



## Gas List 2011

List of detectable gases and vapours



# **Dräger Gas List 2011**

## **List of detectable gases and vapours**

Gas list to find a suitable fixed installed Dräger gas detection instrument for a specified substance.

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## Search Indexes

This list of gases consists of three search indexes and the main part. The search indexes are suitable to find the substance in question by having only its name (including short name or technical abbreviation), its sum formula, or its cas-number.

Using the search indexes you will obtain the substance's associated number to look for in the list of gases.

If the substance is not listed, this does not necessarily mean that this substance is not detectable by Polytron equipment.

### Search Index for CAS-Number

The CAS-number is a worldwide used code to identify a chemical substance unambiguously. This number is issued by the Chemical Abstracts Service and is the easiest way to characterize a chemical substance. Knowing the CAS-No. means to be able to get comprehensive information and links from internet and search engines.

With the CAS-No. the considered substance is unambiguously specified.

### Search Index for Name / Abbreviation

When sorting alphabetically the chemical prefixes such as n-, i-, sec-, tert-, N-, N.N-, or numbers were omitted. Furthermore the prefix "iso" is always substituted by "i-" (exception: Isoprene). Please proceed correspondingly when looking for a substance.

When searching 1,2-Dichloroethane look for Dichloroethane, Isopentane (= i-Pentane) is listed under Pentane, tert-Butanol under Butanol and Methyl-tert-butylether under Methylbutylether.

This search index also lists short names or technical abbreviations. However these names may be ambiguous from chemical aspects (e.g. Dimethyl ether and Dimethoxy ethane usually both are short-named as "DME").

Furthermore refrigerants were considered. The code basically is preceded by "R" meaning refrigerant although in other countries characters such as "F", "FCK", "HFA" or names such as "Freon", "Frigen" and "Propellant" etc. are used. So, if you look for e.g. Freon 134a please search for R 134a.

### Search Index for Sum formula

For every chemical formula - normally given as a semi-structure formula - a sum formula exists. A sum formula is formed according to the Hill-system: Within each sum formula the element symbol C (for Carbon) is on the first place, the element symbol H (for Hydrogen) on the second, followed by all other element symbols in alphabetical order. For every element symbol the order is given with increasing number of atoms of the corresponding molecule. So it seems a little bit strange having a sum formula of e.g. ammonia  $\text{H}_3\text{N}$ , of sulphur dioxide  $\text{O}_2\text{S}$  and of hydrogen cyanide  $\text{CHN}$ .

Having the chemical formula of a substance, the individual element symbols have to be summarized and sorted accordingly. With the sum formula obtained this way you can go into the search index for sum formulas to get the substance's associated number.

Example:  $\text{CH}_3\text{COOH}$

Sum formula is  $\text{C}_2\text{H}_4\text{O}_2$ . This is the sum formula of acetic acid. But you can verify that this is also the sum formula of Methyl formate ( $\text{HCOOCH}_3$ ).

Attention:

Sum formulas may be ambiguous!

# The Gas List

This list is the real list of gases. For each substance there are at least three lines. Besides the column of the current number the gas list consists of 17 columns which are explained in the following:

## Column 1: Substance / Chemical Formula

The main name covers two columns in the first line. The 2<sup>nd</sup> line shows the CAS-No., and the 3<sup>rd</sup> line shows the chemical formula.

## Column 2: Shortn. and S-formula

If there is a technical abbreviation known it is listed in this column 2<sup>nd</sup> line. The sum formula is printed in the 3<sup>rd</sup> line.

## Column 3: Synonyms

If further names are known the three most usual ones are listed here.

## Column 4: Molw. g/mol

In the first line the molecular weight (mol weight) M is listed. The mol weight is used in many calculations, e.g. you can calculate the relative density of a gas or vapour by dividing value M by 28.96. If the result is less than 1 the gas is lighter than air. In most cases the result will be greater than 1 - so it is heavier than air. In case of vapours, however, the maximum vapour pressure (the maximum concentration at a given temperature) in an air/vapour mixture has to be regarded (see vapour pressure column 7): Vapours can never exist in a 100 %v/v-concentration!

Below the mol weight the value of the relative density compared to air is listed. It is marked by a subsequent "r" (for relative).

Example: n-Butanol: 2.56 r

Vapours of n-Butanol are 2.56 times heavier than air.

By using the mol weight M you can convert concentrations given in %v/v (= % by vol.) or ppm to obtain g/m<sup>3</sup> or mg/m<sup>3</sup>.

Using the mol weight M you can also calculate the density of a gas in kg/m<sup>3</sup> (at 20 °C and 1013 hPa) by simply multiplying with a factor of 0.04179:

Example: The mol weight of Propane is 44.1 g/mol, so the density of Propane is:

$$\rho = 0.04179 \cdot 44.1 = 1.843 \text{ kg/m}^3$$

If density  $\rho$  and mol weight M are known you are able to calculate the amount of liquid to be evaporated in a given volume to obtain a defined vapour concentration. However, it is very important that this liquid is evaporated completely. This requires a sufficiently high vapour pressure.

Use the "calibration chamber formula": To obtain a vapour concentration c in a volume of 3 litres at 20 °C and 1013 hPa you have to insert the following amount F (in microlitres) of the liquid:

$$F = 1.2478 \cdot \frac{M}{\rho} \cdot c$$

Example: Ethyl acetate, M = 88.1 g/mol,  $\rho = 0.90$  g/ml, LEL = 2.0 %v/v.

To obtain 50 %LEL (c = 1.0 %v/v) vapour of Ethyl acetate in the 3-litres-calibration chamber insert

$$F = 1.2478 \cdot \frac{88.1}{0.90} \cdot 1.05 = 122 \text{ microlitres}$$

of liquid Ethyl acetate.

If the flashpoint of the liquid is less than 25 °C the value of the amount to be inserted into the 3 litres calibration chamber to obtain 50 %LEL is printed below the value of the density. It is marked by a subsequent "v" (for volume).

Example: n-Hexane: 81 v

You need to insert 81 microliters into the Dräger Calibration Chamber to obtain 50% LEL of hexane vapour.

# The Gas List

## Column 5: Dens. g/ml

In this column the density  $\rho$  of the liquid in g/ml (= g/cm<sup>3</sup>) at 20 °C is listed. This value exists only for liquids, so gases are indicated by "Gas".

## Column 6: Boil. °C

This column is self-explaining, it shows the boiling point of the substance in °C (at 1013 hPa).

Below the boiling point given in °C the boiling point is printed in °F. This value is marked by a subsequent "°F".

## Column 7: p<sub>20</sub> mbar

Vapour pressure p<sub>20</sub> of a liquid at 20 °C given in mbar (= hPa). Vapour pressure is only defined for liquids. So for gases instead of the vapour pressure you will find the marking "Gas" in this column.

The vapour of each liquid forms a pressure which depends on the nature of liquid and the liquid's temperature. If the vapour pressure is low, the liquid evaporates slowly and thus only produces low vapour concentrations (for such flammable liquids the flashpoint is usually high). The maximum vapour concentration c<sub>max</sub> (called saturated vapour concentration), which can form in closed containments, can be calculated by dividing the given vapour pressure by the environmental atmospheric pressure.

Example: n-Nonane, p<sub>20</sub> = 5 mbar, so

$$c_{\max} = \frac{5}{1013} \cdot 100 = 0.49 \%v/v$$

So at 20 °C no vapour concentrations higher than 4900 ppm n-Nonane can exist. Only higher temperatures may produce higher vapour concentrations. Since the Lower Explosion Limit is 0.7 %v/v even in a closed containment at 20 °C no explosive vapour/air-mixtures of n-Nonane can form.

It is essential that the "calibration chamber formula" does not apply for substances with a low vapour pressure, e.g. dosing to obtain 0.6 %v/v of n-Nonane vapour at 20 °C is not possible.

## Column 8: Flpt. °C

This column shows the flashpoint of flammable liquids. Flammable gases do not have a flashpoint and are marked by "Gas". Gases or liquids being non-flammable are marked by 'n.a.'.

The flashpoint is defined as the temperature of a flammable liquid which (in a closed containment) is needed to obtain an ignitable vapour concentration above the liquid's surface.

If environmental temperature and liquid temperature are clearly below the flashpoint (e.g. 10 °C lower), the liquid cannot be ignited.

Example: n-Nonane, flashpoint 31 °C, is not ignitable at 20 °C.

The relatively high flashpoint of n-Nonane is arising from its low vapour pressure. As already shown it is not possible to produce vapours of 100 %LEL under normal conditions (20 °C).

As the flashpoint is a temperature you can also convert a flashpoint F given in degrees Celsius into a flashpoint F given in degrees Fahrenheit using the conversion

$$F_{\text{°F}} = \frac{9}{5} \cdot F_{\text{°C}} + 32 \text{ deg. Fahrenheit}$$

Example: n-Nonane, flashpoint is 31 °C,

$$F_{\text{°F}} = \frac{9}{5} \cdot 31 + 32 = 87.8 \text{ °F}$$

Below the flashpoint F given in °C the flashpoint is printed in °F. This value is marked by a subsequent "°F".

Example: n-Nonane, flashpoint 88 °F

## Columns 9, 10 and 11: LEL

These columns show the lower explosion limit in %v/v. Non-inflammable gases and liquids are marked by 'n.a.'. If there is a void field this indicates that the LEL is unknown. Three values - if available - are listed here:

**Germ.:** Source: Brandes, Möller (PTB): Safety Characteristic Data, Vol. 1: Flammable Liquids and Gases, Wirtschaftsverlag NW, 2<sup>nd</sup> Edition, 2008

If no data of LEL available, chemical catalogues or material safety data sheets have been consulted.



**IEC:** Source: IEC 60079-20-1: 2010 „Explosive atmospheres - Material characteristics for gas and vapour classification“

**USA:** Source: mainly NIOSH (Pocket guide to chemical hazards, US department of health and human services, 2005).

These LELs occasionally deviate from the mentioned ones because the apparatus and procedures to determine the LEL are differently standardized in the USA.

Conversion:

By means of the mol weight (column 4) you can convert the LEL to  $\text{g}/\text{m}^3$  by multiplying the LEL given in %v/v with the mol weight M and dividing it by 2.4. This conversion is valid for 20 °C.

Example: n-Nonane, M = 128.3 g/mol, LEL = 0.7 %v/v, so

$$\text{LEL}_{\text{g}/\text{m}^3} = \frac{128.3}{2.4} \cdot 0.7 = 37.4$$

The LEL of n-Nonane is 37.4  $\text{g}/\text{m}^3$ .

And vice versa:

$$\text{LEL} = \frac{2.4}{M} \cdot \text{LEL}_{\text{g}/\text{m}^3}$$

Below the LELs given in %v/v the corresponding values given in  $\text{g}/\text{m}^3$  are listed. They are enclosed in parenthesis.

#### Column 12: AIT °C

This column shows the auto-ignition temperature (AIT) of flammable gases and vapours. For non-flammable substances this column shows “n.a.”.

If known, the explosion group with subgroup, IIA, IIB or IIC (acc. to standard EN 60079-0), is listed in the 2<sup>nd</sup> line. If the ignition temperature is known, the 3<sup>rd</sup> line contains the temperature class. Electrical devices to be operated in hazardous atmospheres containing the considered flammable substance must at least be marked with the given explosion group and temperature class:

Example:

Allyl alcohol: AIT = 375 °C, IIB T2.

An electrical device must at least be marked IIB T2. Devices marked IIA T2 or IIB T1 are not allowed to be used in atmospheres where Allyl alcohol is present in potentially explosive concentrations.

#### Column 13 and 14: TLV Germ. and TLV USA

If available this column lists toxic limits as threshold limit values (TLV) or workplace limit values (WPL) in ppm.

**TLV Germ.:** Source: TRGS 900, Edition February 2010.

**TLV USA:** Source: NIOSH (Pocket guide to chemical hazards, US department of health and human services, 2005).

Commonly the TLVs are average values, but sometimes ceiling values (marked by a “c”) are listed. In no case ceiling values are allowed to be exceeded.

If neither the TLV Germ. nor the TLV USA is listed this does not necessarily mean that the considered substance is not toxic. Short-term limit values have not been regarded in this gas list.

Conversion:

By means of the mol weight (column 4) you can convert the TLV to  $\text{mg}/\text{m}^3$  by multiplying the TLV given in ppm with the mol weight M and dividing it by 24. This conversion is valid for 20 °C.

Example: n-Nonane, M = 128.3 g/mol, TLV = 200 ppm:

$$\text{TLV}_{\text{mg}/\text{m}^3} = \frac{128.3}{24} \cdot 200 = 1069$$

The TLV is 1069  $\text{mg}/\text{m}^3$ .

Vice versa:

$$\text{TLV} = \frac{24}{M} \cdot \text{TLV}_{\text{mg}/\text{m}^3}$$

Below the TLVs given in ppm the corresponding values given in  $\text{mg}/\text{m}^3$  are listed. They are enclosed in parenthesis. As these figures are exactly calculated they may slightly be different from officially issued values which are frequently rounded.

# The Gas List

## Column 15: Detectable by ...

This column lists the transmitters by means of which the considered substance is detectable. This information is self-explaining. Especially "TX ... ne" indicates the non-explosion-proof version of Polytron TX.

## Column 16: Suitable measuring ranges

### PEX 3000, SE Ex, FX, XP Ex

For catalytic bead sensors and -transmitters the full scale deflection is always 100% LEL. The 10% LEL sensor can also be used for the detection of the listed substance, in this case the measuring range then is 0 ... 10% LEL. Also, without being explicitly mentioned, the Polytron Ex is implemented.

### Polytron IR Ex and Polytron IR Ex ES

Since you can configure different measuring ranges with the Polytron IR Ex series not every possible full scale deflection (f.s.d.) could be listed. In most cases the lowest possible full scale deflection is listed. If more than one measuring unit is listed, the ranges are separated by '/'. If the gas category is given in parenthesis:

- (1) Category Methane
- (2) Category Ethene = Ethylene
- (3) Category Propane
- (?) Category not yet determined

A question mark, e.g. "3000 ppm (3)?", shows that the gas is assumed to be detectable in the gas category propane but not yet confirmed.

If a lowest full scale deflection of less than 100% LEL is listed the range 0 ... 100% LEL in most cases is also suitable.

### Dräger PIR 3000

The full scale value is always 100% LEL. Other measuring ranges are not suitable. A question mark indicates substances which are assumed to be detectable but have not been verified so far.

### Polytron IR Type 334 and Type 340

If the substance in consideration is stored in the transmitter's EPROM and so is directly selectable from the gas library it is marked by "Gas-Library".

The minimum and maximum f.s.d in %LEL are listed. Separated by a "/" mostly the lowest f.s.d in also listed in ppm.

A question mark indicates substances which are assumed to be detectable but have not been verified so far.

### Dräger PIR 7000 Type 334 and 340

The listed measuring ranges are comparable to those of P IR Type 334 or 340. A "(§)" indicates substances being surely detectable but not yet having undergone verifying measurements - so no calibration hints can be issued so far.

A question mark indicates substances which are assumed to be detectable but have not been verified so far.

## Remark:

Since measurements in our application laboratory are an on-going routine one can expect to have calibration data at a later date.

### Polytron 7000, XP Tox

The minimum, standard, and maximum full scale deflections are listed. If the substance considered is not stored in the sensor's EEPROM the full scale deflection values have to be multiplied by the given factor.

Example: Morpholine with Polytron 7000 and sensor NH<sub>3</sub>: "50 / 100 ppm x 4" means that the configured f.s.d. of 50 or 100 ppm NH<sub>3</sub> corresponds to 200 or 400 ppm Morpholine. So when applying Morpholine to the sensor the reading has to be multiplied by factor 4 to obtain the true concentration.

Concerning the sensors OV1, OV2, H<sub>2</sub>S, and NH<sub>3</sub>, additionally the gas type to configure is recommended:

Example: 1-Hexene: "as Aald x 2" means: To measure 1-Hexene configure for Acetic aldehyde, calibrate for Acetic aldehyde and multiply the reading by 2 to have the true concentration of 1-Hexene.

In some cases this factor may even be 0.5, so the reading has to be divided by 2.

### Pulsar

Measuring ranges always are 1 and 4 / 8 LELm, 1 LELm is possible e.g. by the duct-version.



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### Column 17: Important Remarks

Here you will find remarks concerning sensor poisoning by corrosive or polymerizing influences for catalytic sensors as well as information about response times ( $t_{20}$ ,  $t_{50}$ ).

### Measuring performance

If the considered substance is subject of a measuring performance certificate ("measuring function for explosion protection") this is indicated by "Performance Approval".

Furthermore there are remarks like e.g. "detectability expected" or "on request". The relative sensitivities  $S$  in respect to the target gas might be of special interest.

For electrochemical sensors the given relative sensitivities  $S$  are only valid for new sensors and the values might fluctuate about  $\pm 30\%$ . An "L" in parenthesis indicates that this sensor is only suitable to be used for leak detection.

Example: OV1-sensor for Butylene oxide: "S = 0.4 (L)" means the sensitivity of the OV1-sensor exposed to Butylene oxide is 40 % compared to ethylene oxide. For Butylene oxide this sensor should only be used for leak detection purposes.

### What is leak detection?

A leak is an unpredictable abnormal release of gases or vapours of higher concentrations.

A leak has to be regarded as an exceptional event of a relative short duration.

In case of normal operation there is only clean air (without even low concentrations of the target gas or vapour).

A gas detection system for leak detection is not to measure a gas concentration but to give alarm reliably if a preset alarm threshold is exceeded. That is why for leak detection rather the  $t_{20}$  or  $t_{50}$  response times are relevant instead of the  $t_{90}$ -time. The given measuring ranges marked by "L" or "(L)" have to be interpreted as a range where an alarm threshold of the control unit can be set (choose e.g. 20% or 40% of full scale deflections).

After a gas release a leak gas detection system needs to be checked for proper function.

### Mixtures of gases and vapours

Not to expand this gas list unnecessarily, only pure substances, but not mixtures of gases and vapours, are listed. This is especially true for mixtures of flammable solvents and fuels which are differently blended by different manufacturers.

For %LEL-measurement the gas detection instrument has to be calibrated for those substances in the mixture, which are detected with the least sensitivity. From this guideline calibration procedures based on pure substances can be derived. For example to detect Kerosene commonly a Nonane-calibration is recommended. Moreover, a catalytic bead sensor calibrated for n-Nonane is also very suitable to detect numerous hydrocarbon mixtures such as gasolines, petrols, aviation fuels and jet petrols as well as Naphtha, Solvent Naphtha, Varnish Makers & Painters Naphtha (VMPN), White Spirit, etc.

However, whether such a calibration leads to safe detection in an individual application can only be derived from suitable Material Safety Data Sheets (acc. to the European Standard, where the chemical characterisation can be found under chap. 2 and the physical data such as LEL, vapour pressure and flashpoint are listed under chap. 9), or needs to be verified by according measurement tests in the laboratory.

## Search Index for Name/Abbreviation

Substance	No.	Substance	No.	Substance	No.
AA	12	Allylcarbinol	50	Azabenzene	344
Aald	1	Allyl chloride	15	Azine	344
AC	235	Allylene	324	Azirane	194
Acetal	127	Allyl-2,3-epoxypropylether	16	Aziridine	194
Acetaldehyde	1	Allylglycidylether	16	B2A	61
Acetaldehyde diethylacetal	127	Allyloxy-2,3-epoxypropane	16	BCHD	297
Acetic acid	2	Aminobenzene	28	Benzenamine	28
Acetic acid allyl ester	11	3-Aminobenzo trifluoride	382	Benzene	31
Acetic acid i-amylester	18	1-Aminobutane	60	Benzene chloride	84
Acetic acid n-amyl ester	19	2-Aminobutane	61	Benzene tetrahydride	97
Acetic acid butylester	55	Aminocyclohexane	99	Benzyl chloride	32
Acetic acid i-butylester	54	Aminoethane	183	BiBi	334
Acetic acid tert-butyl ester	56	2-Aminoethanol	178	Bicyclo(2.2.1)hepta-2,5-diene	297
Acetic acid dimethyl amide	143	Aminoethylene	194	Bicycloheptadiene	297
Acetic acid ethenyl ester	396	1-Aminohexane	230	Bicyclohexyl	125
Acetic acid ethyl ester	181	Aminomethane	255	Bicyclopentadiene	126
Acetic acid methoxy propylic ester	251	2-Amino-2-methylpropane	62	Bis(2-ethoxyethyl)-ether	132
Acetic acid methyl ester	252	1-Aminopentane	23	Bis(2-methoxyethyl)-ether	133
Acetic acid 1-methylethyl ester	329	1-Aminopropane	332	Bis-trimethylsilyl-amine	222
Acetic acid i-propenyl ester	323	2-Aminopropane	331	1,2-Bis-(dimethyl amino)-ethane	364
Acetic acid i-propyl ester	329	3-Amino-1-propene	13	BMA	72
Acetic acid propyl ester	330	3-Aminopropyl dimethylamine	145	Boroethane	108
Acetic acid sec butyl ester	53	1-Amino propylene	13	Boron bromide	33
Acetic acid vinyl ester	396	Ammonia	17	Boron fluoride	35
Acetic aldehyde	1	AMS	286	Boron hydride	108
Acetone	3	i-Amylacetate	18	Boron tribromide	33
Acetone dimethylacetal	142	n-Amylacetate	19	Boron trichloride	34
Acetonitrile	4	Amyl acetic ester	19	Boron trifluoride	35
1-Acetoxyethylene	396	i-Amyl alcohol	20	Boron trimethyl	386
Acetylacetone	5	n-Amyl alcohol	21	Bromine	36
Acetylchloride	6	tert-Amyl alcohol	22	Bromoallylene	14
Acetyl dimethylamine	143	n-Amylamine	23	2-Bromo-2-chloro-1,1,1-trifluoroethane	215
Acetylene	7	Amyl carbinol	225	Bromoethane	185
ACN	10	Amylchloride	25	Bromoethyl	185
Acroleic acid	9	i-Amylchloride	24	2-Bromo i-butyric acid i-propylester	334
Acrolein	8	n-Amylchloride	25	Bromomethane	256
Acrylic acid	9	n-Amylene	312	3-Bromopropene	14
Acrylic acid ethyl ester	182	i-Amylformate	26	BTBAS	63
Acrylic acid (2-ethylhexyl)ester	199	tert-Amylmethyl ether	27	BuAc	55
Acrylic acid methyl ester	253	i-Amyl methyl ketone	271	1,2-Butadiene	37
Acrylic aldehyde	8	n-Amyl methyl ketone	218	1,3-Butadiene	38
Acrylo-i-butylic ester	57	AN	4	1,3-Butadiene monoxide	39
Acrylobutylic ester	58	Anhydrous ammonia	17	i-Butanal	74
Acrylonitrile	10	Aniline	28	n-Butanal	75
Adipic ketone	101	Anol	95	i-Butane	40
AGE	16	Anon	96	n-Butane	41
Allyl acetate	11	Antimony-(V)-chloride	29	1-Butane amine	60
Allyl alcohol	12	Antimony pentachloride	29	2-Butane amine	61
Allyl aldehyde	8	Arsenic hydride	30	1-Butanol	44
Allylamine	13	Arsenic trihydride	30	2-Butanol	42
Allyl bromide	14	Arsine	30	i-Butanol	43

Substance	No.	Substance	No.	Substance	No.
n-Butanol	44	i-Butylformate	68	Chlorodimethyl ether	89
tert-Butanol	45	n-Butylformate	69	1-Chloro-2,3-epoxypropane	174
2-Butanone	267	n-Butyl glycol	51	2-Chloro-1-ethanal	83
Butanthiol	70	n-Butyl mercaptan	70	Chloroethane	187
2-Butenal	46	tert-Butylmercaptan	71	2-Chloroethanol	88
1-Butene	49	Butyl methacrylate	72	Chloroethene	398
2-Butene	47	tert-Butyl methane	158	Chloroethyl	187
i-Butene	48	Butyl methanoate	69	Chloroethyl alcohol	88
n-Butene	49	tert-Butyl methyl ether	258	Chloroethylene	398
3-Butene-1-ol	50	Butyl methyl ketone	226	1-Chloroethyl methyl ketone	85
1-Buten-3-one	403	Butyl propenoate	58	Chloroform	373
1-Buten-3-yne	397	2-Butyne	73	Chloroformic acid ethyl ester	188
3-Butenyne-1	397	i-Butyraldehyde	74	Chloroformic acid methyl ester	262
1-Butoxybutane	110	n-Butyraldehyde	75	Chloromethane	261
2-Butoxyethanol	51	i-Butyric aldehyde	74	Chloromethoxymethane	89
1-Butoxy-2-propanol	52	n-Butyric aldehyde	75	Chloromethyl	261
3-Butoxy-2-propanol	52	C11	395	Chloro methylbenzene	32
2-Butyl acetate	53	C4=	49	1-Chloro-3-methylbutane	24
i-Butyl acetate	54	C4=	47	Chloromethyl methylether	89
n-Butyl acetate	55	C4==	38	Chloromethyl oxirane	174
sec-Butyl acetate	53	Caprylene	302	1-Chloro-2-methylpropane	65
tert-Butyl acetate	56	Carbinol	247	2-Chloro-2-methylpropane	67
i-Butyl acrylate	57	Carbon dioxide	76	3-Chloro-2-methyl-1-propene	254
n-Butyl acrylate	58	Carbonic acid diethyl ester	131	1-Chloropentane	25
i-Butyl alcohol	43	Carbonic acid dimethyl ester	148	Chloropicrin	374
n-Butyl alcohol	44	Carbonic acid ethyl methyl ester	264	1-Chloropropane	336
sec-Butyl alcohol	42	Carbon monoxide	77	2-Chloropropane	335
tert-Butylalcohol	45	Carbon oxide	77	2-Chloropropene	90
i-Butylamine	59	Carbon oxychloride	313	2-Chloropropylene	90
n-Butylamine	60	Carbon tetrachloride	78	3-Chloropropylene	15
sec-Butylamine	61	Carbonyl chloride	313	Chlorosulfonic acid	91
tert-Butylamine	62	Carboxyethane	325	Chlorosulfuric acid	91
Bis(tert-butylamino)silane	63	CCHO	98	$\alpha$ -Chlorotoluene	32
tert-Butyl arsine	64	Cellosolve	197	Chlorotrifluoride	82
N-Butyl-1-butane amine	109	CG	313	Chlorotrifluoroethyldifluoromethyl ether	173
i-Butylcarbinol	20	CHA	99	Chlorotrifluoroethyldifluoromethylether	241
n-Butylcarbinol	21	1-Chlor-2-butene	79	CMME	89
Butyl cellosolve	51	Chlorine	80	Colamine	178
Butylchloride	66	Chlorine dioxide	81	CP	100
i-Butylchloride	65	Chlorine peroxide	81	Crotonaldehyde	46
n-Butylchloride	66	Chlorine trifluoride	82	Crotonic aldehyde	46
tert-Butylchloride	67	Chloroacetaldehyde	83	Crotonylene	73
1-Butylene	49	3-Chloroallyl chloride	121	Crotlyl chloride	79
2-Butylene	47	Chloroallylene	15	Cumene	92
i-Butylene	48	Chlorobenzene	84	Cyanoethylene	10
Butylene oxide	175	1-Chlorobutane	66	Cyanomethane	4
i-Butyl ethanoate	54	3-Chloro-2-butanone	85	Cyclobutane	93
n-Butyl ethanoate	55	3-Chloro-i-butene	254	Cyclohexane	94
tert-Butyl ethanoate	56	1-Chloro-1,1-difluoroethane	86	Cyclohexanol	95
Butyl ethylene	228	Chlorodifluoromethane	87	Cyclohexanone	96
tert-Butyl ethyl ether	186	2-Chloro difluoromethoxytrifluoroethane	173	Cyclohexene	97

## Search Index for Name/Abbreviation

Substance	No.	Substance	No.	Substance	No.
3-Cyclohexene-1-aldehyde	358	1,2-Dichloroethylene cis	115	1,2-Dimethoxy ethane	140
3-Cyclohexene-1-carboxaldehyde	358	1,2-Dichloroethylene trans	116	Dimethoxy formic acid anhydride	148
Cyclohexene oxide	98	1,1-Dichloro-1-fluoroethane	117	Dimethoxymethane	141
Cyclohexylamine	99	1,3-Dichlorohydrin	120	2,2-Dimethoxypropane	142
Cyclohexyl cyclohexane	125	Dichloromethane	118	Dimethyl	176
N-Cyclohexyl dimethyl amine	149	1,2-Dichloropropane	119	N,N-Dimethyl acetamide	143
Cyclohexylethene	399	1,3-Dichloro-2-propanol	120	1,1-Dimethyl acetone	282
Cyclohexyl ketone	96	1,3-Dichloro-i-propanol	120	Dimethylacetone	136
Cyclohexylmethane	263	1,3-Dichloropropene	121	Dimethyl acetylene	73
Cyclomethicone	103	Dichlorosilane	122	Dimethylamine	144
Cyclopentadiene dimere	126	1,2-Dichlorotetrafluoroethane	123	Dimethylamino cyclohexane	149
Cyclopentane	100	2,2-Dichloro-1,1,1-trifluoroethane	124	2-Dimethylaminoethanol	151
Cyclopentanone	101	Dicyclohexyl	125	1-Dimethyl aminopropane	160
Cyclopropane	102	Dicyclopentadiene	126	1-Dimethylamino-2-propanol	159
Cyclohexane amine	99	Diethenyl benzene	170	Dimethylaminopropylamine	145
DC245 Fluid	103	1,1-Diethoxyethane	127	1,2-Dimethylbenzene	406
DCM	118	Diethoxy formic acid anhydride	131	1,3-Dimethylbenzene	405
1,3-DCP	120	Diethoxy methyl silane	128	1,4-Dimethylbenzene	407
DCP	121	Diethylacetal	127	2,2-Dimethylbutane	146
DCS	122	Diethylamine	129	2,3-Dimethylbutane	147
DEA	129	N,N-Diethylamine	129	Dimethyl carbinol	321
DEC	131	2-Diethylaminoethanol	134	Dimethyl carbonate	148
Decamethyl cyclopentasiloxane	103	1,2-Diethylbenzene	130	N,N-Dimethyl cyclohexyl amine	149
n-Decane	104	o-Diethylbenzene	130	N,N-Dimethyl-1,3-diaminopropane	145
1-Decene	105	Diethylcarbinol	311	Dimethyl diglycol	133
n-Decylene	105	Diethyl carbonate	131	Dimethyl dimethoxy methane	142
DEGDME	133	Diethyldiglycol	132	Dimethyl disulphide	150
DEK	136	Diethylene dioxide	163	Dimethylene oxide	195
DEMS	128	Diethylene ether	163	N,N-Dimethylethanamine	153
Desflurane	106	Diethylene glycol diethylether	132	1,1-Dimethyl ethane thiol	71
Diacetone	107	Diethylene monoxide	359	N,N-Dimethylethanolamine	151
Diacetone alcohol	107	Diethylene oximide	287	1,2-Dimethyl ethene	47
Diacetylmethane	5	Diethyleneglycol dimethylether	133	Dimethylether	152
Diamine	231	N,N-Diethylethanamine	377	Dimethyl ethinyl carbinol	260
1,2-Diaminoethane	193	N,N-Diethylethanolamine	134	Bis(1,1-dimethylethyl)peroxide	111
Diazane	231	Diethyl ether	135	1,1-Dimethylethylamine	62
Diborane	108	Diethyl ketone	136	Dimethylethylamine	153
Diboron hexahydride	108	Diethylmethylmethane	278	1,1-Dimethylethyl arsine	64
Dibutylamine	109	Diethylsulphide	137	Dimethyl ethyl carbinol	22
N,N-Dibutyl-1-butanamine	371	Diethyl thioether	137	Dimethylformamide	154
Di-i-butylene	390	Difluoro chloroethane	86	N,N-Dimethylformamide	154
Di-n-butylether	110	Difluorochloromethane	87	Dimethylglycol	140
Dibutyl ketone	296	1,1-Difluoroethane	138	3,4-Dimethyl hexane	155
Di-tert-butyl peroxide	111	Difluoromethane	139	1,1-Dimethylhydrazine	156
N,N'-Di-tert-butylsilane diamine	63	2-Difluoromethoxy tetrafluoroethane	106	N,N-Dimethylhydrazine	156
1,1-Dichloroethane	112	Diglyme	133	Dimethyl ketone	3
1,2-Dichloroethane	113	Dihexyl	172	N,N-Dimethyl methanamide	143
1,1-Dichloroethene	114	Dihydro-1,3-dioxol	164	N,N-Dimethylmethanamide	154
1,2-Dichloroethene cis	115	Dihydrogen selenide	239	N,N-Dimethylmethanamine	383
1,2-Dichloroethene trans	116	3,4-Dihydro-2-methoxypyrene	248	Dimethyl methane	320
1,1-Dichloroethylene	114	Dimazine	156	Dimethylnitromethane	293

Substance	No.	Substance	No.	Substance	No.
2,4-Dimethyl-3-oxa-2,4-disilapentane	363	DVB	170	1-Ethoxy-2-methyl propane	186
Dimethyl oxide	152	DVE	171	1-Ethoxypropane	204
2,3-Dimethylpentane	157	ECH	174	1-Ethoxy-2-propanol	179
N,N-Dimethyl-1-propanamine	161	EDA	193	Ethoxytrifluorbutenon	180
N,N-Dimethyl-1,3-propandiamine	145	EDC	113	4-Ethoxy-1,1,1-trifluoro-3-buten-2-one	180
2,2-Dimethyl propane	158	EGBE	51	Ethrane	173
N,N-Dimethyl-1-propane amine	160	EGDME	140	Ethyl acetate	181
N,N-Dimethyl-i-propanolamine	159	EGEE	197	1-Ethyl acetone	281
Dimethylpropylamine	161	EGEEA	198	Ethyl acrylate	182
N,N-Dimethyl-i-propylamine	160	EGiPE	328	Ethyl alcohol	177
N,N-Dimethyl-n-propyl amine	161	EGME	249	Ethyl aldehyde	1
Dimethylpropylmethane	277	EMA	202	Ethylamine	183
Dimethyl sulphide	162	EMC	264	Ethyl benzene	184
Dinitrogen monoxide	294	Enflurane	173	Ethyl bromide	185
1,4-Dioxo cyclohexane	163	EO	195	Ethyl-tert-butylether	186
1,3-Dioxo cyclopentane	164	Epichlorohydrin	174	Ethyl carbinol	322
1,4-Dioxane	163	1,2-Epoxy-3-allyloxypropane	16	Ethyl chloride	187
1,3-Dioxolane	164	1,4-Epoxy-1,3-butadiene	209	Ethyl chloro carbonate	188
DIPA	165	1,2-Epoxybutane	175	Ethyl chloroformate	188
Di-i-propyl	147	1,4-Epoxybutane	359	Ethylcyclobutane	189
Di-i-propylamine	165	3,4-Epoxy-1-butene	39	Ethylcyclohexane	190
Di-n-propylamine	166	1,2-Epoxy cyclohexane	98	Ethylcyclopentane	191
Dipropylamine	166	1,2-Epoxyethane	195	Ethylcyclohexylmethane	189
Di-i-propyl ether	167	1,2-Epoxy propane	338	Ethyl dimethylamine	153
Di-n-propyl ether	168	2,3-Epoxypropylchloride	174	Ethylene	192
Dipropyl ether	168	Erythrene	38	Ethylencarboxylic acid	9
N,N-Dipropyl-1-propanamine	393	ETBE	186	Ethylene chloride	113
Disilane	169	ETFBO	180	Ethylene chlorohydrin	88
2,3-Dithiabutane	150	Ethanal	1	Ethylenediamine	193
Divinyl	38	Ethane	176	Ethylene dichloride	113
Divinyl benzene (mixture of isomeres)	170	Ethane amine	183	Ethylene glycol dimethyl ether	140
Divinylether	171	1,2-Ethanediamine	193	Ethylene glycol monobutyl ether	51
Divinyloxide	171	Ethanethiol	201	Ethylene glycol monoethyl ether	197
DMA	144	Ethanoic acid	2	Ethylene glycol monoethyl ether acetate	198
DMAC	143	Ethanol	177	Ethylene glycol monomethyl ether	249
DMAPA	145	Ethanol amine	178	Ethylene glycol i-propyl ether	328
DMC	148	Ethanoylchloride	6	Ethyleneimine	194
DMCHA	149	Ethene	192	Ethylene oxide	195
DMCPS	103	Ethenyl benzene	349	Ethylene tetrachloride	353
DMDS	150	4-Ethenylcyclohexene	400	N-Ethylethane amine	129
DME	152	Ethenyl methylether	402	Ethyl ethanoate	181
DMEA	153	Ethenyl oxirane	39	Ethylethylene	49
DMF	154	Ethenyltrimethoxysilane	404	Ethyl formate	196
DMIPA	160	Ether	135	Ethyl glycol	197
DMK	3	Ethine	7	Ethyl glycol acetate	198
DMPA	161	Ethinyl dimethyl carbinol	260	Ethylhexamethylene	190
DMS	162	Ethoxy carbonyl chloride	188	2-Ethylhexyl acrylate	199
i-Dodecane	308	Ethoxy ethane	135	2-Ethylhexyl-2-propenoate	199
n-Dodecane	172	2-Ethoxyethanol	197	Ethylidene chloride	112
DS	169	Ethoxyethene	205	Ethylidene fluoride	138
DTBP	111	2-Ethoxy ethylacetate	198	Ethyl lactate	200

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Substance	No.	Substance	No.	Substance	No.
Ethyl mercaptan	201	Furfur alcohol	211	HFC-1234ze	357
Ethylmethacrylate	202	Furfuraldehyde	210	HFC 365mfc	306
Ethyl methanoate	196	Furfuran	209	HFO-1234ze	357
Ethylmethylcarbinol	42	Furfuryl alcohol	211	HMDS	222
Ethyl methyl carbonate	264	Germane	212	HMDSO	223
Ethylmethyl ether	265	Germanium hydride	212	Hydrazine	231
4-Ethyl-2-methylhexane	266	Germanium tetrachloride	213	Hydrobromic acid	233
Ethyl methyl ketone	267	Germanium tetrafluoride	214	Hydrochloric acid	234
Ethyl nitrile	4	Germanium tetrahydride	212	Hydrocyanic acid	235
Ethyl oxirane	175	Germanomethane	212	Hydrofluoric acid	236
Ethylpentamethylene	191	Glycol chlorohydrin	88	Hydrogen	232
Ethyl propanoate	203	Glycol dimethylether	140	Hydrogen arsenide	30
1-Ethyl-1-propanol	311	Glycol monomethyl ether	249	Hydrogen bromide	233
Ethyl propenoate	182	Halon 10001	273	Hydrogen carboxylic acid	208
Ethylpropionate	203	Halothane	215	Hydrogen chloride	234
Ethylpropylether	204	Hendecane	395	Hydrogen cyanide	235
Ethylpropylketone	227	n-Heptane	216	Hydrogen dioxide	238
Ethyl sulfhydrate	201	1-Heptanol	217	Hydrogen fluoride	236
Ethyl vinyl ether	205	2-Heptanone	218	Hydrogen iodide	237
Ethyne	7	n-Hepten	219	Hydrogen nitrate	288
Ethynyl carbinol	343	Heptene	219	Hydrogen peroxide	238
EtM	201	Heptyl alcohol	217	Hydrogen phosphide	314
EtOH	177	1-Heptylene	219	Hydrogen selenide	239
EVE	205	Hexafluoro-2-(fluoromethoxy)propane	345	Hydrogen sulfide	240
Fluorine	206	Hexafluoro-1.3-butadiene	220	Hydroperoxide	238
Fluoroethene	401	Hexafluoroethane	221	Hydrosulfuric acid	240
Fluoroform	380	Hexahydroaniline	99	2-Hydroxybutane	42
Fluoromethane	269	Hexahydrobenzene	94	Hydroxycyclohexane	95
Fluothrane	215	Hexahydro-N,N-dimethyl aniline	149	2-Hydroxyethylamine	178
Forane	241	Hexahydrophenol	95	2-Hydroxymethylfuran	211
Formal	141	Hexahydropyridine	319	4-Hydroxy-4-methyl-2-pentanone	107
Formaldehyde	207	Hexahydrotoluene	263	Hydroxypropionic acid ethyl ester	200
Formaldehyde dimethylacetal	141	Hexalin	95	2-Hydroxy triethylamine	134
Formaldehyde ethylene acetal	164	Hexamethyldisilazane	222	Hyponitrous acid anhydride	294
Formic acid	208	Hexamethyldisiloxane	223	IBA	43
Formic acid butyl ester	69	Hexamethylene	94	iC12	308
Formic acid i-butylester	68	1-Hexanamine	230	iC4=	48
Formic acid dimethylamide	154	Hexanaphthene	94	Iodomethane	273
Formic acid ethyl ester	196	i-Hexane	277	IPA	321
Formic acid methylester	270	n-Hexane	224	IPC	335
Formic acid i-pentylester	26	1-Hexanol	225	iPM	340
Formic acid propylester	339	2-Hexanone	226	Isobutane	40
Formic acid-o-triethyl ester	378	3-Hexanone	227	Isobutene	48
Formic acid-o-trimethyl ester	388	Hexanone	96	Isoflurane	241
Formonitrile	235	1-Hexene	228	Isopentane	309
4-Formyl-1-cyclohexene	358	2-Hexene	229	Isoprene	242
2-Furaldehyde	210	n-Hexene	228	2-Isopropoxy propane	167
Furan	209	Hexone	259	Isopropyl ether	167
2-Furancarboxaldehyde	210	Hexyl alcohol	225	Ketocyclopentane	101
2-Furan methanol	211	n-Hexylamine	230	Keto pentamethylene	101
Furfural	210	HF-A	236	Ketopropane	3

Substance	No.	Substance	No.	Substance	No.
Lactic acid ethyl ester	200	$\alpha$ -Methylacrylic acid	245	1-Methylethyl-2-propanamine	165
Laughing gas	294	Methylal	141	Methylethyl sulfide	268
Lead tetraethyl	243	Methyl alcohol	247	Methylfluoride	269
MA	255	Methyl aldehyde	207	Methylfluoroform	379
MAK	218	Methylallene	37	Methyl formate	270
MBK	226	2-Methylallyl chloride	254	Methyl glycol	249
MCB	84	Methylallylchloride	254	5-Methyl-2-hexanone	271
MCH	263	Methylamine	255	Methyl hydrazine	272
MDHP	248	Methyl-tert-amylether	27	Methyl iodide	273
Mel	273	Methyl amyl ketone	218	Methyl mercaptan	274
MEK	267	Methyl-i-amyl ketone	271	Methyl methacrylate	275
MeM	274	Methyl benzene	370	N-Methylmethanamine	144
MeOH	247	Methyl bromide	256	Methylmethane	176
1-Mercaptobutane	70	2-Methyl-1.3-butadiene	242	Methyl methanoate	270
Mercaptoethane	201	2-Methylbutane	309	2-Methyl-2-methoxy propane	258
Mercaptomethane	274	2-Methyl-1-butanol	257	Methyl-2-methyl-2-propenoate	275
3-Mercaptopropane	341	2-Methyl-2-butanol	22	4-Methyl morpholine	276
Mesitylene	385	3-Methylbutan-1-ol	20	N-Methyl morpholine	276
Mesityl oxide	244	3-Methyl-2-butanone	282	Methyloxirane	338
Metaformaldehyde	392	3-Methyl butyl acetate	18	2-Methyl pentane	277
Methacrylic acid	245	2-Methyl butylacrylate	72	3-Methyl pentane	278
Methacrylic acid butylester	72	2-Methyl butyl alcohol	257	Methylpentane	278
Methacrylic acid ethylester	202	Methyl-i-butylene ketone	244	2-Methyl-2-pentanol-4-one	107
Methacrylic acid methyl ester	275	Methyl-tert-butyl ether	258	4-Methyl-2-pentanone	259
Methanal	207	3-Methyl-1-butylformate	26	4-Methyl-3-penten-2-one	244
Methane	246	Methyl butyl ketone	226	Methyl-tert-pentylether	27
Methanecarboxylic acid	2	Methyl-i-butylketone	259	Methyl pentyl ketone	218
Methanethiol	274	2-Methyl-3-butyn-2-ol	260	2-Methyl propanal	74
Methane trichloride	373	Methylcarbinol	177	2-Methylpropane	40
Methanoic acid	208	Methyl chloride	261	2-Methyl-1-propane amine	59
Methanoic acid methyl ester	270	Methyl chlorocarbonate	262	2-Methyl-2-propane amine	62
Methanoic acid propylester	339	Methyl chloroform	372	2-Methyl-2-propanethiol	71
Methanol	247	Methyl chloroformate	262	2-Methyl-1-propanol	43
Methoxy carbonyl chloride	262	Methylchloromethyl ether	89	2-Methylpropanol-2	45
Methoxycarbonylethylene	253	Methyl cyanide	4	Methyl propanone	267
2-Methoxy-3.4-dihydropyran	248	Methylcyclohexane	263	2-Methylpropene	48
Methoxy dihydropyran	248	Methyl diethoxy silane	128	Methyl propenoate	253
Methoxy ethane	265	Methylene chloride	118	2-Methyl-2-propenoic acid	245
2-Methoxyethanol	249	Methylene dichloride	118	2-Methyl-2-propenoic acid butylester	72
Methoxyethene	402	Methylene fluoride	139	2-Methyl-2-propenoic acid ethylester	202
Methoxy methane	152	Methylene glycol dimethyl ether	141	2-Methyl-2-propenoic acid methyl ester	275
2-Methoxy-2-methyl butane	27	4.7-Methylentetrahydro indene	126	Methylpropionate	279
2-Methoxy-1-methylethyl acetate	251	Methyl ethanoate	252	1-Methylpropyl acetate	53
2-Methoxy-2-methyl propane	258	Methyl ethene	337	2-Methylpropyl acetate	54
1-Methoxypropane	280	(1-Methyl ethenyl)benzene	286	2-Methyl propyl acrylate	57
1-Methoxy-2-propanol	250	2-Methyl-2-ethoxy propane	186	2-Methylpropyl amine	59
1-Methoxy-2-propyl acetate	251	Methyl ethyl carbonate	264	2-Methyl-i-propyl arsine	64
Methyl acetate	252	Methylethyl ether	265	1-Methyl propylene glycol-2	250
Methyl acetic acid	325	2-Methyl-4-ethylhexane	266	Methyl-n-propylether	280
Methyl acetylene	324	Methyl ethyl ketone	267	Methylpropylether	280
Methyl acrylate	253	Methylethylmethane	41	2-Methylpropyl formate	68

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Substance	No.	Substance	No.	Substance	No.
Methyl propyl ketone	281	Nitrogen trifluoride	292	n-Pentane	310
Methyl-i-propyl ketone	282	2-Nitropropane	293	1-Pentane amine	23
2-Methylpyridine	317	Nitro-i-propane	293	3-Pentanol	311
3-Methyl pyridine	283	Nitrotrichloromethane	374	i-Pentanol	20
N-Methyl-2-pyrrolidinone	284	Nitrous oxide	294	i-Pentanol	257
1-Methyl-2-pyrrolidone	284	NMM	276	n-Pentanol	21
N-Methylpyrrolidone	284	NMP	284	tert-Pentanol	22
Methylsilane	285	i-Nonane	387	2-Pentanone	281
2-Methyl-2-silapropane	391	i-Nonane	365	3-Pentanone	136
$\alpha$ -Methyl styrene	286	n-Nonane	295	1-Pentene	312
Methyl sulfhydrate	274	5-Nonanone	296	i-Pentyl acetate	18
Methylthioethane	268	2.5-Norbornadiene	297	n-Pentyl acetate	19
Methyl thiomethane	162	2-NP	293	Pentyl alcohol	21
Methylvinyl acetate	323	NPA	322	Pentylchloride	25
Methylvinyl ether	402	nPM	341	i-Pentylchloride	24
Methylvinylketone	403	NTO	290	n-Pentylene	312
MiAK	271	Octafluoro cyclopentene	298	i-Pentylformate	26
MiBK	259	Octamethyl cyclotetrasiloxane	299	i-Pentyl methyl ketone	271
MIPK	282	Octamethyl trisiloxane	300	PER	353
MMA	275	i-Octane	389	Perchloroethylene	353
MMH	272	i-Octane	155	Perfluoro butadiene	220
MMS	285	n-Octane	301	Perfluoro cyclopentene	298
MO	244	1-Octene	302	Perfluoroethylene	356
Monoamylamine	23	1-Octylene	302	PFC	298
Monobromomethane	256	Olefiant gas	192	PFE	356
Monochlorobenzene	84	OMCTS	299	PGBE	52
Monoethylamine	183	OMTSO	300	PGEE	179
Monomethylamine	255	7-Oxabicyclo(4.1.0)heptane	98	PGME	250
Monomethylhydrazine	272	Oxacyclopentadiene	209	PGMEA	251
Monomethylsilane	285	Oxirane	195	Phenylamine	28
Monosilane	346	Oxol	209	Phenyl chloride	84
Morpholine	287	Oxomethane	207	Phenylethane	184
MPK	281	1.1'-Oxybisbutane	110	Phenylethylene	349
MTBE	258	1.1'-Oxybisethane	135	Phenyl hydride	31
Muriatic acid	234	1.1'-Oxybisethene	171	Phenyl methane	370
MVK	403	1.1'-Oxybismethane	152	1-Phenylpropane	333
NBA	44	1.1'-Oxybispropane	168	2-Phenyl propane	92
NBC	66	2.2'-Oxybispropane	167	2-Phenyl propene	286
NBM	70	Oxygen	303	Phenyl trifluoromethyl ether	381
Neohexane	146	Ozone	304	Phosgene	313
Neopentane	158	Paracetaldehyde	305	Phosphine	314
Nitric acid	288	Paraldehyde	305	Phosphorus chloride	315
Nitric acid 1-methylethylester	342	PCHO	305	Phosphorus chloride	316
Nitric acid i-propylester	342	PDC	119	Phosphorus hydride	314
Nitric oxide	291	1.1.1.3.3-Pentafluoro butane	306	Phosphorus oxychloride	315
Nitrobenzene	289	Pentafluoroethane	307	Phosphorus oxytrichloride	315
Nitrochloroform	374	Pentamethylene	100	Phosphorus trichloride	316
Nitrogen dioxide	290	Pentamethylene imine	319	3-Picolin	283
Nitrogen monoxide	291	2.2.4.6.6-Pentamethylheptane	308	2-Picoline	317
Nitrogen peroxide	290	2.4-Pentandione	5	Picoline	317
Nitrogen tetroxide	290	i-Pentane	309	$\alpha$ -Pinene	318

Substance	No.	Substance	No.	Substance	No.
PIP	319	n-Propyl alcohol	322	R 116	221
Piperidine	319	Propyl aldehyde	327	R 123	124
PO	338	1-Propylamine	332	R 1234ze	357
POCL	315	2-Propylamine	331	R 123B1	215
Propanal	327	i-Propylamine	331	R 125	307
1-Propanamine	332	n-Propylamine	332	R 1270	337
2-Propanamine	331	i-Propyl benzene	92	R 134a	355
Propane	320	n-Propylbenzene	333	R 140a	372
1,2-Propanediol-1-monomethyl ether	250	i-Propyl-2-bromo-i-butyrate	334	R 141b	117
1-Propanethiol	341	i-Propyl-2-bromo-2-methylpropionate	334	R 142b	86
2-Propanethiol	340	Propyl carbinol	44	R 143a	379
Propanoic acid	325	i-Propylcarbinol	43	R 150	113
Propanoic acid anhydride	326	i-Propylchloride	335	R 150a	112
Propanoic acid ethylester	203	n-Propylchloride	336	R 152a	138
Propanoic acid 2-hydroxy ethylester	200	Propylene	337	R 160	187
Propanoic acid methylester	279	Propylene aldehyde	46	R 170	176
1-Propanol	322	Propylene bromide	14	R 20	373
2-Propanol	321	Propylenechloride	15	R 22	87
i-Propanol	321	1,2-Propylene dichloride	119	R 23	380
n-Propanol	322	Propylene glycol methylether acetate	251	R 270	119
2-Propanone	3	Propylene glycol monobutylether	52	R 280	336
Propargyl alcohol	343	Propylene glycol monoethyl ether	179	R 290	320
2-Propenal	8	Propylene glycol monomethyl ether	250	R 30	118
Propene	337	Propylene oxide	338	R 32	139
2-Propene-1-amine	13	2-Propylenglycol-1-ethylether	179	R 365	306
2-Propenenitrile	10	Propylethylene	312	R 40	261
1,2-Propene oxide	338	Propylethylether	204	R 40B1	256
Propenoic acid	9	n-Propylformate	339	R 41	269
Propenoic acid i-butylester	57	i-Propyl glycol	328	R 50	246
Propenoic acid n-butyl ester	58	i-Propylidene acetone	244	R 600	41
2-Propenoic acid ethyl ester	182	1-Propyl mercaptan	341	R 600a	40
2-Propenoic acid-2-ethylhexyl ester	199	2-Propyl mercaptan	340	R 610	135
2-Propen-1-ol	12	i-Propyl mercaptan	340	R 611	270
1-Propen-2-ol acetate	323	n-Propyl mercaptan	341	R 630	255
Propenyl acetate	11	Propyl methyl ketone	281	R 631	183
i-Propenylacetate	323	i-Propylmethylketone	282	R 702	232
i-Propenyl benzene	286	i-Propylnitrate	342	R 717	17
i-Propenylchloride	90	N-Propyl-1-propane amine	166	R 732	303
2-Propenyl methanoate	11	1-Propyne	324	R 744	76
Propine	324	2-Propyn-1-ol	343	R 744a	294
Propione	136	2-Propynyl alcohol	343	R 764	351
Propionic acid	325	Prussic acid	235	RC 270	102
Propionic acid anhydride	326	Pseudocumene	384	SBA	42
Propionic acid ethylester	203	Pyridine	344	Selane	239
Propionic aldehyde	327	R 10	78	Selenium hydride	239
i-Propoxyethanol	328	R 1130	116	Sevoflurane	345
1-Propoxypropane	168	R 1130a	114	Sextone	96
i-Propyl acetate	329	R 114	123	Silaethane	285
n-Propyl acetate	330	R 1140	398	Silane	346
i-Propyl acetone	259	R 1141	401	Silicane	346
i-Propyl alcohol	321	R 1150	192	Silicic acid tetraethylester	354

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Substance	No.	Substance	No.	Substance	No.
Silico ethane	169	Tetrahydrofuran	359	Triethylorthoformate	378
Silicon dichloride	122	1,2,3,4-Tetrahydronaphthalene	360	Trifluoro amine	292
Silicon hexahydride	169	Tetrahydro-1,4-oxazine	287	Trifluoro ammonia	292
Silicon tetrachloride	347	1,2,5,6-Tetrahydrostyrene	400	Trifluoroanisene	381
Silicon tetrafluoride	348	Tetrahydrothiophene	361	Trifluoroborane	35
Silicon tetrahydride	346	Tetrakisdimethylaminotitanium	362	1,1,1-Trifluoroethane	379
Silyltrichloride	376	Tetraline	360	Trifluoro methane	380
Solvenon PnB	52	Tetramethyl-3-aza-2,4-disilapentane	222	Trifluoro methoxy benzene	381
Solvent GAC	198	1,1,3,3-Tetramethyldisiloxane	363	Trifluoromethylanilin	382
Stannic chloride	368	Tetramethylene	93	Trifluoromethyl benzene amine	382
Styrene	349	Tetramethylene oxide	359	Trimethoxymethane	388
Sulfane	240	Tetramethylene oxirane	98	Trimethoxy silylethene	404
Sulfur hexafluoride	350	Tetramethylene sulfide	361	Trimethoxy vinylsilane	404
Sulfurous oxide	351	Tetramethyl ethylene diamine	364	Trimethylamine	383
Sulfurous oxychloride	367	Tetramethyl methane	158	1,2,4-Trimethylbenzene	384
Sulphur dioxide	351	Tetramethyl-3-oxa-2,4-disilapentane	223	1,3,5-Trimethylbenzene	385
Sulphuretted hydrogen	240	2,2,3,3-Tetramethylpentane	365	2,6,6-Trimethylbicyclo(3,1,1)hept-2-ene	318
Sulphuric acid anhydride	352	Tetramethylsilane	366	Trimethyl borane	386
Sulphur trioxide	352	Tetramethyl silicane	366	Trimethylcarbinol	45
Suprane	106	TFMB	381	Trimethylchloromethane	67
TAME	27	THB	358	Trimethylene	102
TBA	371	THF	359	2,2,4-Trimethyl hexane	387
TBA	45	2-Thiabutane	268	Trimethyl methane	40
TBAAs	64	2-Thiapropane	162	Trimethyl orthoformate	388
tBM	71	1,1'-Thiobisethane	137	2,2,4-Trimethylpentane	389
TCS	376	Thiobismethane	162	2,4,4-Trimethyl-1-pentene	390
TDMAT	362	Thionyl chloride	367	1,2,3-Trimethylpropane	278
TEA	377	Thiophane	361	Trimethyl silane	391
TEL	243	THT	361	2,4,6-Trimethyl-1,3,5-trioxane	305
Telone	121	Tin chloride	368	1,3,5-Trioxacyclohexane	392
TEMED	364	Tin tetrachloride	368	1,3,5-Trioxane	392
TEOF	378	Titanic chloride	369	Trioxymethylene	392
TEOS	354	Titanium tetrachloride	369	Tri-n-propylamine	393
Tetrachloroethene	353	TMA	383	Tripropyl amine	393
Tetrachloroethylene	353	TMB	386	Tungsten hexafluoride	394
Tetrachlorogermene	213	TMDSO	363	UDMH	156
Tetrachloromethane	78	TMOF	388	n-Undecane	395
Tetrachlorosilane	347	TMS	391	Valerone	296
Tetraethoxysilane	354	TMS	366	VAM	396
Tetraethyl lead	243	Toluene	370	VCM	398
Tetraethyl orthosilicate	354	Tribromoborane	33	VF	401
Tetraethylplumbane	243	Tributylamine	371	Vinyl acetate	396
Tetraethyl silicate	354	Trichloro borane	34	Vinylacetylene	397
1,1,1,2-Tetrafluoro ethane	355	1,1,1-Trichloroethane	372	Vinyl benzene	349
Tetrafluoro ethene	356	Trichlorohydrin	375	Vinyl carbinol	12
Tetrafluoroethyl difluoromethyl ether	106	Trichloromethane	373	Vinyl chloride	398
Tetrafluorogermene	214	Trichloronitromethane	374	Vinyl cyanide	10
1,3,3,3-Tetrafluoroprop-1-ene trans	357	1,2,3-Trichloropropane	375	Vinylcyclohexane	399
Tetrafluorosilane	348	Trichlorosilane	376	4-Vinyl cyclohexene-1	400
Tetrahydro benzaldehyde	358	Triethoxymethane	378	Vinylether	171
1,2,3,4-Tetrahydrobenzene	97	Triethylamine	377	Vinylethylene	38

<b>Substance</b>	<b>No.</b>	<b>Substance</b>	<b>No.</b>	<b>Substance</b>	<b>No.</b>
Vinyl ethyl ether	205	Vinylstyrene	170	o-Xylene	406
Vinyl fluoride	401	Vinyltrimethoxysilane	404	p-Xylene	407
Vinylidene chloride	114	VME	402		
Vinylmethyl ether	402	VTMOS	404		
Vinylmethylketone	403	m-Xylene	405		

## Search Index for Sum formula

Sum formula	No.	Sum formula	No.	Sum formula	No.	Sum formula	No.	Sum formula	No.
BBr3	33	C2H4Cl2	113	C3H6O3	148	C4H8O2	181	C5H10O	282
BCl3	34	C2H4F2	138	C3H6O3	392	C4H8O2	163	C5H10O	136
BF3	35	C2H4O	1	C3H7Cl	336	C4H8O2	339	C5H10O	281
Br2	36	C2H4O	195	C3H7Cl	335	C4H8O2	279	C5H10O2	68
CCl2O	313	C2H4O2	2	C3H7N	13	C4H8O3	264	C5H10O2	69
CCl3NO2	374	C2H4O2	270	C3H7NO	154	C4H8S	361	C5H10O2	330
CCl4	78	C2H5Br	185	C3H7NO2	293	C4H9Cl	66	C5H10O2	329
CHClF2	87	C2H5Cl	187	C3H7NO3	342	C4H9Cl	65	C5H10O2	203
CHCl3	373	C2H5ClO	88	C3H8	320	C4H9Cl	67	C5H10O3	131
CHF3	380	C2H5ClO	89	C3H8O	265	C4H9NO	143	C5H10O3	200
CHN	235	C2H5N	194	C3H8O	321	C4H9NO	287	C5H11Cl	25
CH2Cl2	118	C2H6	176	C3H8O	322	C4H10	40	C5H11Cl	24
CH2F2	139	C2H6O	177	C3H8O2	249	C4H10	41	C5H11N	319
CH2O	207	C2H6O	152	C3H8O2	141	C4H10O	135	C5H11NO	276
CH2O2	208	C2H6S	162	C3H8S	341	C4H10O	45	C5H12	158
CH3Br	256	C2H6S	201	C3H8S	268	C4H10O	44	C5H12	310
CH3Cl	261	C2H6S2	150	C3H8S	340	C4H10O	42	C5H12	309
CH3F	269	C2H7N	144	C3H9B	386	C4H10O	43	C5H12O	22
CH3I	273	C2H7N	183	C3H9N	332	C4H10O	280	C5H12O	257
CH4	246	C2H7NO	178	C3H9N	331	C4H10O2	140	C5H12O	20
CH4O	247	C2H8N2	193	C3H9N	383	C4H10O2	250	C5H12O	21
CH4S	274	C2H8N2	156	C3H10Si	391	C4H10O2	197	C5H12O	311
CH5N	255	C3H2ClF5O	241	C4F6	220	C4H10O3	388	C5H12O	204
CH6N2	272	C3H2ClF5O	173	C4H3F7O	345	C4H10S	70	C5H12O	258
CH6Si	285	C3H2F4	357	C4H4	397	C4H10S	71	C5H12O2	328
CO	77	C3H2F6O	106	C4H4O	209	C4H10S	137	C5H12O2	179
CO2	76	C3H3N	10	C4H5F5	306	C4H11As	64	C5H12O2	142
C2Cl2F4	123	C3H4	324	C4H6	73	C4H11N	129	C5H12O3Si	404
C2Cl4	353	C3H4Cl2	121	C4H6	37	C4H11N	62	C5H13N	160
C2F4	356	C3H4O	8	C4H6	38	C4H11N	61	C5H13N	161
C2F6	221	C3H4O	343	C4H6O	46	C4H11N	153	C5H13N	23
C2HBrClF3	215	C3H4O2	9	C4H6O	403	C4H11N	59	C5H13NO	159
C2HCl2F3	124	C3H5Br	14	C4H6O	171	C4H11N	60	C5H14N2	145
C2HF5	307	C3H5Cl	15	C4H6O	39	C4H11NO	151	C5H14O2Si	128
C2H2	7	C3H5Cl	90	C4H6O2	245	C4H12Si	366	C6H5Cl	84
C2H2Cl2	115	C3H5ClO	174	C4H6O2	253	C4H14OSi2	363	C6H5NO2	289
C2H2Cl2	114	C3H5ClO2	188	C4H6O2	396	C5F8	298	C6H6	31
C2H2Cl2	116	C3H5Cl3	375	C4H7Cl	254	C5H4O2	210	C6H7F3O2	180
C2H2F4	355	C3H6	102	C4H7Cl	79	C5H5N	344	C6H7N	317
C2H3Cl	398	C3H6	337	C4H7ClO	85	C5H6O2	211	C6H7N	28
C2H3ClF2	86	C3H6Cl2	119	C4H8	49	C5H8	242	C6H7N	283
C2H3ClO	83	C3H6Cl2O	120	C4H8	93	C5H8O	101	C6H10	97
C2H3ClO	6	C3H6O	3	C4H8	47	C5H8O	260	C6H10O	96
C2H3ClO2	262	C3H6O	327	C4H8	48	C5H8O2	11	C6H10O	244
C2H3Cl2F	117	C3H6O	402	C4H8O	267	C5H8O2	323	C6H10O	98
C2H3Cl3	372	C3H6O	12	C4H8O	359	C5H8O2	5	C6H10O2	16
C2H3F	401	C3H6O	338	C4H8O	175	C5H8O2	275	C6H10O2	248
C2H3F3	379	C3H6O2	164	C4H8O	205	C5H8O2	182	C6H10O2	202
C2H3N	4	C3H6O2	196	C4H8O	74	C5H9NO	284	C6H10O3	326
C2H4	192	C3H6O2	252	C4H8O	75	C5H10	100	C6H12	94
C2H4Cl2	112	C3H6O2	325	C4H8O	50	C5H10	312	C6H12	228

Sum formula	No.	Sum formula	No.	Sum formula	No.	Sum formula	No.	Sum formula	No.
C6H12	189	C6H15N	166	C8H10	406	C9H20	266	F6S	350
C6H12	229	C6H15N	377	C8H10	408	C9H21N	393	F6W	394
C6H12O	226	C6H15NO	134	C8H12	400	C10H10	170	HBr	233
C6H12O	227	C6H16N2	364	C8H14	399	C10H12	126	HCl	234
C6H12O	259	C6H18OSi2	223	C8H14O2	72	C10H12	360	HClO3S	91
C6H12O	95	C6H19NSi2	222	C8H16	390	C10H14	130	HCl3Si	376
C6H12O2	53	C7H5F3O	381	C8H16	302	C10H16	318	HF	236
C6H12O2	54	C7H6F3N	382	C8H16	190	C10H20	105	HI	237
C6H12O2	56	C7H7Cl	32	C8H17N	149	C10H22	104	HNO3	288
C6H12O2	55	C7H8	297	C8H18	155	C10H30O5Si5	103	H2	232
C6H12O2	26	C7H8	370	C8H18	389	C11H20O2	199	H2Cl2Si	122
C6H12O2	107	C7H10O	358	C8H18	301	C11H24	395	H2O2	238
C6H12O3	305	C7H12O2	57	C8H18O	110	C12H22	125	H2S	240
C6H12O3	198	C7H12O2	58	C8H18O2	111	C12H26	308	H2Se	239
C6H12O3	251	C7H13BrO2	334	C8H18O3	132	C12H26	172	H3As	30
C6H13N	99	C7H14	219	C8H19N	109	C12H27N	371	H3N	17
C6H14	278	C7H14	263	C8H20O4Si	354	ClF3	82	H3P	314
C6H14	277	C7H14	191	C8H20Pb	243	ClO2	81	H4Ge	212
C6H14	224	C7H14O	218	C8H22N2Si	63	Cl2	80	H4N2	231
C6H14	147	C7H14O	271	C8H24N4Ti	362	Cl2OS	367	H4Si	346
C6H14	146	C7H14O2	19	C8H24O2Si3	300	Cl3OP	315	H6B2	108
C6H14O	225	C7H14O2	18	C8H24O4Si4	299	Cl3P	316	H6Si2	169
C6H14O	27	C7H16	216	C9H10	286	Cl4Ge	213	NO	291
C6H14O	167	C7H16	157	C9H12	385	Cl4Si	347	NO2	290
C6H14O	168	C7H16O	217	C9H12	333	Cl4Sn	368	N2O	294
C6H14O	186	C7H16O2	52	C9H12	92	Cl4Ti	369	O2	303
C6H14O2	127	C7H16O3	378	C9H12	384	Cl5Sb	29	O2S	351
C6H14O2	51	C8H8	349	C9H18O	296	F2	206	O3	304
C6H14O3	133	C8H10	405	C9H20	387	F3N	292	O3S	352
C6H15N	230	C8H10	407	C9H20	295	F4Ge	214		
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507-20-0	67	593-90-8	386	1634-04-4	258	7722-84-1	238	13838-16-9	173
513-36-0	65	598-56-1	153	1640-89-7	191	7726-95-6	36	13952-84-6	61
540-54-5	336	616-38-6	148	1645-83-6	357	7782-41-4	206	16747-26-5	387
540-67-0	265	623-53-0	264	1678-91-7	190	7782-44-7	303	17129-06-5	180
540-84-1	389	624-89-5	268	1712-64-7	342	7782-50-5	80	19287-45-7	108
540-88-5	56	624-92-0	150	1717-00-6	117	7782-65-2	212	26675-46-7	241
541-02-6	103	627-27-0	50	2031-62-1	128	7783-06-4	240	28523-86-6	345
541-41-3	188	628-32-0	204	2551-62-4	350	7783-07-5	239	51368-55-9	334
542-55-2	68	628-63-7	19	2768-02-7	404	7783-54-2	292	57041-67-5	106
542-75-6	121	630-08-0	77	3074-75-7	266	7783-58-6	214	186598-40-3	63
543-59-9	25	637-92-3	186	3275-24-9	362	7783-61-1	348		
554-12-1	279	646-06-0	164	3277-26-7	363	7783-82-6	394		

## Product overview

### TRANSMITTERS WITH ELECTROCHEMICAL SENSORS FOR THE DETECTION OF TOXIC GASES AND OXYGEN

**Dräger Polytron 7000**  
Intrinsically safe universal transmitter for continuous monitoring of toxic gases and oxygen by means of an electrochemical sensor.



ST-3812-2003

**Dräger Polytron 7000 with pump**  
Universal transmitter for continuous monitoring of toxic gases and oxygen with an integrated pump module.



ST-318-2003

**Dräger Polytron 7000 with relay**  
Universal transmitter for continuous monitoring of toxic gases and oxygen with an integrated relay module.



ST-3814-2003

**Dräger Polytron 3000 with display**  
Intrinsically safe low-cost transmitter for continuous monitoring of toxic gases and oxygen.



ST-3811-2003

**Dräger Polytron 3000 without display**  
Intrinsically safe low-cost transmitter for continuous monitoring of toxic gases and oxygen.



ST-3811-2003

**Dräger Polytron 2 XP Tox**  
Explosion-proof transmitter for continuous monitoring of toxic gases and oxygen.



ST-44-2002

**Dräger Polytron TX**  
Explosion-proof low-cost transmitter for continuous monitoring of toxic gases and oxygen.



ST-266-2001

### TRANSMITTERS WITH PYROLYSIS MEASURING PRINCIPLE FOR THE DETECTION OF TOXIC GASES AND VAPORS

**Dräger Polytron 7500**  
Universal fixed gas detector with integrated sampling pump and pyrolysis oven for continuous monitoring of fluorinated and chlorinated gases.



ST-3804-2005

**Dräger Polytron 3500**  
Fixed gas detector with integrated sampling pump and pyrolysis oven for continuous monitoring of fluorinated gases.



ST-3802-2005

## TRANSMITTERS WITH IR-SENSORS FOR THE DETECTION OF FLAMMABLE GASES AND VAPORS

### Dräger PIR 7000

Explosion-proof infrared optical transmitter for the detection of flammable gases and vapors offering drift-free optics and SS 316L stainless steel enclosure.



ST-11659-2207

### Dräger Polytron IR

Explosion-proof infrared optical transmitter for the detection of flammable gases and vapors, with 4-beam optics and stainless steel enclosure.



ST-3837-2003

### Dräger PIR 3000

Explosion-proof infrared optical transmitter for the detection of flammable gases and vapors in standard applications.



ST-7766-2005

### Dräger Polytron IR Ex

Infrared optical transmitter with display and configurable measuring ranges for the detection of flammable gases and vapors.



ST-5643-2004

### Dräger Polytron IR Ex IL

Infrared optical transmitter with display for the detection of flammable gases and vapors, with stainless steel cuvette for inline applications.



ST-5682-2004

### Dräger Polytron IR Ex HC

Infrared optical transmitter with display for the detection of propane-similar gases and vapors in a measuring range of 0 to 100 %LEL.



ST-5678-2004

## TRANSMITTERS WITH IR-SENSORS FOR THE DETECTION OF TOXIC GASES

### Dräger PIR 7200

Explosion-proof infrared optical transmitter for monitoring of carbon dioxide, suitable for industrial environments.



ST-11660-2007

### Dräger Polytron IR CO<sub>2</sub>

Infrared optical transmitter for continuous monitoring of carbon dioxide.



ST-5649-2004

### Dräger Polytron IR N<sub>2</sub>O

Infrared optical transmitter for continuous monitoring of dinitrogen monoxide (laughing gas) in the ppm-range.



ST-5647-2004

# Product overview

## TRANSMITTERS AND SENSING HEADS WITH CATALYTIC BEAD SENSORS

**Dräger PEX 3000**  
Family of low-cost 4-20-mA-transmitters with DrägerSensor Ex PR M or LC M, with internal display and control elements.



ST-5675-2004

**Dräger Polytron Ex**  
Transmitter for DrägerSensor Ex PR M or DrägerSensor LC M, with display and control elements supporting one-man-calibration.



ST-3839-2003

**Dräger Polytron SE Ex PR M**  
Sensing head with DrägerSensor Ex PR M and measuring range 0 to 100 %LEL.



ST-5671-2004

**Dräger Polytron SE Ex LC M**  
Sensing head with DrägerSensor Ex LC M for flammable gases with concentrations lower than 10 %LEL.



ST-5669-2004

**Dräger Polytron SE Ex HT M**  
Sensing head with DrägerSensor Ex HT M and metal enclosure for ambient temperatures up to 150 °C.



ST-5659-2004

**Dräger Polytron 2 XP Ex**  
Explosion-proof transmitter for flammable gases with analog and digital signal output, display and optional relays.



ST-45-2002

**Dräger Polytron FX**  
Low-cost explosion-proof 4-20-mA-transmitter for flammable gases with display and DrägerSensor Ex PR or LC.



ST-46-2002

## ELECTROCHEMICAL, INFRARED-OPTICAL AND CATALYTIC BEAD SENSORS

**DrägerSensor (elch)**  
Electrochemical gas sensor for toxic gases and oxygen, with integrated data memory.



ST-3829-2003

**DrägerSensor AC**  
Electrochemical gas sensor for the leak-detection of corrosive gases.



ST-3806-2003

**DrägerSensor IR**  
Infrared optical sensor with semi-bridge interface and mV-signal for the detection of flammable gases.



ST-7767-2005

**DrägerSensor Ex PR M**  
Catalytic bead sensor (pellistor sensor) for the detection of flammable gas concentrations by way of catalytic reaction ranging up to 100 %LEL.



ST-7769-2005

**DrägerSensor Ex LC M**  
Catalytic bead sensor with integrated electronics for the detection of flammable gas concentrations ranging up to 10 %LEL.



ST-7770-2005

## TRANSMITTERS WITH OPEN PATH FOR THE DETECTION OF SELECTED GASES AND VAPORS

### Dräger Polytron Pulsar 2

Open path system for the detection of gas clouds along a sight line of 4 to 200 meters between receiver and transmitter.



ST-3932-2005

## CENTRAL CONTROLLERS TO BE COMBINED WITH TRANSMITTERS AND SENSING HEADS

### Dräger REGARD

Modular control system for complex gas detection systems with different plug-in cards and modules in a 19"-rack.



ST-340-2004

### Dräger REGARD 3900

Stand-alone closed control system for gas detection systems, configurable and expandable to up to 16 measurement channels.



ST-272-2004

### Dräger REGARD 2400

Flexible 4-channel control unit for wall-mounting for 4-20-mA-transmitters or Polytron SE Ex sensing heads.



ST-5647-2006

### Dräger REGARD 2410

Flexible 4-channel control unit for DIN rail-mounting for 4-20-mA-transmitters or Polytron SE Ex sensing heads.



ST-5738-2006

### Dräger REGARD 1

Flexible and configurable single-channel control system for either a 4-20-mA-transmitter or a Polytron SE Ex sensing head.



ST-335-2004

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
1	Acetaldehyde CAS 75-07-0 CH <sub>3</sub> CHO	Aald C <sub>2</sub> H <sub>4</sub> O	Ethyl aldehyde Ethanal Acetic aldehyde	44.1 1.52 r 141 v	0.78 1 ppm = 1.84 mg/m <sup>3</sup>	21 70°F	1007	-38 -36°F	4.0 (74) 1 mg/m <sup>3</sup> = 0.54 ppm	4.0 (74)	4.0 (74)	155 IIA T4
2	Acetic acid CAS 64-19-7 CH <sub>3</sub> COOH	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Ethanoic acid Methanecarboxylic acid	60.1 2.07 r	1.05 1 ppm = 2.50 mg/m <sup>3</sup>	118 244°F	16	39 102°F	6.0 (150) 1 mg/m <sup>3</sup> = 0.40 ppm	4.0 (100)	4.0 (100)	485 IIA T1
3	Acetone CAS 67-64-1 CH <sub>3</sub> COCH <sub>3</sub>	DMK C <sub>3</sub> H <sub>6</sub> O	Dimethyl ketone 2-Propanone Ketopropane	58.1 2.01 r 115 v	0.79 1 ppm = 2.42 mg/m <sup>3</sup>	56 133°F	246	<-20 <-4°F	2.5 (61) 1 mg/m <sup>3</sup> = 0.41 ppm	2.5 (61)	2.5 (61)	535 IIA T1
4	Acetonitrile CAS 75-05-8 CH <sub>3</sub> CN	AN C <sub>2</sub> H <sub>3</sub> N	Methyl cyanide Ethyl nitrile Cyanomethane	41.1 1.42 r 99 v	0.78 1 ppm = 1.71 mg/m <sup>3</sup>	82 180°F	97	2 36°F	3.0 (51) 1 mg/m <sup>3</sup> = 0.58 ppm	3.0 (51)	3.0 (51)	525 IIA T1
5	Acetylacetone CAS 123-54-6 CH <sub>3</sub> COCH <sub>2</sub> COCH <sub>3</sub>	C <sub>6</sub> H <sub>8</sub> O <sub>2</sub>	2,4-Pentandione Diacetylmethane	100.1 3.46 r	0.98 1 ppm = 4.17 mg/m <sup>3</sup>	140 284°F	9	34 93°F	1.7 (71) 1 mg/m <sup>3</sup> = 0.24 ppm	1.7 (71)		340 IIA T2
6	Acetylchloride CAS 75-36-5 CH <sub>3</sub> COCl	C <sub>2</sub> H <sub>3</sub> ClO	Ethanoylchloride	78.5 2.71 r 325 v	1.10 1 ppm = 3.27 mg/m <sup>3</sup>	51 124°F	309	-4 25°F	7.3 (239) 1 mg/m <sup>3</sup> = 0.31 ppm	5.0 (164)		390 IIA T2
7	Acetylene CAS 74-86-2 C <sub>2</sub> H <sub>2</sub>	C <sub>2</sub> H <sub>2</sub>	Ethine Ethyne	26.0 0.90 r	Gas 1 ppm = 1.08 mg/m <sup>3</sup>	-84 -119°F	Gas	Gas	2.3 (25) 1 mg/m <sup>3</sup> = 0.92 ppm	2.3 (25)	2.5 (27)	305 IIC T2
8	Acrolein CAS 107-02-8 CH <sub>2</sub> =CHCHO	C <sub>3</sub> H <sub>4</sub> O	Acrylic aldehyde 2-Propenal Allyl aldehyde	56.1 1.94 r 117 v	0.84 1 ppm = 2.34 mg/m <sup>3</sup>	52 126°F	297	-29 -20°F	2.8 (65) 1 mg/m <sup>3</sup> = 0.43 ppm	2.8 (65)	2.8 (65)	215 IIB T3
9	Acrylic acid CAS 79-10-7 CH <sub>2</sub> =CHCOOH	C <sub>3</sub> H <sub>4</sub> O <sub>2</sub>	Propenoic acid Acroleic acid Ethlenecarboxylic acid	72.1 2.49 r	1.05 1 ppm = 3.00 mg/m <sup>3</sup>	141 286°F	4.3	54 129°F	2.4 (72) 1 mg/m <sup>3</sup> = 0.33 ppm	2.4 (72)	2.4 (72)	395 IIB T2
10	Acrylonitrile CAS 107-13-1 CH <sub>2</sub> =CHCN	ACN C <sub>3</sub> H <sub>3</sub> N	Vinyl cyanide Cyanoethylene 2-Propenenitrile	53.1 1.83 r 116 v	0.80 1 ppm = 2.21 mg/m <sup>3</sup>	77 171°F	117	-5 23°F	2.8 (62) 1 mg/m <sup>3</sup> = 0.45 ppm	2.8 (62)	3.0 (66)	480 IIB T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
1	50 (92)	200 (368)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	10 // 100 %LEL 40 / 100 %LEL // 16000 ppm Gas-Library 50 / 100 %LEL 25 / 100 %LEL // 10000 ppm Gas-Library 100 %LEL (\$) 100 %LEL (3) Aald: 50 / 100 / 200 ppm / LDL = 10 ppm	S=0.3
2	10 (25)	10 (25)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox AC	10 // 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 20 %LEL // 3000 / 5000 ppm (3) Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm	corrosive/sensor poison  only for concentrations < 20% LEL
3	500 (1210)	1000 (2421)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL // 7500 ppm Gas-Library 20 / 100 %LEL // 5000 ppm Gas-Library 35 / 100 %LEL // 8750 ppm Gas-Library 35 / 100 %LEL 100 %LEL (2) 80 / 100 %LEL (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=0.62 (Propane=1)
4	20 (34)	40 (69)	PEX 3000, SE Ex, FX, XP Ex	10 // 100 %LEL	
5	30 (125)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL // 3000 ppm (3)	
6			PEX 3000, SE Ex, FX, XP Ex	100 %LEL	corrosive/sensor poison
7		2500c (2708)	PEX 3000, SE Ex, FX, XP Ex Polytron 7000, XP Tox OV1	10 // 100 %LEL C2H2: 20 / 50 / 100 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval S=1.1
8	0.09 (0.21)	0.1 (0.23)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron 7000, XP Tox OV1	10 // 100 %LEL 55 / 100 %LEL 70 / 100 %LEL 75 / 100 %LEL as MeOH (20 / 50 / 200 ppm)	polymerizing/sensor poison   S=1.3 (L)
9	10 (30)	2 (6.0)	Polytron 7000, XP Tox OV1	as EO x 10 (20 / 50 / 200 ppm x 10)	S=0.1 (L)
10		2 (4.4)	PEX 3000, SE Ex, FX, XP Ex Polytron 7000, XP Tox OV2	10 // 100 %LEL ACN: 20 / 50 / 100 ppm / LDL = 5 ppm	polymerizing/sensor poison S=0.2

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
11	Allyl acetate CAS 591-87-7 CH <sub>3</sub> COOCH <sub>2</sub> CH=CH <sub>2</sub>	C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Acetic acid allyl ester Propenyl acetate 2-Propenyl methanoate	100.1 3.46 r 114 v	0.93	103 217°F	27	11 52°F	1.7 (71)	1.7 (71)		375 IIA T2
12	Allyl alcohol CAS 107-18-6 CH <sub>2</sub> =CHCH <sub>2</sub> OH	AA C <sub>3</sub> H <sub>6</sub> O	2-Propen-1-ol Vinyl carbinol	58.1 2.01 r 107 v	0.85	97 207°F	24	21 70°F	2.5 (61)	2.5 (61)	2.5 (61)	375 IIB T2
13	Allylamine CAS 107-11-9 CH <sub>2</sub> =CHCH <sub>2</sub> NH <sub>2</sub>	C <sub>3</sub> H <sub>7</sub> N	3-Amino-1-propene 2-Propene-1-amine 1-Amino propylene	57.1 1.97 r 103 v	0.76	53 127°F	262	-29 -20°F	2.2 (52)		2.2 (52)	370 T2
14	Allyl bromide CAS 106-95-6 CH <sub>2</sub> =CHCH <sub>2</sub> Br	C <sub>3</sub> H <sub>5</sub> Br	Bromoallylene 3-Bromopropene Propylene bromide	121.0 4.18 r 232 v	1.40	70 158°F	150	-1 30°F	4.3 (217)		4.4 (222)	295 IIA T3
15	Allyl chloride CAS 107-05-1 CH <sub>2</sub> =CHCH <sub>2</sub> Cl	C <sub>3</sub> H <sub>5</sub> Cl	Chloroallylene 3-Chloropropylene Propylenechloride	76.5 2.64 r 162 v	0.94	45 113°F	400	-29 -20°F	3.2 (102)	2.9 (92)	2.9 (92)	390 IIA T2
16	Allylglycidylether CAS 106-92-3 CH <sub>2</sub> =CHCH <sub>2</sub> OC <sub>3</sub> H <sub>5</sub> O	AGE C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	Allyl-2,3-epoxypropylether 1,2-Epoxy-3-allyloxypropane Allyloxy-2,3-epoxypropane	114.1 3.94 r	0.97	154 309°F	4.8	45 113°F				1 mg/m <sup>3</sup> = 0.21 ppm
17	Ammonia CAS 7664-41-7 NH <sub>3</sub>	R 717 H <sub>3</sub> N	Anhydrous ammonia	17.0 0.59 r	Gas	-33.4 -28°F	Gas	Gas	15.4 (109)	15.0 (106)	15.0 (106)	630 IIA T1
18	i-Amylacetate CAS 123-92-2 CH <sub>3</sub> COOC <sub>5</sub> H <sub>11</sub>	C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	Acetic acid i-amylester i-Pentyl acetate 3-Methyl butyl acetate	130.2 4.49 r 93 v	0.87	142 288°F	5.3	25 77°F	1.0 (54)		1.0 (54)	380 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
11			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (2) as EO (20 / 50 / 200 ppm)	S=1.0 (L)
12	2 (4.8)	2 (4.8)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (§) 45 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 80 / 100 %LEL // 2.0 / 2.3 vol% (2) as EO (20 / 50 / 200 ppm)	S=1.0 (L)
13			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox NH3 LC Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (§) 20 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL // 3000 / 5000 ppm (3) as NH3 x 2 (50 / 100 ppm x 2) as C3H6 (30 / 50 / 100 ppm)	corrosive/sensor poison      S=0.45 (L) S=0.7 (L)
14			Polytron 7000, XP Tox OV1	as Aald (50 / 100 / 200 ppm)	S=0.3 (L)
15		1 (3.2)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 7000, XP Tox OV1	100 %LEL 20 / 100 %LEL 20 / 100 %LEL // 5800 ppm Gas-Library 30 / 100 %LEL 100 %LEL (§) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) as Aald x 2 (50 / 100 / 200 ppm x 2)	corrosive/sensor poison Performance Approval Performance Approval      S=0.15 (L)
16		10c (48)	Polytron 7000, XP Tox OV1	as Aald (50 / 100 / 200 ppm)	S=0.4 (L)
17	20 (14)	50 (35)	PEX 3000, SE Ex, FX, XP Ex Polytron 3000 NH3 HC Polytron 3000 NH3 LC Polytron 7000, XP Tox NH3 HC Polytron 7000, XP Tox NH3 LC Polytron TX NH3 ne	10 // 100 %LEL 300 / 1000 ppm 100 ppm 300 / 1000 / 1000 ppm NH3: 50 / 100 / 200 ppm / LDL = 5 ppm 300 / 500 ppm	SE Ex / PEX 3000: Perf. Approval
18	50 (271)	100 (543)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
19	n-Amylacetate CAS 628-63-7 CH <sub>3</sub> COOC <sub>5</sub> H <sub>11</sub>	C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	Amyl acetic ester n-Pentyl acetate Acetic acid n-amyl ester	130.2 4.49 r	0.88	149 300°F	5.3	41 106°F	1.0 (54)	1.0 (54)	1.1 (60)	350 IIA T2
20	i-Amyl alcohol CAS 123-51-3 (CH <sub>3</sub> ) <sub>2</sub> CHC <sub>2</sub> H <sub>4</sub> OH	C <sub>6</sub> H <sub>12</sub> O	3-Methylbutan-1-ol i-Pentanol i-Butylcarbinol	88.2 3.04 r	0.81	131 268°F	3.7	42 108°F	1.2 (44)	1.3 (48)	1.2 (44)	340 IIA T2
21	n-Amyl alcohol CAS 71-41-0 C <sub>6</sub> H <sub>11</sub> OH	C <sub>6</sub> H <sub>12</sub> O	Pentyl alcohol n-Pentanol n-Butylcarbinol	88.2 3.04 r	0.81	138 280°F	1.3	43 109°F	1.3 (48)	1.06 (39)	1.2 (44)	320 IIA T2
22	tert-Amyl alcohol CAS 75-85-4 (CH <sub>3</sub> ) <sub>2</sub> C(OH)C <sub>2</sub> H <sub>5</sub>	C <sub>6</sub> H <sub>12</sub> O	2-Methyl-2-butanol Dimethyl ethyl carbinol tert-Pentanol	88.2 3.04 r 88 v	0.81	102 216°F	16	19 66°F	1.3 (48)	1.4 (51)	1.2 (44)	435 IIA T2
23	n-Amylamine CAS 110-58-7 C <sub>6</sub> H <sub>11</sub> NH <sub>2</sub>	C <sub>6</sub> H <sub>13</sub> N	1-Aminopentane Monoamylamine 1-Pentane amine	87.2 3.01 r 93 v	0.76	104 219°F	31	4 39°F	1.3 (47)			305 IIA T2
24	i-Amylchloride CAS 107-84-6 (CH <sub>3</sub> ) <sub>2</sub> CHC <sub>2</sub> H <sub>4</sub> Cl	C <sub>6</sub> H <sub>11</sub> Cl	i-Pentylchloride 1-Chloro-3-methylbutane	106.6 3.68 r 112 v	0.89	100 212°F		1 34°F	1.5 (67)			240 IIA T3
25	n-Amylchloride CAS 543-59-9 C <sub>6</sub> H <sub>11</sub> Cl	C <sub>6</sub> H <sub>11</sub> Cl	Amylchloride 1-Chloropentane Pentylchloride	106.6 3.68 r 106 v	0.88	108 226°F	32	3 37°F	1.4 (62)			255 IIA T3
26	i-Amylformate CAS 110-45-2 HCOOC <sub>5</sub> H <sub>11</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	Formic acid i-pentylester i-Pentylformate 3-Methyl-1-butylformate	116.2 4.01 r 140 v	0.88	124 255°F	15	22 72°F	1.7 (82)			320 IIA T2
27	tert-Amylmethyl ether CAS 994-05-8 CH <sub>3</sub> OC(CH <sub>3</sub> ) <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	TAME C <sub>6</sub> H <sub>14</sub> O	Methyl-tert-amylether 2-Methoxy-2-methyl butane Methyl-tert-pentylether	102.2 3.53 r 99 v	0.77	86 187°F	76	-18 0°F	1.2 (51)	1.18 (50)		345 IIA T2
28	Aniline CAS 62-53-3 C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub>	C <sub>6</sub> H <sub>7</sub> N	Aminobenzene Benzenamine Phenylamine	93.1 3.21 r	1.02	184 363°F	0.63	76 169°F	1.2 (47)	1.2 (47)	1.3 (50)	630 IIA T1
29	Antimony pentachloride CAS 7647-18-9 SbCl <sub>5</sub>	Cl <sub>5</sub> Sb	Antimony-(V)-chloride	299.0 10.32 r	2.33	150 302°F	1	n.a.	n.a.	n.a.	n.a.	n.a.

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
19	50 (271)	100 (543)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
20		100 (368)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL // 1000 / 5000 ppm (3) 100 %LEL as EtOH (100 / 200 / 300 ppm)	S=0.6
21			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL as Aald (50 / 100 / 200 ppm)	S=0.3 (L)
22			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (\$) 35 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?)	
23			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL // 3000 ppm (3)?	corrosive/sensor poison
24			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL // 3000 ppm (3)?	corrosive/sensor poison
25			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL // 3000 ppm (3)?	corrosive/sensor poison
26			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL // 3000 ppm (3)?	
27			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
28	2 (7.8)	5 (19)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (\$) 30 / 100 %LEL	
29			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm AnPC: 5 / 10 / 20 ppm / LDL = 0.2 ppm	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
30	Arsenic hydride CAS 7784-42-1 AsH <sub>3</sub>	H <sub>3</sub> As	Hydrogen arsenide Arsine Arsenic trihydride	77.9 2.69 r	Gas 1 ppm = 3.25 mg/m <sup>3</sup>	-62 -80°F	Gas	Gas	3.9 (127)		5.1 (166)	285 IIC T3
31	Benzene CAS 71-43-2 C <sub>6</sub> H <sub>6</sub>	C <sub>6</sub> H <sub>6</sub>	Phenyl hydride	78.1 2.70 r 66 v	0.88 1 ppm = 3.25 mg/m <sup>3</sup>	80 176°F	100	-11 12°F	1.2 (39)	1.2 (39)	1.2 (39)	555 IIA T1
32	Benzyl chloride CAS 100-44-7 C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> Cl	C <sub>7</sub> H <sub>7</sub> Cl	Chloro methylbenzene α-Chlorotoluene	126.6 4.37 r	1.10 1 ppm = 5.28 mg/m <sup>3</sup>	179 354°F	1.2	60 140°F	1.1 (58)	1.1 (58)	1.1 (58)	585 IIA T1
33	Boron tribromide CAS 10294-33-4 BBr <sub>3</sub>	BBr <sub>3</sub>	Tribromoborane Boron bromide	250.5 8.65 r	2.69 1 ppm = 10.44 mg/m <sup>3</sup>	90 194°F	72	n.a.	n.a.	n.a.	n.a.	n.a.
34	Boron trichloride CAS 10294-34-5 BCl <sub>3</sub>	BCl <sub>3</sub>	Trichloro borane	117.2 4.05 r	Gas 1 ppm = 4.88 mg/m <sup>3</sup>	12.6 55°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
35	Boron trifluoride CAS 7637-07-2 BF <sub>3</sub>	BF <sub>3</sub>	Trifluoroborane Boron fluoride	67.8 2.34 r	Gas 1 ppm = 2.83 mg/m <sup>3</sup>	-100 -148°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
36	Bromine CAS 7726-95-6 Br <sub>2</sub>	Br <sub>2</sub>		159.8 5.52 r	3.12 1 ppm = 6.66 mg/m <sup>3</sup>	58.8 138°F	220	n.a.	n.a.	n.a.	n.a.	n.a.
37	1,2-Butadiene CAS 590-19-2 H <sub>2</sub> C=C=CHCH <sub>3</sub>	C <sub>4</sub> H <sub>6</sub>	Methylallene	54.1 1.87 r	Gas 1 ppm = 2.25 mg/m <sup>3</sup>	10.8 51°F	Gas	Gas	1.6 (36)		2.0 (45)	340 T2
38	1,3-Butadiene CAS 106-99-0 CH <sub>2</sub> =CH-CH=CH <sub>2</sub>	C <sub>4</sub> H <sub>6</sub>	Erythrene Vinylethylene Divinyl	54.1 1.87 r	Gas 1 ppm = 2.25 mg/m <sup>3</sup>	-5 23°F	Gas	Gas	1.4 (32)	1.4 (32)	2.0 (45)	415 IIB T2
39	1,3-Butadiene monoxide CAS 930-22-3 H <sub>2</sub> C=CH-CHCH <sub>2</sub> O	C <sub>4</sub> H <sub>6</sub> O	3,4-Epoxy-1-butene Ethenyl oxirane	70.1 2.42 r	0.87 1 ppm = 2.92 mg/m <sup>3</sup>	66 151°F		-50 -58°F			0.95 (28)	430 T2
40	i-Butane CAS 75-28-5 (CH <sub>3</sub> ) <sub>3</sub> CH	R 600a C <sub>4</sub> H <sub>10</sub>	2-Methylpropane Trimethyl methane Isobutane	58.1 2.01 r	Gas 1 ppm = 2.42 mg/m <sup>3</sup>	-12 10°F	Gas	Gas	1.5 (36)	1.3 (31)	1.6 (39)	460 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
30	0.005 (0.02)	0.05 (0.16)	Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC Polytron 7000, XP Tox PH3/AsH3	AsH3: 0.3 / 1 / 20 ppm / LDL = 0.03 ppm AsH3: 0.3 / 1 / 1 ppm / LDL = 0.01 ppm AsH3: 0.3 / 1 / 20 ppm / LDL = 0.02 ppm	
31	1 (3.3)	1 (3.3)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex ES	10 // 100 %LEL 30 / 100 %LEL // 3600 ppm Gas-Library 20 / 100 %LEL // 2400 ppm Gas-Library 100 %LEL (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2)	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval
32		1 (5.3)	Pyrolyzer Polytron 7500 PFC	50 ppm / LDL = 1 ppm	S=0.5
33		1c (10)	Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm as BCl3 (5 / 10 / 20 ppm)	
34			Polytron 3000 BCl3 Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	10 ppm BCl3: 3 / 10 / 10 ppm / LDL = 0.5 ppm BCl3: 5 / 10 / 20 ppm / LDL = 0.2 ppm	
35	0.35 (0.99)	1c (2.8)	Polytron 3000 AC Polytron 7000, XP Tox AC	20 ppm BF3: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
36	0.1 (0.67)	0.1 (0.67)	Polytron 7000, XP Tox Cl2	Br2: 1 / 10 / 50 ppm	
37			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex ES	30 / 100 %LEL 50 / 100 %LEL 25 / 100 %LEL 25 / 100 %LEL 100 %LEL 100 %LEL (?)	
38		1 (2.3)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 7000, XP Tox OV1	100 %LEL 35 / 100 %LEL // 4900 ppm Gas-Library 30 / 100 %LEL // 4000 ppm Gas-Library 100 %LEL (2) 80 / 100 %LEL // 2.0 / 2.3 vol% (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2) BTD: 20 / 50 / 200 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval      S=1.2
39			Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (S) 30 / 100 %LEL	
40	1000 (2421)	800 (1937)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL // 2600 ppm Gas-Library 50 / 100 %LEL 10 / 100 %LEL // 1040 ppm Gas-Library 10 / 100 %LEL 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 1 // 4 / 8 LELm	Performance Approval  Performance Approval  Performance Approval Performance Approval  S=0.7 (Propane=1)

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
41	n-Butane CAS 106-97-8 C <sub>4</sub> H <sub>10</sub>	R 600 C <sub>4</sub> H <sub>10</sub>	Methylethylmethane	58.1 2.01 r	Gas	-0.5 31°F	Gas	Gas	1.4 (34)	1.4 (34)	1.6 (39)	365 IIA T2
						1 ppm = 2.42 mg/m <sup>3</sup>			1 mg/m <sup>3</sup> = 0.41 ppm			
42	2-Butanol CAS 78-92-2 C <sub>2</sub> H <sub>5</sub> CH(OH)CH <sub>3</sub>	SBA C <sub>4</sub> H <sub>10</sub> O	sec-Butyl alcohol Ethylmethylcarbinol 2-Hydroxybutane	74.1 2.56 r 97 v	0.81	99 210°F	17	23 73°F	1.7 (52)	1.7 (52)	1.7 (52)	390 IIB T2
						1 ppm = 3.09 mg/m <sup>3</sup>			1 mg/m <sup>3</sup> = 0.32 ppm			
43	i-Butanol CAS 78-83-1 (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> OH	IBA C <sub>4</sub> H <sub>10</sub> O	i-Butyl alcohol 2-Methyl-1-propanol i-Propylcarbinol	74.1 2.56 r 81 v	0.80	108 226°F	12	27 81°F	1.4 (43)	1.4 (43)	1.7 (52)	430 IIA T2
						1 ppm = 3.09 mg/m <sup>3</sup>			1 mg/m <sup>3</sup> = 0.32 ppm			
44	n-Butanol CAS 71-36-3 C <sub>4</sub> H <sub>9</sub> OH	NBA C <sub>4</sub> H <sub>10</sub> O	1-Butanol n-Butyl alcohol Propyl carbinol	74.1 2.56 r	0.81	118 244°F	7	35 95°F	1.4 (43)	1.4 (43)	1.4 (43)	325 IIB T2
						1 ppm = 3.09 mg/m <sup>3</sup>			1 mg/m <sup>3</sup> = 0.32 ppm			
45	tert-Butanol CAS 75-65-0 (CH <sub>3</sub> ) <sub>3</sub> COH	TBA C <sub>4</sub> H <sub>10</sub> O	tert-Butylalcohol 2-Methylpropanol-2 Trimethylcarbinol	74.1 2.56 r 82 v	0.79	83 181°F	40	11 52°F	1.4 (43)		2.4 (74)	470 IIA T1
						1 ppm = 3.09 mg/m <sup>3</sup>			1 mg/m <sup>3</sup> = 0.32 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
41	1000 (2421)	800 (1937)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL // 2800 ppm Gas-Library 25 / 100 %LEL // 3200 ppm Gas-Library 5 / 100 %LEL // 700 ppm Gas-Library 5 / 100 %LEL // 700 ppm Gas-Library 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=1.03 (Propane=1)
42		150 (463)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (§) 40 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
43	100 (309)	100 (309)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (§) 40 / 100 %LEL 100 %LEL (§) 10 / 100 %LEL 100 %LEL 5 / 100 %LEL // 1000 ppm (3) 100 %LEL	
44	100 (309)	100 (309)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	10 // 100 %LEL 20 / 100 %LEL 20 / 100 %LEL // 2800 ppm Gas-Library 10 / 100 %LEL 100 %LEL (§) 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL as EtOH (100 / 200 / 300 ppm)	S=0.65
45	20 (62)	100 (309)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (§) 30 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3)	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
46	2-Butenal CAS 123-73-9 CH <sub>3</sub> CH=CHCHO	C <sub>4</sub> H <sub>6</sub> O	Crotonaldehyde Crotonic aldehyde Propylene aldehyde	70.1 2.42 r 108 v	0.85	102 216°F	24	8 46°F	2.1 (61)	2.1 (61)	2.1 (61)	230 IIB T3
							1 ppm = 2.92 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.34 ppm			
47	2-Butene CAS 107-01-7 CH <sub>3</sub> CH=CHCH <sub>3</sub>	C <sub>4</sub> = C <sub>4</sub> H <sub>8</sub>	2-Butylene 1,2-Dimethyl ethene	56.1 1.94 r	Gas	1 34°F	Gas	Gas	1.6 (37)	1.6 (37)		325 IIB T2
							1 ppm = 2.34 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.43 ppm			
48	i-Butene CAS 115-11-7 (CH <sub>3</sub> ) <sub>2</sub> C=CH <sub>2</sub>	iC <sub>4</sub> = C <sub>4</sub> H <sub>8</sub>	i-Butylene 2-Methylpropene Isobutene	56.1 1.94 r	Gas	-7 19°F	Gas	Gas	1.6 (37)	1.6 (37)		465 IIA T1
							1 ppm = 2.34 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.43 ppm			
49	n-Butene CAS 106-98-9 C <sub>2</sub> H <sub>5</sub> CH=CH <sub>2</sub>	C <sub>4</sub> = C <sub>4</sub> H <sub>8</sub>	1-Butylene 1-Butene Ethylethylene	56.1 1.94 r	Gas	-6 21°F	Gas	Gas	1.5 (35)	1.6 (37)	1.6 (37)	360 IIA T2
							1 ppm = 2.34 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.43 ppm			
50	3-Butene-1-ol CAS 627-27-0 CH <sub>2</sub> =CH(CH <sub>2</sub> ) <sub>2</sub> OH	C <sub>4</sub> H <sub>8</sub> O	Allylcarbinol	72.1 2.49 r	0.84	112 234°F		32 90°F	2.0 (60)			IIB
							1 ppm = 3.00 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.33 ppm			
51	2-Butoxyethanol CAS 111-76-2 C <sub>4</sub> H <sub>9</sub> OC <sub>2</sub> H <sub>4</sub> OH	EGBE C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>	Ethylene glycol monobutyl ether n-Butyl glycol Butyl cellosolve	118.2 4.08 r	0.90	171 340°F	1	61 142°F	1.1 (54)	1.1 (54)	1.1 (54)	240 IIB T3
							1 ppm = 4.93 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.20 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
46		2 (5.8)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (\$) 35 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 80 / 100 %LEL (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2) as C3H6 x 0.5 (30 / 50 / 100 ppm x 0.5)	S=1.4 (L)
47			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL // 5000 ppm (3)?	
48			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	100 %LEL 20 / 100 %LEL // 3200 ppm Gas-Library 30 / 100 %LEL 15 / 100 %LEL // 2400 ppm Gas-Library 15 / 100 %LEL 100 %LEL 20 / 100 %LEL // 2000 ppm (3) 100 %LEL 40 / 100 %LEL // 1.0 / 2.3 vol% (2)	
49			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	100 %LEL 30 / 100 %LEL // 3200 ppm Gas-Library 30 / 100 %LEL // 3300 ppm Gas-Library 20 / 100 %LEL // 2400 ppm Gas-Library 100 %LEL (\$) 100 %LEL (3) 20 / 100 %LEL // 2000 ppm (3) 100 %LEL 40 / 100 %LEL // 1.0 / 2.3 vol% (2)	Performance Approval
50			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (2)?	
51	20 (99)	50 (246)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	20 / 100 %LEL // 2200 ppm Gas-Library 40 / 100 %LEL 5 / 100 %LEL // 550 ppm Gas-Library 5 / 100 %LEL 100 %LEL 10 / 100 %LEL // 1000 ppm (3) 100 %LEL as EtOH (100 / 200 / 300 ppm)	S=0.65

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
52	1-Butoxy-2-propanol CAS 5131-66-8 C <sub>4</sub> H <sub>9</sub> O-CH <sub>2</sub> CH(OH)CH <sub>3</sub>	PGBE C <sub>7</sub> H <sub>16</sub> O <sub>2</sub>	Propylene glycol monobutylether Solvenon PnB 3-Butoxy-2-propanol	132.2 4.56 r	0.88	170 338°F	1.3	59 138°F	0.9 (50)	1.1 (61)	1.1 (61)	260 IIB T3
53	2-Butyl acetate CAS 105-46-4 CH <sub>3</sub> COOCH(CH <sub>3</sub> )C <sub>2</sub> H <sub>5</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	sec-Butyl acetate 1-Methylpropyl acetate Acetic acid sec butyl ester	116.2 4.01 r 108 v	0.87	112 234°F	25	16 61°F	1.3 (63)	1.3 (63)	1.7 (82)	410 IIA T2
54	i-Butyl acetate CAS 110-19-0 CH <sub>3</sub> COOCH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	i-Butyl ethanoate 2-Methylpropyl acetate Acetic acid i-butylester	116.2 4.01 r 108 v	0.87	118 244°F	20	18 64°F	1.3 (63)		1.3 (63)	420 IIA T2
55	n-Butyl acetate CAS 123-86-4 CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub>	BuAc C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	n-Butyl ethanoate Acetic acid butylester	116.2 4.01 r 99 v	0.88	127 261°F	11	27 81°F	1.2 (58)	1.2 (58)	1.7 (82)	390 IIA T2
56	tert-Butyl acetate CAS 540-88-5 CH <sub>3</sub> COOC(CH <sub>3</sub> ) <sub>3</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	tert-Butyl ethanoate Acetic acid tert-butyl ester	116.2 4.01 r 110 v	0.86	97 207°F	40	1 34°F	1.3 (63)	1.3 (63)	1.5 (73)	435 IIA T2
57	i-Butyl acrylate CAS 106-63-8 CH <sub>2</sub> =CHCOOC <sub>4</sub> H <sub>9</sub>	C <sub>7</sub> H <sub>12</sub> O <sub>2</sub>	Acrylo-i-butyl ester Propenoic acid i-butylester 2-Methyl propyl acrylate	128.2 4.43 r	0.89	132 270°F	8.8	30 86°F	1.2 (64)			350 T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
52			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (§) 55 / 100 %LEL 100 %LEL (§) 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3)	
53		200 (968)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
54		150 (726)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (§) 30 / 100 %LEL 100 %LEL (§) 10 / 100 %LEL 100 %LEL (3) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
55		150 (726)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 30 / 100 %LEL // 3250 ppm Gas-Library 25 / 100 %LEL // 2600 ppm Gas-Library 20 / 100 %LEL // 1950 ppm Gas-Library 20 / 100 %LEL 100 %LEL (3) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	SE Ex / PEX 3000: Perf. Approval  Performance Approval  Performance Approval
56		200 (968)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 15 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
57			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL (?) as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
58	n-Butyl acrylate CAS 141-32-2 CH <sub>2</sub> =CHCOOC <sub>4</sub> H <sub>9</sub>	C <sub>7</sub> H <sub>12</sub> O <sub>2</sub>	Acrylobutylic ester Propenoic acid n-butyl ester Butyl propenoate	128.2 4.43 r	0.90	148 298°F	5	37 99°F	1.2 (64)	1.2 (64)	1.5 (80)	275 IIB T3
									1 mg/m <sup>3</sup> = 0.19 ppm			
59	i-Butylamine CAS 78-81-9 (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> NH <sub>2</sub>	C <sub>4</sub> H <sub>11</sub> N	2-Methylpropyl amine 2-Methyl-1-propane amine	73.1 2.52 r 114 v	0.76	66 151°F	150	-13 9°F	1.9 (58)	1.47 (45)		370 IIA T2
									1 mg/m <sup>3</sup> = 0.33 ppm			
60	n-Butylamine CAS 109-73-9 C <sub>4</sub> H <sub>9</sub> NH <sub>2</sub>	C <sub>4</sub> H <sub>11</sub> N	1-Aminobutane 1-Butane amine	73.1 2.52 r 105 v	0.74	78 172°F	95	-14 7°F	1.7 (52)	1.7 (52)	1.7 (52)	310 IIA T2
									1 mg/m <sup>3</sup> = 0.33 ppm			
61	sec-Butylamine CAS 13952-84-6 C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )NH <sub>2</sub>	B2A C <sub>4</sub> H <sub>11</sub> N	2-Aminobutane 2-Butane amine	73.1 2.52 r 108 v	0.72	63 145°F	181	-20 -4°F	1.7 (52)			290 IIA T3
									1 mg/m <sup>3</sup> = 0.33 ppm			
62	tert-Butylamine CAS 75-64-9 (CH <sub>3</sub> ) <sub>3</sub> CNH <sub>2</sub>	C <sub>4</sub> H <sub>11</sub> N	2-Amino-2-methylpropane 2-Methyl-2-propane amine 1.1-Dimethylethylamine	73.1 2.52 r 111 v	0.70	45 113°F	394	-38 -36°F	1.7 (52)			380 IIA T2
									1 mg/m <sup>3</sup> = 0.33 ppm			
63	Bis(tert-butylamino)silane CAS 186598-40-3 ((CH <sub>3</sub> ) <sub>3</sub> CNH) <sub>2</sub> SiH <sub>2</sub>	BTBAS C <sub>8</sub> H <sub>22</sub> N <sub>2</sub> Si	N,N'-Di-tert-butylsilane diamine	174.4 6.02 r	0.82	166 331°F	1.5	30 86°F		0.5 (36)		190 T4
									1 mg/m <sup>3</sup> = 0.14 ppm			
64	tert-Butyl arsine CAS 4262-43-5 (CH <sub>3</sub> ) <sub>3</sub> CArH <sub>2</sub>	TBAAs C <sub>4</sub> H <sub>11</sub> As	2-Methyl-i-propyl arsine 1.1-Dimethylethyl arsine	134.1 4.63 r	1.08	68 154°F	166					
									1 mg/m <sup>3</sup> = 0.18 ppm			
65	i-Butylchloride CAS 513-36-0 (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> Cl	C <sub>4</sub> H <sub>9</sub> Cl	1-Chloro-2-methylpropane	92.6 3.20 r 131 v	0.88	69 156°F	158	-21 -6°F	2.0 (77)	2.0 (77)		395 IIA T2
									1 mg/m <sup>3</sup> = 0.26 ppm			
66	n-Butylchloride CAS 109-69-3 C <sub>4</sub> H <sub>9</sub> Cl	NBC C <sub>4</sub> H <sub>9</sub> Cl	Butylchloride 1-Chlorobutane	92.6 3.20 r 117 v	0.89	78 172°F	112	-12 10°F	1.8 (69)	1.8 (69)		245 IIA T3
									1 mg/m <sup>3</sup> = 0.26 ppm			
67	tert-Butylchloride CAS 507-20-0 (CH <sub>3</sub> ) <sub>3</sub> CCl	C <sub>4</sub> H <sub>9</sub> Cl	2-Chloro-2-methylpropane Trimethylchloromethane	92.6 3.20 r 124 v	0.84	51 124°F	319	-33 -27°F	1.8 (69)			570 IIA T1
									1 mg/m <sup>3</sup> = 0.26 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
58	2 (11)	10 (53)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	20 / 100 %LEL // 2400 ppm Gas-Library 25 / 100 %LEL // 3000 ppm Gas-Library 10 / 100 %LEL // 1200 ppm Gas-Library 10 / 100 %LEL 100 %LEL (3) 1000 ppm (3) 100 %LEL as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
59			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL	corrosive/sensor poison
60		5c (15)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3)	corrosive/sensor poison
61			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	corrosive/sensor poison
62			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL	corrosive/sensor poison
63			Polytron 7000, XP Tox Hydrides	BTBS: 5 / 20 / 20 ppm / LDL = 0.4 ppm	
64			Polytron 7000, XP Tox Hyd SC	as PH3 x 0.75 (0.3 / 1.0 ppm x 0.75)	S=1.5 (L)
65			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 100% LEL (3)?	corrosive/sensor poison
66	25 (96)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3)	corrosive/sensor poison
67			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 100% LEL (3)?	corrosive/sensor poison

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
68	i-Butylformate CAS 542-55-2 HCOOC <sub>4</sub> H <sub>9</sub>	C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	Formic acid i-butylester 2-Methylpropyl formate	102.1 3.52 r 123 v	0.88 1 ppm = 4.25 mg/m <sup>3</sup>	98 208°F	43	5 41°F	1.7 (72) 1 mg/m <sup>3</sup> = 0.24 ppm			320 T2
69	n-Butylformate CAS 592-84-7 HCOOC <sub>4</sub> H <sub>9</sub>	C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	Butyl methanoate Formic acid butyl ester	102.1 3.52 r 111 v	0.92 1 ppm = 4.25 mg/m <sup>3</sup>	106 223°F	29	18 64°F	1.6 (68) 1 mg/m <sup>3</sup> = 0.24 ppm			265 T3
70	n-Butyl mercaptan CAS 109-79-5 C <sub>4</sub> H <sub>9</sub> SH	NBM C <sub>4</sub> H <sub>10</sub> S	Butanthiol 1-Mercaptobutane	90.2 3.11 r 94 v	0.84 1 ppm = 3.76 mg/m <sup>3</sup>	98 208°F	40	1 34°F	1.4 (53) 1 mg/m <sup>3</sup> = 0.27 ppm	1.4 (53)		
71	tert-Butylmercaptane CAS 75-66-1 (CH <sub>3</sub> ) <sub>3</sub> CSH	tBM C <sub>4</sub> H <sub>10</sub> S	2-Methyl-2-propanethiol 1.1-Dimethyl ethane thiol	90.2 3.11 r	0.83 1 ppm = 3.76 mg/m <sup>3</sup>	64 147°F	190	-26 -15°F	1 mg/m <sup>3</sup> = 0.27 ppm			
72	Butyl methacrylate CAS 97-88-1 CH <sub>2</sub> =C(CH <sub>3</sub> )COOC <sub>4</sub> H <sub>9</sub>	BMA C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	2-Methyl-2-propenoic acid butylester 2-Methyl butylacrylate Methacrylic acid butylester	142.2 4.91 r	0.90 1 ppm = 5.93 mg/m <sup>3</sup>	163 325°F	2.7	50 122°F	1.0 (59) 1 mg/m <sup>3</sup> = 0.17 ppm	1.0 (59)	2.0 (119)	290 IIA T3
73	2-Butyne CAS 503-17-3 CH <sub>3</sub> CCCH <sub>3</sub>	C <sub>4</sub> H <sub>6</sub>	Dimethyl acetylene Crotonylene	54.1 1.87 r 68 v	0.69 1 ppm = 2.25 mg/m <sup>3</sup>	27 81°F	779	-25 -13°F	1.4 (32) 1 mg/m <sup>3</sup> = 0.44 ppm			
74	i-Butyraldehyde CAS 78-84-2 (CH <sub>3</sub> ) <sub>2</sub> CHCHO	C <sub>4</sub> H <sub>8</sub> O	i-Butanal i-Butyric aldehyde 2-Methyl propanal	72.1 2.49 r 91 v	0.79 1 ppm = 3.00 mg/m <sup>3</sup>	64 147°F	184	-24 -11°F	1.6 (48) 1 mg/m <sup>3</sup> = 0.33 ppm	1.6 (48)	1.6 (48)	165 IIA T4
75	n-Butyraldehyde CAS 123-72-8 C <sub>3</sub> H <sub>7</sub> CHO	C <sub>4</sub> H <sub>8</sub> O	n-Butanal n-Butyric aldehyde	72.1 2.49 r 96 v	0.80 1 ppm = 3.00 mg/m <sup>3</sup>	75 167°F	113	-11 12°F	1.7 (51) 1 mg/m <sup>3</sup> = 0.33 ppm	1.7 (51)	1.9 (57)	190 IIA T4
76	Carbon dioxide CAS 124-38-9 CO <sub>2</sub>	R 744 CO <sub>2</sub>		44.0 1.52 r	Gas 1 ppm = 1.83 mg/m <sup>3</sup>	-78.5 -109°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.55 ppm	n.a.	n.a.	n.a.
77	Carbon monoxide CAS 630-08-0 CO	CO	Carbon oxide	28.0 0.97 r	Gas 1 ppm = 1.17 mg/m <sup>3</sup>	-192 -314°F	Gas	Gas	10.9 (127) 1 mg/m <sup>3</sup> = 0.86 ppm	10.9 (127)	12.5 (146)	605 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
68			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
69			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 25 / 100 %LEL // 4000 ppm (3)	
70	0.5 (1.9)	10 (38)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (\$) 45 / 100 %LEL	
71			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron 7000, XP Tox H2S LC	3.0 vol% (\$) 1.5 / 3.0 vol% tBM: 20 / 50 / 100 ppm / LDL = 1 ppm	LEL unknown LEL unknown
72			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	20 / 100 %LEL 30 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 100 %LEL	
73			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL? 100 %LEL (2)?	
74			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3) as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
75	20 (60)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3) 100 %LEL as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
76	5000 (9167)	5000 (9167)	Dräger PIR 7200 Polytron IR CO2	2000 ppm / 10 vol% / 30 vol% 2000 ppm / 5 vol% / 20 vol%	
77	30 (35)	50 (58)	PEX 3000, SE Ex, FX, XP Ex Polytron 3000 CO Polytron 3000 CO LS Polytron 7000, XP Tox CO Polytron 7000, XP Tox CO LS Polytron TX CO	10 // 100 %LEL 100 / 300 / 1000 ppm 300 ppm CO: 50 / 300 / 1000 ppm / LDL = 5 ppm CO: 200 / 1000 / 5000 ppm / LDL = 10 ppm 100 / 500 ppm	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
78	Carbon tetrachloride CAS 56-23-5 CCl <sub>4</sub>	R 10 CCl <sub>4</sub>	Tetrachloromethane	153.8 5.31 r	1.59	76 169°F	120	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.16 ppm			
79	1-Chlor-2-butene CAS 591-97-9 CH <sub>3</sub> CH=CHCH <sub>2</sub> Cl	C <sub>4</sub> H <sub>7</sub> Cl	Crotyl chloride	90.6 3.13 r 255 v	0.93	85 185°F	494	-5 23°F	4.2 (159)			510 T1
									1 mg/m <sup>3</sup> = 0.26 ppm			
80	Chlorine CAS 7782-50-5 Cl <sub>2</sub>	Cl <sub>2</sub>		70.9 2.45 r	Gas	-34 -29°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.34 ppm			
81	Chlorine dioxide CAS 10049-04-4 ClO <sub>2</sub>	ClO <sub>2</sub>	Chlorine peroxide	67.5 2.33 r	Gas	11 52°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.36 ppm			
82	Chlorine trifluoride CAS 7790-91-2 ClF <sub>3</sub>	ClF <sub>3</sub>	Chlorotrifluoride	92.4 3.19 r	Gas	12 54°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.26 ppm			
83	Chloroacetaldehyde CAS 107-20-0 CH <sub>2</sub> ClCHO	C <sub>2</sub> H <sub>3</sub> ClO	2-Chloro-1-ethanal	78.5 2.71 r	1.21	86 187°F	133	53 127°F		5.7 (186)		
									1 mg/m <sup>3</sup> = 0.31 ppm			
84	Chlorobenzene CAS 108-90-7 C <sub>6</sub> H <sub>5</sub> Cl	MCB C <sub>6</sub> H <sub>5</sub> Cl	Phenyl chloride Monochlorobenzene Benzene chloride	112.6 3.89 r 82 v	1.11	132 270°F	12	28 82°F	1.3 (61)	1.3 (61)	1.3 (61)	590 IIA T1
									1 mg/m <sup>3</sup> = 0.21 ppm			
85	3-Chloro-2-butanone CAS 4091-39-8 CH <sub>3</sub> CHClCOCH <sub>3</sub>	C <sub>4</sub> H <sub>7</sub> ClO	1-Chloroethyl methyl ketone	106.6 3.68 r 144 v	1.06	115 239°F	23	21 70°F	2.3 (102)			
									1 mg/m <sup>3</sup> = 0.23 ppm			
86	1-Chloro-1.1-difluoroethane CAS 75-68-3 CH <sub>3</sub> CClF <sub>2</sub>	R 142b C <sub>2</sub> H <sub>3</sub> ClF <sub>2</sub>	Difluoro chloroethane	100.5 3.47 r	Gas	-10 14°F	Gas	Gas	6.3 (264)			632 IIA T1
									1 mg/m <sup>3</sup> = 0.24 ppm			
87	Chlorodifluoromethane CAS 75-45-6 CHClF <sub>2</sub>	R 22 CHClF <sub>2</sub>	Difluorochloromethane	86.5 2.99 r	Gas	-40.8 -41°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.28 ppm			
88	2-Chloroethanol CAS 107-07-3 Cl-CH <sub>2</sub> CH <sub>2</sub> -OH	C <sub>2</sub> H <sub>5</sub> ClO	Ethylene chlorohydrin Glycol chlorohydrin Chloroethyl alcohol	80.5 2.78 r	1.21	129 264°F	7	55 131°F	5.0 (168)	4.9 (164)	4.9 (164)	425 IIA T2
									1 mg/m <sup>3</sup> = 0.30 ppm			
89	Chloromethyl methylether CAS 107-30-2 ClCH <sub>2</sub> OCH <sub>3</sub>	CMME C <sub>2</sub> H <sub>5</sub> ClO	Chlorodimethyl ether Chloromethoxymethane Methylchloromethyl ether	80.5 2.78 r 213 v	1.06	59 138°F	250	-18 0°F	4.5 (151)			IIA
									1 mg/m <sup>3</sup> = 0.30 ppm			
90	2-Chloropropene CAS 557-98-2 CH <sub>2</sub> =C(Cl)CH <sub>3</sub>	C <sub>3</sub> H <sub>5</sub> Cl	2-Chloropropylene i-Propenylchloride	76.5 2.64 r 128 v	0.93	23 73°F	920	<-20 <-4°F	2.5 (80)			
									1 mg/m <sup>3</sup> = 0.31 ppm			
91	Chlorosulfonic acid CAS 7790-94-5 HSO <sub>3</sub> Cl	HClO <sub>3</sub> S	Chlorosulfuric acid	116.5 4.02 r	1.75	151 304°F	1.3	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.21 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
78	0.5 (3.2)	10 (64)	Pyrolyzer Polytron 7500 PFC	20 ppm / LDL = 0.5 ppm	S=1.5
79			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL 5000 ppm (3)? as Aald x 2 (50 / 100 / 200 ppm x 2)	corrosive/sensor poison S=0.15 (L)
80	0.5 (1.5)	1c (3.0)	Polytron 3000 Cl2 Polytron 7000, XP Tox Cl2 Polytron TX CL2 ne	1 / 10 / 25 ppm Cl2: 1 / 10 / 50 ppm 5 ppm	
81	0.1 (0.28)	0.1 (0.28)	Polytron 7000, XP Tox Cl2	ClO2: 1 / 10 / 50 ppm	S=0.6
82		0.1c (0.39)	Polytron 7000, XP Tox AC	ClF3: 3 / 3 / 30 ppm / LDL = 0.5 ppm	cross-calibration with Cl2 possible
83		1c (3.3)	Polytron 7000, XP Tox OV1	as C3H6 x 0.5 (30 / 50 / 100 ppm x 0.5)	S=1.4 (L)
84	10 (47)	75 (352)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	10 // 100 %LEL 55 / 100 %LEL // 7000 ppm Gas-Library 20 / 100 %LEL // 2600 ppm Gas-Library 100 %LEL (2) 60 / 100 %LEL // 1.0 / 2.3 vol% (2) 60 ppm / LDL = 1 ppm	corrosive/sensor poison Performance Approval Performance Approval S=0.4
85			Polytron IR Ex, IR Ex IL	80 / 100 %LEL (2)	
86	1000 (4188)		Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	45 / 100 %LEL 50 / 100 %LEL 100 / 100 %LEL 100 %LEL (?) 80 / 100 %LEL (2)	
87	1000 (3604)	1000 (3604)	Pyrolyzer Polytron 7500 PFC	CDFM: 50 / 50 ppm / LDL = 0.5 ppm	S = 1.11
88	1 (3.4)	1 (3.4)	Polytron 7000, XP Tox OV1	as EO x 0.5 (20 / 50 / 100 ppm x 0.5)	S=2.0 (L)
89			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	100 %LEL (\$) 20 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?)	
90			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL (3)	corrosive/sensor poison
91			Polytron 7000, XP Tox AC	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
92	Cumene CAS 98-82-8 C <sub>6</sub> H <sub>5</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>9</sub> H <sub>12</sub>	i-Propyl benzene 2-Phenyl propane	120.2 4.15 r	0.86 1 ppm = 5.01 mg/m <sup>3</sup>	152 306°F	4.3	31 88°F	0.8 (40)	0.8 (40)	0.9 (45)	420 IIA T2
93	Cyclobutane CAS 287-23-0 (CH <sub>2</sub> ) <sub>4</sub>	C <sub>4</sub> H <sub>8</sub>	Tetramethylene	56.1 1.94 r	Gas 1 ppm = 2.34 mg/m <sup>3</sup>	13 55°F	Gas	Gas	1.8 (42)	1.8 (42)		IIA
94	Cyclohexane CAS 110-82-7 (CH <sub>2</sub> ) <sub>6</sub>	C <sub>6</sub> H <sub>12</sub>	Hexahydrobenzene Hexamethylene Hexanaphthene	84.2 2.91 r 67 v	0.78 1 ppm = 3.51 mg/m <sup>3</sup>	81 178°F	104	-18 0°F	1.0 (35)	1.0 (35)	1.3 (46)	260 IIA T3
95	Cyclohexanol CAS 108-93-0 (CH <sub>2</sub> ) <sub>5</sub> CHOH	Anol C <sub>6</sub> H <sub>12</sub> O	Hexahydrophenol Hydroxycyclohexane Hexalin	100.2 3.46 r	0.95 1 ppm = 4.18 mg/m <sup>3</sup>	161 322°F	1.2	61 142°F	1.2 (50)	1.2 (50)		300 IIA T3
96	Cyclohexanone CAS 108-94-1 (CH <sub>2</sub> ) <sub>5</sub> CO	Anon C <sub>6</sub> H <sub>10</sub> O	Sextone Hexanone Cyclohexyl ketone	98.1 3.39 r	0.95 1 ppm = 4.09 mg/m <sup>3</sup>	156 313°F	5	43 109°F	1.3 (53)	1.3 (53)	1.1 (45)	430 IIA T2
97	Cyclohexene CAS 110-83-8 C <sub>6</sub> H <sub>10</sub>	C <sub>6</sub> H <sub>10</sub>	Benzene tetrahydride 1,2,3,4-Tetrahydrobenzene	82.1 2.83 r 70 v	0.81 1 ppm = 3.42 mg/m <sup>3</sup>	83 181°F	94	-17 1°F	1.1 (38)	1.1 (38)	1.2 (41)	265 IIA T3
98	Cyclohexene oxide CAS 286-20-4 (CH <sub>2</sub> ) <sub>4</sub> CHCHO	CCHO C <sub>6</sub> H <sub>10</sub> O	1,2-Epoxy cyclohexane Tetramethylene oxirane 7-Oxabicyclo(4.1.0)heptane	98.1 3.39 r 95 v	0.97 1 ppm = 4.09 mg/m <sup>3</sup>	130 266°F	12	24 75°F	1.5 (61)			345 IIB T2
99	Cyclohexylamine CAS 108-91-8 (CH <sub>2</sub> ) <sub>5</sub> CHNH <sub>2</sub>	CHA C <sub>6</sub> H <sub>13</sub> N	Hexahydroaniline Aminocyclohexane Cyclohexane amine	99.2 3.42 r 79 v	0.86 1 ppm = 4.13 mg/m <sup>3</sup>	134 273°F	14.3	27 81°F	1.1 (45)	1.1 (45)	1.5 (62)	275 IIA T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
92	20 (100)	50 (250)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3) 100 %LEL	
93			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	10 // 100 %LEL 3000 ppm (3)?	
94	200 (702)	300 (1053)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron Pulsar 2	10 // 100 %LEL 5 / 100 %LEL // 600 ppm Gas-Library 5 / 100 %LEL // 600 ppm Gas-Library 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 1 // 4 / 8 LELm	Performance Approval  Performance Approval  S=0.70 (Propane=1)
95	50 (209)	50 (209)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 3000 ppm (3) 100 %LEL	
96	20 (82)	50 (204)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 35 / 100 %LEL // 3500 ppm Gas-Library 15 / 100 %LEL // 1500 ppm Gas-Library 15 / 100 %LEL 100 %LEL 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
97		300 (1026)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 30 / 100 %LEL // 4000 ppm (3)	
98			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3)	
99		10 (41)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 / 5000 ppm (3)	corrosive/sensor poison

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
100	Cyclopentane CAS 287-92-3 (CH <sub>2</sub> ) <sub>5</sub>	CP C <sub>5</sub> H <sub>10</sub>	Pentamethylene	70.1 2.42 r 83 v	0.74	49 120°F	346	-51 -60°F	1.4 (41)	1.4 (41)	1.1 (32)	320 IIA T2
									1 mg/m <sup>3</sup> = 0.34 ppm			
101	Cyclopentanone CAS 120-92-3 (CH <sub>2</sub> ) <sub>4</sub> CO	C <sub>5</sub> H <sub>8</sub> O	Keto pentamethylene Ketocyclopentane Adipic ketone	84.1 2.90 r	0.95	131 268°F	11.5	26 79°F	1.6 (56)			430 IIA T2
									1 mg/m <sup>3</sup> = 0.29 ppm			
102	Cyclopropane CAS 75-19-4 (CH <sub>2</sub> ) <sub>3</sub>	RC 270 C <sub>3</sub> H <sub>6</sub>	Trimethylene	42.1 1.45 r	Gas	-33 -27°F	Gas	Gas	2.4 (42)	2.4 (42)	2.4 (42)	495 IIA T1
									1 mg/m <sup>3</sup> = 0.57 ppm			
103	Decamethyl cyclopentasiloxane CAS 541-02-6 Si <sub>5</sub> O <sub>5</sub> (CH <sub>3</sub> ) <sub>10</sub>	DMCPS C <sub>10</sub> H <sub>30</sub> O <sub>5</sub> Si <sub>5</sub>	Cyclomethicone DC245 Fluid	370.8 12.80 r	0.96	210 410°F	0.15	77 171°F	0.7 (108)	0.7 (108)		392 T2
									1 mg/m <sup>3</sup> = 0.06 ppm			
104	n-Decane CAS 124-18-5 C <sub>10</sub> H <sub>22</sub>	C <sub>10</sub> H <sub>22</sub>		142.3 4.91 r	0.73	174 345°F	2	46 115°F	0.7 (42)	0.7 (42)		200 IIA T4
									1 mg/m <sup>3</sup> = 0.17 ppm			
105	1-Decene CAS 872-05-9 C <sub>10</sub> H <sub>20</sub>	C <sub>10</sub> H <sub>20</sub>	n-Decylene	140.3 4.84 r	0.74	172 342°F	2	44 111°F	0.55 (32)		0.5 (29)	235 T3
									1 mg/m <sup>3</sup> = 0.17 ppm			
106	Desflurane CAS 57041-67-5 CHF <sub>2</sub> -O-CHFCF <sub>3</sub>	C <sub>3</sub> H <sub>2</sub> F <sub>6</sub> O	Tetrafluoroethyl difluoromethyl ether Suprane 2-Difluoromethoxy tetrafluoroethane	168.0 5.80 r	1.47	23.5 74°F	892	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.14 ppm			
107	Diacetone alcohol CAS 123-42-2 CH <sub>3</sub> COCH <sub>2</sub> COH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	4-Hydroxy-4-methyl-2-pentanone 2-Methyl-2-pentanol-4-one Diacetone	116.2 4.01 r	0.93	166 331°F	1	58 136°F	1.3 (63)	1.8 (87)	1.8 (87)	515 IIB T1
									1 mg/m <sup>3</sup> = 0.21 ppm			
108	Diborane CAS 19287-45-7 B <sub>2</sub> H <sub>6</sub>	H <sub>6</sub> B <sub>2</sub>	Boron hydride Boroethane Diboron hexahydride	27.7 0.96 r	Gas	-93 -135°F	Gas	Gas	0.8 (9.2)	0.8 (9.2)		
									1 mg/m <sup>3</sup> = 0.87 ppm			
109	Dibutylamine CAS 111-92-2 (C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> NH	C <sub>8</sub> H <sub>19</sub> N	N-Butyl-1-butane amine	129.3 4.46 r	0.76	161 322°F	2.7	42 108°F	0.6 (32)	0.6 (32)		260 IIA T3
									1 mg/m <sup>3</sup> = 0.19 ppm			
110	Di-n-butylether CAS 142-96-1 (C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> O	C <sub>8</sub> H <sub>18</sub> O	1-Butoxybutane 1,1'-Oxybisbutane	130.2 4.49 r 95 v	0.77	141 286°F	6.4	25 77°F	0.9 (49)	0.9 (49)		175 IIB T4
									1 mg/m <sup>3</sup> = 0.18 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
100		600 (1753)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL 20 / 100 %LEL // 2200 ppm Gas-Library 20 / 100 %LEL 10 / 100 %LEL // 700 ppm Gas-Library 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 1 // 4 / 8 LELm	Performance Approval S=0.68 (Propane=1)
101			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 15 / 100 %LEL // 2000 ppm (3) 100 %LEL	
102			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	10 // 100 %LEL 3000 ppm (3)?	SE Ex / PEX 3000: Perf. Approval
103		10 (155)	Polytron IR Ex, IR Ex IL	100 %LEL (3)	
104			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
105			Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (§) 40 / 100 %LEL	
106			Pyrolyzer Polytron 7500 PFC	20 ppm / LDL = 0.5 ppm	S=1.3
107	20 (97)	50 (242)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	25 / 100 %LEL 40 / 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 100 %LEL 100 %LEL	
108		0.1 (0.12)	Polytron 3000 B2H6 Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC	0.5 ppm B2H6: 0.5 / 1 / 1 ppm / LDL = 0.05 ppm B2H6: 0.3 / 1 / 5 ppm / LDL = 0.02 ppm	
109	5 (27)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
110			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (§) 40 / 100 %LEL 100 %LEL // 3000 ppm (3)?	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
111	Di-tert-butyl peroxide CAS 110-05-4 (CH <sub>3</sub> ) <sub>3</sub> COOC(CH <sub>3</sub> ) <sub>3</sub>	DTBP C <sub>8</sub> H <sub>18</sub> O <sub>2</sub>	Bis(1.1-dimethylethyl)peroxide	146.2 5.05 r 85 v	0.79 1 ppm = 6.09 mg/m <sup>3</sup>	110 230°F	26	4 39°F	0.74 (45) 1 mg/m <sup>3</sup> = 0.16 ppm	0.74 (45)		170 IIB T4
112	1.1-Dichloroethane CAS 75-34-3 CH <sub>3</sub> CHCl <sub>2</sub>	R 150a C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	Ethylidene chloride	99.0 3.42 r 296 v	1.17 1 ppm = 4.13 mg/m <sup>3</sup>	57 135°F	245	-10 14°F	5.6 (231) 1 mg/m <sup>3</sup> = 0.24 ppm	5.6 (231)	5.4 (223)	440 IIA T2
113	1.2-Dichloroethane CAS 107-06-2 ClCH <sub>2</sub> CH <sub>2</sub> Cl	EDC C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	Ethylene chloride Ethylene dichloride R 150	99.0 3.42 r 306 v	1.25 1 ppm = 4.13 mg/m <sup>3</sup>	84 183°F	88	13 55°F	6.2 (256) 1 mg/m <sup>3</sup> = 0.24 ppm	6.2 (256)	6.2 (256)	440 IIA T2
114	1.1-Dichloroethylene CAS 75-35-4 CH <sub>2</sub> =CCl <sub>2</sub>	R 1130a C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	1.1-Dichloroethene Vinylidene chloride	96.9 3.34 r 314 v	1.25 1 ppm = 4.04 mg/m <sup>3</sup>	32 90°F	664	-25 -13°F	6.5 (262) 1 mg/m <sup>3</sup> = 0.25 ppm	6.5 (262)	6.5 (262)	530 IIA T1
115	1.2-Dichloroethylene cis CAS 156-59-2 CHCl=CHCl	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	1.2-Dichloroethene cis	96.9 3.34 r 293 v	1.28 1 ppm = 4.04 mg/m <sup>3</sup>	60 140°F	218	6 43°F	6.2 (250) 1 mg/m <sup>3</sup> = 0.25 ppm		5.6 (226)	460 IIA T1
116	1.2-Dichloroethylene trans CAS 156-60-5 CHCl=CHCl	R 1130 C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	1.2-Dichloroethene trans	96.9 3.34 r 293 v	1.26 1 ppm = 4.04 mg/m <sup>3</sup>	48 118°F	361	-6 21°F	6.1 (246) 1 mg/m <sup>3</sup> = 0.25 ppm	9.7 (392)	5.6 (226)	440 IIA T2
117	1.1-Dichloro-1-fluoroethane CAS 1717-00-6 CCl <sub>2</sub> FCH <sub>3</sub>	R 141b C <sub>2</sub> H <sub>3</sub> Cl <sub>2</sub> F		117.0 4.04 r	1.27 1 ppm = 4.88 mg/m <sup>3</sup>	32 90°F	644	n.a.	5.6 (273) 1 mg/m <sup>3</sup> = 0.21 ppm			550 T1
118	Dichloromethane CAS 75-09-2 CH <sub>2</sub> Cl <sub>2</sub>	DCM CH <sub>2</sub> Cl <sub>2</sub>	Methylene chloride R 30 Methylene dichloride	84.9 2.93 r	1.33 1 ppm = 3.54 mg/m <sup>3</sup>	40 104°F	473	n.a.	13.0 (460) 1 mg/m <sup>3</sup> = 0.28 ppm		13.0 (460)	605 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
111			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	100 %LEL 30 / 100 %LEL 40 / 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 100 %LEL (?)	
112	100 (413)	100 (413)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (\$) 35 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (2)	corrosive/sensor poison
113		50 (206)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC Polytron Pulsar 2	100 %LEL 45 / 100 %LEL 45 / 100 %LEL 35 / 100 %LEL 20 / 100 %LEL // 12400 ppm Gas-Library 100 %LEL (2) 80 / 100 %LEL // 2.0 / 2.3 vol% (2) 25 / 100 %LEL (3) // 1.5 / 2.3 vol% (2) 30 ppm / LDL = 0.5 ppm 1 // 4 / 8 LELm	corrosive/sensor poison Performance Approval  Performance Approval  S=0.8 S=1.13 (Propane=1)
114	2 (8.1)		PEX 3000, SE Ex, FX, XP Ex	100 %LEL	corrosive/sensor poison
115		200 (808)	Pyrolyzer Polytron 7500 PFC	30 ppm / LDL = 0.5 ppm	S=0.8
116		200 (808)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	100 %LEL 100 %LEL (\$) 45 / 100 %LEL 30 / 100 %LEL (3) // 2.3 / 2.3 vol% (2) 30 ppm / LDL = 0.5 ppm	corrosive/sensor poison   S=0.8
117			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	40 / 100 %LEL 55 / 100 %LEL 80 / 100 %LEL 80 / 100 %LEL 80 / 100 %LEL (2) 60 / 100 %LEL (3) // 2.3 / 2.3 vol% (2) 20 ppm / LDL = 0.5 ppm	S=1.3
118	75 (265)	25 (88)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	35 / 100 %LEL 45 / 100 %LEL 40 / 100 %LEL 40 / 100 %LEL 100 %LEL 80 / 100 %LEL (2) 20 / 100 %LEL (3) // 1.5 / 2.3 vol% (2) 30 ppm / LDL = 0.5 ppm	Performance Approval      S=1.0

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
119	1,2-Dichloropropane CAS 78-87-5 CH <sub>3</sub> CH(Cl)CH <sub>2</sub> Cl	PDC C <sub>3</sub> H <sub>6</sub> Cl <sub>2</sub>	1,2-Propylene dichloride R 270	113.0 3.90 r 188 v	1.16 1 ppm = 4.71 mg/m <sup>3</sup>	96 205°F	51	15 59°F	3.1 (146)	3.4 (160)	3.4 (160)	555 IIA T1
120	1,3-Dichloro-2-propanol CAS 96-23-1 (CH <sub>2</sub> Cl) <sub>2</sub> CHOH	1,3-DCP C <sub>3</sub> H <sub>6</sub> Cl <sub>2</sub> O	1,3-Dichlorohydrin 1,3-Dichloro-i-propanol	129.0 4.45 r	1.36 1 ppm = 5.38 mg/m <sup>3</sup>	175 347°F	0.72	85 185°F	3.5 (188)			IIA
121	1,3-Dichloropropene CAS 542-75-6 ClCH <sub>2</sub> CH=CHCl	DCP C <sub>3</sub> H <sub>4</sub> Cl <sub>2</sub>	Telone 3-Chloroallyl chloride	111.0 3.83 r 298 v	1.23 1 ppm = 4.63 mg/m <sup>3</sup>	108 226°F	37	27 81°F	5.3 (245)	5.3 (245)	5.3 (245)	IIA
122	Dichlorosilane CAS 4109-96-0 SiH <sub>2</sub> Cl <sub>2</sub>	DCS H <sub>2</sub> Cl <sub>2</sub> Si	Silicon dichloride	101.0 3.49 r	Gas 1 ppm = 4.21 mg/m <sup>3</sup>	8 46°F	Gas	Gas	2.5 (105)		4.7 (198)	185 IIC T4
123	1,2-Dichlorotetrafluoroethane CAS 76-14-2 C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub>	R 114 C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub>		170.9 5.90 r	Gas 1 ppm = 7.12 mg/m <sup>3</sup>	3.6 38°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
124	2,2-Dichloro-1,1,1-trifluoroethane CAS 306-83-2 CHCl <sub>2</sub> CF <sub>3</sub>	R 123 C <sub>2</sub> HCl <sub>2</sub> F <sub>3</sub>		152.9 5.28 r	1.48 1 ppm = 6.37 mg/m <sup>3</sup>	28.7 84°F	914	n.a.	n.a.	n.a.	n.a.	n.a.
125	Dicyclohexyl CAS 92-51-3 (C <sub>6</sub> H <sub>11</sub> ) <sub>2</sub>	C <sub>12</sub> H <sub>22</sub>	Bicyclohexyl Cyclohexyl cyclohexane	166.3 5.74 r	0.86 1 ppm = 6.93 mg/m <sup>3</sup>	227 441°F		74 165°F	0.6 (42)			240 IIA T3
126	Dicyclopentadiene CAS 77-73-6 C <sub>10</sub> H <sub>12</sub>	C <sub>10</sub> H <sub>12</sub>	4,7-Methylenetetrahydro indene Cyclopentadiene dimere Bicyclopentadiene	132.2 4.56 r	0.94 1 ppm = 5.51 mg/m <sup>3</sup>	166 331°F	3	39 102°F	0.8 (44)	0.8 (44)	0.8 (44)	500 IIA T1
127	1,1-Diethoxyethane CAS 105-57-7 CH <sub>3</sub> CH(OC <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>	Acetaldehyde diethylacetal Acetal Diethylacetal	118.2 4.08 r 144 v	0.82 1 ppm = 4.93 mg/m <sup>3</sup>	102 216°F	35	-21 -6°F	1.6 (79)		1.7 (84)	230 T3
128	Diethoxy methyl silane CAS 2031-62-1 (C <sub>2</sub> H <sub>5</sub> O) <sub>2</sub> SiHCH <sub>3</sub>	DEMS C <sub>6</sub> H <sub>14</sub> O <sub>2</sub> Si	Methyl diethoxy silane	134.3 4.64 r 100 v	0.84 1 ppm = 5.60 mg/m <sup>3</sup>	94 201°F		10 50°F	1.0 (56)			
129	Diethylamine CAS 109-89-7 (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NH	DEA C <sub>4</sub> H <sub>11</sub> N	N-Ethylethane amine N,N-Diethylamine	73.1 2.52 r 111 v	0.70 1 ppm = 3.05 mg/m <sup>3</sup>	56 133°F	256	-25 -13°F	1.7 (52)	1.7 (52)	1.8 (55)	310 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
119		75 (353)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL 35 / 100 %LEL 25 / 100 %LEL // 6800 ppm Gas-Library 25 / 100 %LEL 100 %LEL (\$) 100 %LEL (?) 3000 ppm (3)	corrosive/sensor poison Performance Approval Performance Approval Performance Approval
120			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Pyrolyzer Polytron 7500 PFC	55 / 100 %LEL 100 %LEL (\$) 20 / 100 %LEL 100 %LEL (\$) 150 ppm / LDL = 5 ppm	S=0.2
121		1 (4.6)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	20 / 100 %LEL 20 / 100 %LEL // 10600 ppm Gas-Library 20 / 100 %LEL 100 %LEL (\$) 100 %LEL (?)	Performance Approval Performance Approval Performance Approval
122			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	DCS: 3 / 10 / 30 ppm / LDL = 0.5 ppm DCS: 5 / 10 / 20 ppm / LDL = 0.2 ppm	test sensor after longer exposure
123	1000 (7121)	1000 (7121)	Pyrolyzer Polytron 7500 PFC	20 ppm / 0.5 ppm	S=1.7
124			Pyrolyzer Polytron 7500 PFC	30 ppm / LDL = 0.5 ppm	S=0.9
125			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 2000 ppm (3)	
126	0.5 (28)	5 (28)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (?) 100 %LEL (?)	
127			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 10 / 100 %LEL (3) 100 %LEL	
128			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3)	
129	5 (15)	25 (76)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (\$) 45 / 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL DEA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
130	1,2-Diethylbenzene CAS 135-01-3 C <sub>8</sub> H <sub>4</sub> (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	C <sub>10</sub> H <sub>14</sub>	o-Diethylbenzene	134.2 4.63 r	0.88 1 ppm = 5.59 mg/m <sup>3</sup>	183 361°F	1.1	55 131°F	1 mg/m <sup>3</sup> = 0.18 ppm			380 IIA T2
131	Diethyl carbonate CAS 105-58-8 CO(OC <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	DEC C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	Diethoxy formic acid anhydride Carbonic acid diethyl ester	118.1 4.08 r 106 v	0.97 1 ppm = 4.92 mg/m <sup>3</sup>	126 259°F	13.3	25 77°F	1.4 (69)	1.4 (69)		445 IIB T2
132	Diethylene glycol diethylether CAS 112-36-7 (C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>4</sub> ) <sub>2</sub> O	C <sub>8</sub> H <sub>18</sub> O <sub>3</sub>	Diethyldiglycol Bis(2-ethoxyethyl)-ether	162.2 5.60 r	0.91 1 ppm = 6.76 mg/m <sup>3</sup>	189 372°F	0.8	71 160°F	1 mg/m <sup>3</sup> = 0.15 ppm			174 T4
133	Diethylenglycol dimethylether CAS 111-96-6 CH <sub>3</sub> OC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>4</sub> OCH <sub>3</sub>	DEGDME C <sub>6</sub> H <sub>14</sub> O <sub>3</sub>	Diglyme Dimethyl diglycol Bis(2-methoxyethyl)-ether	134.2 4.63 r	0.94 1 ppm = 5.59 mg/m <sup>3</sup>	160 320°F	2	51 124°F	1.3 (73)			190 T4
134	N,N-Diethylethanolamine CAS 100-37-8 (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> NC <sub>2</sub> H <sub>4</sub> OH	C <sub>6</sub> H <sub>15</sub> NO	2-Diethylaminoethanol 2-Hydroxy triethylamine	117.2 4.05 r	0.88 1 ppm = 4.88 mg/m <sup>3</sup>	161 322°F	1.9	51 124°F	1.8 (88)		1.8 (88)	320 IIA T2
135	Diethyl ether CAS 60-29-7 (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O	R 610 C <sub>4</sub> H <sub>10</sub> O	Ether Ethoxy ethane 1,1'-Oxybisethane	74.1 2.56 r 111 v	0.71 1 ppm = 3.09 mg/m <sup>3</sup>	35 95°F	590	-40 -40°F	1.7 (52)	1.7 (52)	1.9 (59)	175 IIB T4
136	Diethyl ketone CAS 96-22-0 (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> CO	DEK C <sub>6</sub> H <sub>10</sub> O	3-Pentanone Propione Dimethylacetone	86.1 2.97 r 106 v	0.81 1 ppm = 3.59 mg/m <sup>3</sup>	102 216°F	38	7 45°F	1.6 (57)	1.6 (57)	1.6 (57)	455 IIB T1
137	Diethylsulphide CAS 352-93-2 (C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> S	C <sub>4</sub> H <sub>10</sub> S	Diethyl thioether 1,1'-Thiobisethane	90.2 3.11 r	0.84 1 ppm = 3.76 mg/m <sup>3</sup>	92 198°F	66	-10 14°F	1 mg/m <sup>3</sup> = 0.27 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
130			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
131			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 25 / 100 %LEL 25 / 100 %LEL 10 / 100 %LEL 15 / 100 %LEL 100 %LEL 15 / 100 %LEL // 2000 ppm (3)	
132			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL as MeOH (20 / 50 / 200 ppm)	S=1.5 (L)
133	5 (28)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL (3)	
134	5 (24)	10 (49)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL as NH3 x 2 (50 / 100 ppm x 2)	S=0.5 (L)
135	400 (1235)	400 (1235)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 20 / 100 %LEL 25 / 100 %LEL 5 / 100 %LEL 5 / 100 %LEL // 850 ppm Gas-Library 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) Et2O: 50 / 50 / 200 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval          S=0.4
136		200 (718)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (§) 20 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
137			Polytron 7000, XP Tox H2S LC	as THT (20 / 50 / 100 ppm)	S=0.3

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
138	1,1-Difluoroethane CAS 75-37-6 CHF <sub>2</sub> CH <sub>3</sub>	R 152a C <sub>2</sub> H <sub>4</sub> F <sub>2</sub>	Ethylidene fluoride	66.1 2.28 r	Gas -25 -13°F 1 ppm = 2.75 mg/m <sup>3</sup>	Gas	Gas	Gas	4.0 (110) 1 mg/m <sup>3</sup> = 0.36 ppm			455 IIA T1
139	Difluoromethane CAS 75-10-5 CH <sub>2</sub> F <sub>2</sub>	R 32 CH <sub>2</sub> F <sub>2</sub>	Methylene fluoride	52.0 1.79 r	Gas -51.7 -61°F 1 ppm = 2.17 mg/m <sup>3</sup>	Gas	Gas	Gas	14.0 (303) 1 mg/m <sup>3</sup> = 0.46 ppm	13.5 (293)	12.7 (275)	648 T1
140	1,2-Dimethoxy ethane CAS 110-71-4 (CH <sub>3</sub> OCH <sub>2</sub> ) <sub>2</sub>	EGDME C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	Dimethylglycol Ethylene glycol dimethyl ether Glycol dimethylether	90.1 3.11 r 103 v	0.87 84 78 183°F 1 ppm = 3.75 mg/m <sup>3</sup>			-2 28°F	1.6 (60) 1 mg/m <sup>3</sup> = 0.27 ppm	1.6 (60)		200 IIB T4
141	Dimethoxymethane CAS 109-87-5 CH <sub>2</sub> (OCH <sub>3</sub> ) <sub>2</sub>	Formal C <sub>3</sub> H <sub>8</sub> O <sub>2</sub>	Methylal Formaldehyde dimethylacetal Methylene glycol dimethyl ether	76.1 2.63 r 121 v	0.86 42 108°F 1 ppm = 3.17 mg/m <sup>3</sup>	429		-31 -24°F	2.2 (70) 1 mg/m <sup>3</sup> = 0.32 ppm	2.2 (70)	2.2 (70)	235 IIB T3
142	2,2-Dimethoxypropane CAS 77-76-9 (CH <sub>3</sub> ) <sub>2</sub> C(OCH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	Acetone dimethylacetal Dimethyl dimethoxy methane	104.2 3.60 r 459 v	0.85 83 181°F 1 ppm = 4.34 mg/m <sup>3</sup>	66		-11 12°F	6.0 (261) 1 mg/m <sup>3</sup> = 0.23 ppm			
143	N,N-Dimethyl acetamide CAS 127-19-5 (CH <sub>3</sub> ) <sub>2</sub> NCOCH <sub>3</sub>	DMAC C <sub>4</sub> H <sub>9</sub> NO	Acetic acid dimethyl amide Acetyl dimethylamine N,N-Dimethyl methanamide	87.1 3.01 r	0.94 165 329°F 1 ppm = 3.63 mg/m <sup>3</sup>	3		66 151°F	1.8 (65) 1 mg/m <sup>3</sup> = 0.28 ppm		1.8 (65)	490 IIA T1
144	Dimethylamine CAS 124-40-3 (CH <sub>3</sub> ) <sub>2</sub> NH	DMA C <sub>2</sub> H <sub>7</sub> N	N-Methylmethanamine	45.1 1.56 r	Gas 7 45°F 1 ppm = 1.88 mg/m <sup>3</sup>	Gas		1 34°F	2.8 (53) 1 mg/m <sup>3</sup> = 0.53 ppm	2.8 (53)	2.8 (53)	400 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
138			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	15 / 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 100 %LEL (?) 20 / 100 %LEL (3)	
139			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Pyrolyzer Polytron 7500 PFC	100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 100 %LEL (?) 2.0 / 2.3 vol% (2) DFM: 100 / 100 ppm / LDL = 2 ppm	S = 0.34
140			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (\$) 30 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
141	1000 (3171)	1000 (3171)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (\$) 35 / 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
142			Polytron IR Ex, IR Ex IL	3000 ppm (3)?	
143	10 (36)	10 (36)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	40 / 100 %LEL 100 %LEL (\$) 35 / 100 %LEL 100 %LEL (\$) 100 %LEL (?) 35 / 100 %LEL // 5000 ppm (3)	
144	2 (3.8)	10 (19)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) DMA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
145	Dimethylaminopropylamine CAS 109-55-7 (CH <sub>3</sub> ) <sub>2</sub> NC <sub>3</sub> H <sub>6</sub> NH <sub>2</sub>	DMAPA C <sub>6</sub> H <sub>14</sub> N <sub>2</sub>	N.N-Dimethyl-1.3-diaminopropane 3-Aminopropyl dimethylamine N.N-Dimethyl-1.3-propandiamine	102.2 3.53 r	0.81 1 ppm = 4.26 mg/m <sup>3</sup>	134 273°F	8	35 95°F	1.9 (81)	1.2 (51)	2.3 (98)	215 T3
146	2.2-Dimethylbutane CAS 75-83-2 (CH <sub>3</sub> ) <sub>2</sub> CCH <sub>2</sub> CH <sub>3</sub>	C <sub>6</sub> H <sub>14</sub>	Neohexane	86.2 2.98 r 101 v	0.64 1 ppm = 3.59 mg/m <sup>3</sup>	50 122°F	350	-45 -49°F	1.2 (43)	1.0 (36)		405 IIA T2
147	2.3-Dimethylbutane CAS 79-29-8 (CH <sub>3</sub> ) <sub>2</sub> CHCH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>14</sub>	Di-i-propyl	86.2 2.98 r 98 v	0.66 1 ppm = 3.59 mg/m <sup>3</sup>	58 136°F	255	-29 -20°F	1.2 (43)	1.0 (36)		415 IIA T2
148	Dimethyl carbonate CAS 616-38-6 CO(OCH <sub>3</sub> ) <sub>2</sub>	DMC C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	Dimethoxy formic acid anhydride Carbonic acid dimethyl ester	90.1 3.11 r 221 v	1.07 1 ppm = 3.75 mg/m <sup>3</sup>	90 194°F	53	16 61°F	4.2 (158)			455 T1
149	N.N-Dimethyl cyclohexyl amine CAS 98-94-2 C <sub>8</sub> H <sub>17</sub> N(CH <sub>3</sub> ) <sub>2</sub>	DMCHA C <sub>8</sub> H <sub>17</sub> N	N-Cyclohexyl dimethyl amine Hexahydro-N.N-dimethyl aniline Dimethylamino cyclohexane	127.2 4.39 r	0.85 1 ppm = 5.30 mg/m <sup>3</sup>	161 322°F	3.6	40 104°F	0.8 (42)			215 T3
150	Dimethyl disulphide CAS 624-92-0 (CH <sub>3</sub> ) <sub>2</sub> S <sub>2</sub>	DMDS C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	2.3-Dithiabutane	94.2 3.25 r 61 v	1.06 1 ppm = 3.93 mg/m <sup>3</sup>	110 230°F	25	10 50°F	1.1 (43)			370 IIA T2
151	N.N-Dimethylethanolamine CAS 108-01-0 (CH <sub>3</sub> ) <sub>2</sub> NC <sub>2</sub> H <sub>4</sub> OH	C <sub>4</sub> H <sub>11</sub> NO	2-Dimethylaminoethanol	89.1 3.08 r	0.89 1 ppm = 3.71 mg/m <sup>3</sup>	131 268°F	5.6	40 104°F		1.6 (59)		220 IIA T3
152	Dimethylether CAS 115-10-6 (CH <sub>3</sub> ) <sub>2</sub> O	DME C <sub>2</sub> H <sub>6</sub> O	Methoxy methane Dimethyl oxide 1.1'-Oxybismethane	46.1 1.59 r	Gas 1 ppm = 1.92 mg/m <sup>3</sup>	-25 -13°F	Gas	Gas	2.7 (52)	2.7 (52)	3.4 (65)	240 IIB T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
145			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (\$) 40 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?) 100 %LEL	
146	500 (1796)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
147	500 (1796)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
148			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 2000 ppm (3)	
149			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (\$) 30 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3)	
150			Dräger PIR 7000 Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron 7000, XP Tox H2S LC	60 / 100 %LEL 40 / 100 %LEL 50 / 100 %LEL DMDS: 20 / 50 / 100 ppm / LDL = 1 ppm	
151			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 / 5000 ppm (3) 100 %LEL	
152	1000 (1921)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 15 / 100 %LEL // 4050 ppm Gas-Library 20 / 100 %LEL // 5400 ppm Gas-Library 5 / 100 %LEL // 1350 ppm Gas-Library 100 %LEL (\$) 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 5000 ppm (3)	SE Ex / PEX 3000: Perf. Approval        Performance Approval

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
153	Dimethylethylamine CAS 598-56-1 C <sub>2</sub> H <sub>5</sub> N(CH <sub>3</sub> ) <sub>2</sub>	DMEA C <sub>4</sub> H <sub>11</sub> N	Ethyl dimethylamine N.N-Dimethylethanamine	73.1 2.52 r 60 v	0.68 1 ppm = 3.05 mg/m <sup>3</sup>	36 97°F	553	-36 -33°F	0.9 (27) 1 mg/m <sup>3</sup> = 0.33 ppm			190 T4
154	Dimethylformamide CAS 68-12-2 HCON(CH <sub>3</sub> ) <sub>2</sub>	DMF C <sub>3</sub> H <sub>7</sub> NO	Formic acid dimethylamide N.N-Dimethylformamide N.N-Dimethylmethanamide	73.1 2.52 r	0.95 1 ppm = 3.05 mg/m <sup>3</sup>	153 307°F	3.5	58 136°F	2.2 (67) 1 mg/m <sup>3</sup> = 0.33 ppm	1.8 (55)	2.2 (67)	440 IIA T2
155	3,4-Dimethyl hexane CAS 583-48-2 (C <sub>2</sub> H <sub>5</sub> CHCH <sub>3</sub> ) <sub>2</sub>	C <sub>8</sub> H <sub>18</sub>	i-Octane	114.2 3.94 r 79 v	0.72 1 ppm = 4.76 mg/m <sup>3</sup>	118 244°F	22	2 36°F	0.8 (38) 1 mg/m <sup>3</sup> = 0.21 ppm	0.8 (38)		305 IIA T2
156	1,1-Dimethylhydrazine CAS 57-14-7 (CH <sub>3</sub> ) <sub>2</sub> N-NH <sub>2</sub>	UDMH C <sub>2</sub> H <sub>8</sub> N <sub>2</sub>	N.N-Dimethylhydrazine Dimazine	60.1 2.07 r 96 v	0.78 1 ppm = 2.50 mg/m <sup>3</sup>	63 145°F	145	-18 0°F	2.0 (50) 1 mg/m <sup>3</sup> = 0.40 ppm	2.4 (60)	2.0 (50)	240 IIB T3
157	2,3-Dimethylpentane CAS 565-59-3 C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )CH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>7</sub> H <sub>16</sub>		100.2 3.46 r 98 v	0.70 1 ppm = 4.18 mg/m <sup>3</sup>	90 194°F	72	-12 10°F	1.1 (46) 1 mg/m <sup>3</sup> = 0.24 ppm	1.1 (46)		330 IIA T2
158	2,2-Dimethyl propane CAS 463-82-1 C(CH <sub>3</sub> ) <sub>4</sub>	C <sub>5</sub> H <sub>12</sub>	Neopentane Tetramethyl methane tert-Butyl methane	72.2 2.49 r	Gas 1 ppm = 3.01 mg/m <sup>3</sup>	10 50°F	Gas	Gas	1.3 (39) 1 mg/m <sup>3</sup> = 0.33 ppm		1.4 (42)	450 IIA T2
159	N.N-Dimethyl-i-propanolamine CAS 108-16-7 (CH <sub>3</sub> ) <sub>2</sub> NCH <sub>2</sub> CH(OH)CH <sub>3</sub>	C <sub>6</sub> H <sub>13</sub> NO	1-Dimethylamino-2-propanol	103.2 3.56 r	0.86 1 ppm = 4.30 mg/m <sup>3</sup>	126 259°F	18	35 95°F	2.7 (116) 1 mg/m <sup>3</sup> = 0.23 ppm			225 IIA T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
153			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (\$) 50 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3) 100 %LEL DMEA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison
154	10 (30)	10 (30)	Dräger PIR 7000 Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	35 / 100 %LEL 15 / 100 %LEL 15 / 100 %LEL 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3) 100 %LEL	
155	500 (2379)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 30 / 100 %LEL // 3000 ppm (3)	
156		0,5 (1.3)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron 7000, XP Tox N2H4	100 %LEL (\$) 40 / 100 %LEL UDMH: 1 / 1 / 3 ppm / LDL = 0.02 ppm	
157	500 (2088)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
158	1000 (3008)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
159			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (\$) 100 %LEL 100 %LEL (\$) 100 %LEL 100 %LEL 3000 ppm (3)?	corrosive/sensor poison

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
160	N,N-Dimethyl-i-propylamine CAS 996-35-0 (CH <sub>3</sub> ) <sub>2</sub> CHN(CH <sub>3</sub> ) <sub>2</sub>	DMIPA C <sub>6</sub> H <sub>13</sub> N	1-Dimethyl aminopropane N,N-Dimethyl-1-propane amine	87.2 3.01 r 83 v	0.72 1 ppm = 3.63 mg/m <sup>3</sup>	66 151°F	170	-27 -17°F	1.1 (40) 1 mg/m <sup>3</sup> = 0.28 ppm	1.0 (36)		190 IIA T4
161	N,N-Dimethyl-n-propyl amine CAS 926-63-6 (CH <sub>3</sub> ) <sub>2</sub> NC <sub>3</sub> H <sub>7</sub>	DMPA C <sub>6</sub> H <sub>13</sub> N	N,N-Dimethyl-1-propanamine Dimethylpropylamine	87.2 3.01 r 83 v	0.72 1 ppm = 3.63 mg/m <sup>3</sup>	65 149°F	173	<-20 <-4°F	1.1 (40) 1 mg/m <sup>3</sup> = 0.28 ppm			165 IIA T4
162	Dimethyl sulphide CAS 75-18-3 (CH <sub>3</sub> ) <sub>2</sub> S	DMS C <sub>2</sub> H <sub>6</sub> S	2-Thiapropane Methyl thiomethane Thiobismethane	62.1 2.14 r 100 v	0.85 1 ppm = 2.59 mg/m <sup>3</sup>	37 99°F	531	-37 -35°F	2.2 (57) 1 mg/m <sup>3</sup> = 0.39 ppm			215 IIA T3
163	1,4-Dioxane CAS 123-91-1 (CH <sub>2</sub> ) <sub>4</sub> O <sub>2</sub>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	Diethylene dioxide Diethylene ether 1,4-Dioxa cyclohexane	88.1 3.04 r 75 v	1.03 1 ppm = 3.67 mg/m <sup>3</sup>	101 214°F	38	11 52°F	1.4 (51) 1 mg/m <sup>3</sup> = 0.27 ppm	1.4 (51)	2.0 (73)	375 IIB T2
164	1,3-Dioxolane CAS 646-06-0 (CH <sub>2</sub> ) <sub>3</sub> O <sub>2</sub>	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	1,3-Dioxa cyclopentane Formaldehyde ethylene acetal Dihydro-1,3-dioxol	74.1 2.56 r 100 v	1.06 1 ppm = 3.09 mg/m <sup>3</sup>	74 165°F	114	-5 23°F	2.3 (71) 1 mg/m <sup>3</sup> = 0.32 ppm	2.3 (71)		245 IIB T3
165	Di-i-propylamine CAS 108-18-9 ((CH <sub>3</sub> ) <sub>2</sub> CH) <sub>2</sub> NH	DIPA C <sub>6</sub> H <sub>15</sub> N	1-Methylethyl-2-propanamine	101.2 3.49 r 105 v	0.72 1 ppm = 4.22 mg/m <sup>3</sup>	82 180°F	85	-7 19°F	1.2 (51) 1 mg/m <sup>3</sup> = 0.24 ppm	1.2 (51)	1.1 (46)	285 IIA T3
166	Dipropylamine CAS 142-84-7 (C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> NH	C <sub>6</sub> H <sub>15</sub> N	Di-n-propylamine N-Propyl-1-propane amine	101.2 3.49 r 102 v	0.74 1 ppm = 4.22 mg/m <sup>3</sup>	105 221°F	24	7 45°F	1.2 (51) 1 mg/m <sup>3</sup> = 0.24 ppm	1.2 (51)		260 IIA T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
160	1 (3.6)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL 20 / 100 %LEL 30 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 1000 / 5000 ppm (3) 100 %LEL as NH3 x 2 (50 / 100 ppm x 2)	S=0.5 (L)
161			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	15 / 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 100 %LEL (\$) 100 %LEL (?)	
162			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron 7000, XP Tox H2S LC	100 %LEL (\$) 25 / 100 %LEL DMS: 20 / 50 / 100 ppm / LDL = 1 ppm	
163	20 (73)	100 (367)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 25 / 100 %LEL 25 / 100 %LEL // 4000 ppm Gas-Library 5 / 100 %LEL 100 %LEL (\$) 100 %LEL 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 30 / 100 %LEL // 5000 ppm (3)	
164	100 (309)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL as EO x 0.5 (20 / 50 / 200 ppm x 0.5)	S=2.0 (L)
165	100 (422)	5 (21)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
166			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	corrosive/sensor poison

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
167	Di-i-propyl ether CAS 108-20-3 (CH <sub>3</sub> ) <sub>2</sub> CHOCH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>14</sub> O	2-Isopropoxy propane 2,2'-Oxybispropane Isopropyl ether	102.2 3.53 r 89 v	0.72 1 ppm = 4.26 mg/m <sup>3</sup>	69 156°F	180	-22 -8°F	1.0 (43) 1 mg/m <sup>3</sup> = 0.23 ppm	1.0 (43)	1.4 (60)	405 IIA T2
168	Di-n-propyl ether CAS 111-43-3 (C <sub>3</sub> H <sub>7</sub> ) <sub>2</sub> O	C <sub>6</sub> H <sub>14</sub> O	Dipropyl ether 1-Propoxypropane 1,1'-Oxybispropane	102.2 3.53 r 102 v	0.75 1 ppm = 4.26 mg/m <sup>3</sup>	90 194°F	74	-18 0°F	1.2 (51) 1 mg/m <sup>3</sup> = 0.23 ppm	1.18 (50)	1.3 (55)	175 IIA T4
169	Disilane CAS 1590-87-0 Si <sub>2</sub> H <sub>6</sub>	DS H <sub>6</sub> Si <sub>2</sub>	Silico ethane Silicon hexahydride	62.2 2.15 r	Gas 1 ppm = 2.59 mg/m <sup>3</sup>	-14 7°F	Gas	Gas	1.0 (26) 1 mg/m <sup>3</sup> = 0.39 ppm			
170	Divinyl benzene (mix of isomeres) CAS 1321-74-0 C <sub>6</sub> H <sub>4</sub> (CH=CH <sub>2</sub> ) <sub>2</sub>	DVB C <sub>10</sub> H <sub>10</sub>	Diethenyl benzene Vinylstyrene	130.2 4.49 r	0.91 1 ppm = 5.43 mg/m <sup>3</sup>	195 383°F	0.9	64 147°F	1.1 (60) 1 mg/m <sup>3</sup> = 0.18 ppm		1.1 (60)	500 T1
171	Divinylether CAS 109-93-3 (CH <sub>2</sub> =CH) <sub>2</sub> O	DVE C <sub>4</sub> H <sub>6</sub> O	Divinyloxyde Vinylether 1,1'-Oxybisethene	70.1 2.42 r 97 v	0.77 1 ppm = 2.92 mg/m <sup>3</sup>	28 82°F	737	-30 -22°F	1.7 (50) 1 mg/m <sup>3</sup> = 0.34 ppm			360 IIB T2
172	n-Dodecane CAS 112-40-3 C <sub>12</sub> H <sub>26</sub>	C <sub>12</sub> H <sub>26</sub>	Dihexyl	170.3 5.88 r	0.75 1 ppm = 7.10 mg/m <sup>3</sup>	216 421°F	0.12	80 176°F	0.6 (43) 1 mg/m <sup>3</sup> = 0.14 ppm			200 IIA T4
173	Enflurane CAS 13838-16-9 CHF <sub>2</sub> -O-CF <sub>2</sub> CHFCI	C <sub>3</sub> H <sub>2</sub> ClF <sub>5</sub> O	Ethrane Chlorotrifluoroethylidifluoromethyl ether 2-Chloro difluoromethoxytrifluoroethane	184.5 6.37 r	1.52 1 ppm = 7.69 mg/m <sup>3</sup>	56.5 134°F	233	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.13 ppm	n.a.	n.a.	n.a.
174	Epichlorohydrin CAS 106-89-8 CH <sub>2</sub> ClCHCH <sub>2</sub> O	ECH C <sub>3</sub> H <sub>5</sub> ClO	1-Chloro-2,3-epoxypropane 2,3-Epoxypropylchloride Chloromethyl oxirane	92.5 3.19 r 112 v	1.18 1 ppm = 3.85 mg/m <sup>3</sup>	116 241°F	16	28 82°F	2.3 (89) 1 mg/m <sup>3</sup> = 0.26 ppm	2.3 (89)	3.8 (146)	385 IIB T2
175	1,2-Epoxybutane CAS 106-88-7 C <sub>4</sub> H <sub>8</sub> O	C <sub>4</sub> H <sub>8</sub> O	Butylene oxide Ethyl oxirane	72.1 2.49 r 81 v	0.83 1 ppm = 3.00 mg/m <sup>3</sup>	65 149°F	177	-15 5°F	1.5 (45) 1 mg/m <sup>3</sup> = 0.33 ppm			370 T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
167	200 (852)	500 (2129)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 20 / 100 %LEL 30 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL / 3000 ppm (3)	
168			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
169			Polytron 7000, XP Tox Hydrides	DS: 5 / 20 / 20 ppm / LDL = 0.3 ppm	
170		10 (54)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340	25 / 25 %LEL 25 / 25 %LEL 25 / 25 %LEL 25 / 25 %LEL	only for concentrations < 25 %LEL only for concentrations < 25 %LEL only for concentrations < 25 %LEL only for concentrations < 25 %LEL
171			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (2)?	polymerizing - sensor poison
172			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 / 5000 ppm (3) 100 %LEL	
173	20 (154)	2c (15)	Pyrolyzer Polytron 7500 PFC	10 ppm / LDL = 0.2 ppm	S=2.2
174		5 (19)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV2	100 %LEL 25 / 100 %LEL 20 / 100 %LEL // 4600 ppm Gas-Library 40 / 100 %LEL 100 %LEL (\$) 100 %LEL (?) 100 %LEL (?) 5000 ppm (3) ECH: 20 / 50 / 100 ppm / LDL = 5 ppm	corrosive/sensor poison Performance Approval Performance Approval Performance Approval  S=0.45 (L)
175			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3) as PO x 2 (20 / 50 / 200 ppm x 2)	S=0.4 (L)

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
176	Ethane CAS 74-84-0 C <sub>2</sub> H <sub>6</sub>	R 170 C <sub>2</sub> H <sub>6</sub>	Methylmethane Dimethyl	30.1 1.04 r	Gas -89 -128°F 1 ppm = 1.25 mg/m <sup>3</sup>	Gas	Gas	Gas	2.4 (30) 1 mg/m <sup>3</sup> = 0.80 ppm	2.4 (30)	3.0 (38)	515 IIA T1
177	Ethanol CAS 64-17-5 C <sub>2</sub> H <sub>5</sub> OH	EtOH C <sub>2</sub> H <sub>6</sub> O	Ethyl alcohol Methylcarbinol	46.1 1.59 r 113 v	0.79 78 172°F 1 ppm = 1.92 mg/m <sup>3</sup>	59	12 54°F	3.1 (60) 1 mg/m <sup>3</sup> = 0.52 ppm	3.1 (60)	3.3 (63)	400 IIB T2	
178	Ethanol amine CAS 141-43-5 NH <sub>2</sub> C <sub>2</sub> H <sub>4</sub> OH	C <sub>2</sub> H <sub>7</sub> NO	2-Aminoethanol 2-Hydroxyethylamine Colamine	61.1 2.11 r	1.02 171 340°F 1 ppm = 2.55 mg/m <sup>3</sup>	0.3	85 185°F	3.4 (87) 1 mg/m <sup>3</sup> = 0.39 ppm		3.0 (76)	410 IIA T2	
179	1-Ethoxy-2-propanol CAS 1569-02-4 C <sub>2</sub> H <sub>5</sub> OCH <sub>2</sub> CH(OH)CH <sub>3</sub>	PGEE C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	Propylene glycol monoethyl ether 2-Propylenglycol-1-ethylether	104.2 3.60 r	0.90 130 266°F 1 ppm = 4.34 mg/m <sup>3</sup>	10	42 108°F	1.3 (56) 1 mg/m <sup>3</sup> = 0.23 ppm			255 IIB T3	
180	Ethoxytrifluorobutenone CAS 17129-06-5 C <sub>2</sub> H <sub>5</sub> OCH=CHC(O)CF <sub>3</sub>	ETFBO C <sub>6</sub> H <sub>7</sub> F <sub>3</sub> O <sub>2</sub>	4-Ethoxy-1.1.1-trifluoro-3-buten-2-one	168.1 5.80 r	1.18 159 318°F 1 ppm = 7.00 mg/m <sup>3</sup>	3	52 126°F	1.4 (98) 1 mg/m <sup>3</sup> = 0.14 ppm			242 T3	
181	Ethyl acetate CAS 141-78-6 CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	Acetic acid ethyl ester Ethyl ethanoate	88.1 3.04 r 122 v	0.90 77 171°F 1 ppm = 3.67 mg/m <sup>3</sup>	98	-4 25°F	2.0 (73) 1 mg/m <sup>3</sup> = 0.27 ppm	2.0 (73)	2.0 (73)	470 IIA T1	

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
176			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	100 %LEL 20 / 100 %LEL // 3750 ppm Gas-Library 40 / 100 %LEL 15 / 100 %LEL // 2500 ppm Gas-Library 15 / 100 %LEL 100 %LEL 5 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	S=1.03 (Propane=1)
177	500 (960)	1000 (1921)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 15 / 100 %LEL // 4650 ppm Gas.-Bibl. 25 / 100 %LEL // 6600 ppm Gas-Library 5 / 100 %LEL // 1550 ppm Gas-Library 5 / 100 %LEL 100 %LEL (3) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 5000 ppm (3) EtOH: 100 / 200 / 300 ppm / LDL = 10 ppm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=0.6
178	2 (5.1)	3 (7.6)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340	10 / 10 %LEL 10 %LEL (§)	only for concentrations < 10 %LEL only for concentrations < 10 %LEL
179	50 (217)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 25 / 100 %LEL // 3250 ppm Gas-Library 30 / 100 %LEL 10 / 100 %LEL // 1300 ppm Gas-Library 10 / 100 %LEL 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
180			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	40 / 100 %LEL 100 %LEL (§) 30 / 100 %LEL 100 %LEL (§) 100 %LEL (?)	
181	400 (1468)	400 (1468)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 25 / 100 %LEL // 4400 ppm Gas-Library 20 / 100 %LEL // 4000 ppm Gas-Library 20 / 100 %LEL // 3300 ppm Gas-Library 20 / 100 %LEL 100 %LEL (2) 15 / 100 %LEL // 3000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=1.24 (Propane=1)

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
182	Ethyl acrylate CAS 140-88-5 <chem>CH2=CHCOOC2H5</chem>	<chem>C5H8O2</chem>	Acrylic acid ethyl ester Ethyl propenoate 2-Propenoic acid ethyl ester	100.1 3.46 r 115 v	0.92 1 ppm = 4.17 mg/m <sup>3</sup>	100 212°F	39	9 48°F	1.7 (71) 1 mg/m <sup>3</sup> = 0.24 ppm	1.4 (58)	1.4 (58)	350 IIB T2
183	Ethylamine CAS 75-04-7 <chem>C2H5NH2</chem>	R 631 <chem>C2H7N</chem>	Aminoethane Monoethylamine Ethane amine	45.1 1.56 r	Gas 1 ppm = 1.88 mg/m <sup>3</sup>	17 63°F	Gas	Gas	3.5 (66) 1 mg/m <sup>3</sup> = 0.53 ppm	3.5 (66)	3.5 (66)	335 IIA T2
184	Ethyl benzene CAS 100-41-4 <chem>C8H10</chem>	<chem>C8H10</chem>	Phenylethane	106.2 3.67 r 76 v	0.87 1 ppm = 4.43 mg/m <sup>3</sup>	136 277°F	10	23 73°F	1.0 (44) 1 mg/m <sup>3</sup> = 0.23 ppm	0.8 (35)	0.8 (35)	430 IIB T2
185	Ethyl bromide CAS 74-96-4 <chem>C2H5Br</chem>	<chem>C2H5Br</chem>	Bromoethane Bromoethyl	109.0 3.76 r 312 v	1.46 1 ppm = 4.54 mg/m <sup>3</sup>	38 100°F	513	<-20 <-4°F	6.7 (304) 1 mg/m <sup>3</sup> = 0.22 ppm	6.7 (304)	6.8 (309)	510 IIB T1
186	Ethyl-tert-butylether CAS 637-92-3 <chem>C2H5OC(CH3)3</chem>	ETBE <chem>C8H14O</chem>	2-Methyl-2-ethoxy propane 1-Ethoxy-2-methyl propane tert-Butyl ethyl ether	102.2 3.53 r 103 v	0.74 1 ppm = 4.26 mg/m <sup>3</sup>	73 163°F	135	-19 -2°F	1.2 (51) 1 mg/m <sup>3</sup> = 0.23 ppm			
187	Ethyl chloride CAS 75-00-3 <chem>C2H5Cl</chem>	R 160 <chem>C2H5Cl</chem>	Chloroethyl Chloroethane	64.5 2.23 r	Gas 1 ppm = 2.69 mg/m <sup>3</sup>	12 54°F	Gas	Gas	3.6 (97) 1 mg/m <sup>3</sup> = 0.37 ppm	3.6 (97)	3.8 (102)	510 IIA T1
188	Ethyl chloroformate CAS 541-41-3 <chem>ClCOOC2H5</chem>	<chem>C3H5ClO2</chem>	Chloroformic acid ethyl ester Ethyl chloro carbonate Ethoxy carbonyl chloride	108.5 3.75 r 220 v	1.14 1 ppm = 4.52 mg/m <sup>3</sup>	93 199°F	53	16 61°F	3.7 (167) 1 mg/m <sup>3</sup> = 0.22 ppm		3.2 (145)	500 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
182	5 (21)	25 (104)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL (\$) 35 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 30 / 100 %LEL // 4000 ppm (3) as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
183	5 (9.4)	10 (19)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (3) 3000 ppm (3)? EA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison
184	100 (443)	100 (443)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 30 / 100 %LEL 20 / 100 %LEL // 1600 ppm Gas-Library 30 / 100 %LEL 30 / 100 %LEL 100 %LEL (3) 25 / 100 %LEL // 3000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
185		200 (908)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	15 / 100 %LEL 25 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 5 / 100 %LEL // 3000 ppm (3) 20 / 100 %LEL // 5000 ppm (3)	
186			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
187	40 (108)	1000 (2688)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL (3) 100 %LEL	corrosive/sensor poison
188			Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (\$) 30 / 100 %LEL	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
189	Ethylcyclobutane CAS 4806-61-5 (CH <sub>2</sub> ) <sub>3</sub> CHC <sub>2</sub> H <sub>5</sub>	C <sub>6</sub> H <sub>12</sub>	Ethylcycloctetramethylene	84.2 2.91 r 86 v	0.73 1 ppm = 3.51 mg/m <sup>3</sup>	71 160°F		<-20 <-4°F	1.2 (42) 1 mg/m <sup>3</sup> = 0.29 ppm	1.2 (42)		210 IIA T3
190	Ethylcyclohexane CAS 1678-91-7 (CH <sub>2</sub> ) <sub>5</sub> CHC <sub>2</sub> H <sub>5</sub>	C <sub>8</sub> H <sub>16</sub>	Ethylhexamethylene	112.2 3.87 r 80 v	0.79 1 ppm = 4.68 mg/m <sup>3</sup>	132 270°F	13	18 64°F	0.9 (42) 1 mg/m <sup>3</sup> = 0.21 ppm	0.9 (42)		260 IIA T3
191	Ethylcyclopentane CAS 1640-89-7 (CH <sub>2</sub> ) <sub>4</sub> CHC <sub>2</sub> H <sub>5</sub>	C <sub>7</sub> H <sub>14</sub>	Ethylpentamethylene	98.2 3.39 r 88 v	0.77 1 ppm = 4.09 mg/m <sup>3</sup>	103 217°F	41	15 59°F	1.1 (45) 1 mg/m <sup>3</sup> = 0.24 ppm	1.05 (43)		260 IIA T3
192	Ethylene CAS 74-85-1 CH <sub>2</sub> =CH <sub>2</sub>	R 1150 C <sub>2</sub> H <sub>4</sub>	Ethene Olefiant gas	28.1 0.97 r	Gas 1 ppm = 1.17 mg/m <sup>3</sup>	-104 -155°F	Gas	Gas	2.4 (28) 1 mg/m <sup>3</sup> = 0.85 ppm	2.3 (27)	2.7 (32)	440 IIB T2
193	Ethylenediamine CAS 107-15-3 NH <sub>2</sub> -C <sub>2</sub> H <sub>4</sub> -NH <sub>2</sub>	EDA C <sub>2</sub> H <sub>6</sub> N <sub>2</sub>	1,2-Diaminoethane 1,2-Ethanediamine	60.1 2.07 r	0.90 1 ppm = 2.50 mg/m <sup>3</sup>	116 241°F	12	34 93°F	2.7 (68) 1 mg/m <sup>3</sup> = 0.40 ppm	2.5 (63)	2.5 (63)	385 IIA T2
194	Ethyleneimine CAS 151-56-4 (CH <sub>2</sub> ) <sub>2</sub> NH	C <sub>2</sub> H <sub>5</sub> N	Aziridine Aminoethylene Azirane	43.1 1.49 r 117 v	0.83 1 ppm = 1.80 mg/m <sup>3</sup>	55 131°F	228	-13 9°F	3.6 (65) 1 mg/m <sup>3</sup> = 0.56 ppm	3.3 (59)	3.3 (59)	320 IIB T2
195	Ethylene oxide CAS 75-21-8 C <sub>2</sub> H <sub>4</sub> O	EO C <sub>2</sub> H <sub>4</sub> O	1,2-Epoxyethane Oxirane Dimethylene oxide	44.1 1.52 r	Gas 1 ppm = 1.84 mg/m <sup>3</sup>	10 50°F	Gas	Gas	2.6 (48) 1 mg/m <sup>3</sup> = 0.54 ppm	2.6 (48)	3.0 (55)	435 IIB T2
196	Ethyl formate CAS 109-94-4 HCOOC <sub>2</sub> H <sub>5</sub>	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	Ethyl methanoate Formic acid ethyl ester	74.1 2.56 r 136 v	0.92 1 ppm = 3.09 mg/m <sup>3</sup>	54 129°F	266	-20 -4°F	2.7 (83) 1 mg/m <sup>3</sup> = 0.32 ppm	2.7 (83)	2.8 (86)	445 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
189			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
190			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (§) 10 / 100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
191			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
192			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 7000, XP Tox OV1 Polytron Pulsar 2	10 // 100 %LEL 40 / 100 %LEL // 9200 ppm Gas-Library 25 / 100 %LEL // 5400 ppm Gas-Library 100 %LEL (2) 80 / 100 %LEL (2) 40 / 100 %LEL // 1.0 / 10 vol% (2) C2H4: 20 / 50 / 100 ppm / LDL = 5 ppm 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  S=1.3 Special version for Ethylene
193		10 (25)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron 7000, XP Tox NH3 LC	100 %LEL (§) 10 / 100 %LEL as NH3 x 5 (50 / 100 ppm x 5)	S=0.2 (L)
194			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (2)?	corrosive/sensor poison
195	1* (1.8)	1 (1.8)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 3000 C2H4O Polytron 7000, XP Tox OV1	100 %LEL 20 / 100 %LEL // 5200 ppm Gas-Library 25 / 100 %LEL // 6000 ppm Gas-Library 30 / 100 %LEL // 7800 ppm Gas-Library 100 %LEL (§) 100 %LEL (2) 80 / 100 %LEL // 2.0 / 2.3 vol% (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2) 50 ppm EO: 20 / 50 / 200 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval      S=1.0
196	100 (309)	100 (309)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 3000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) as Et2O (50 / 50 / 200 ppm)	S=0.4 (L)

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
197	Ethyl glycol CAS 110-80-5 C <sub>2</sub> H <sub>5</sub> OC <sub>2</sub> H <sub>4</sub> OH	EGEE C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	Cellosolve Ethylene glycol monoethyl ether 2-Ethoxyethanol	90.1 3.11 r	0.93	135 275°F	5	40 104°F	1.8 (68)	1.7 (64)	1.7 (64)	235 IIB T3
198	Ethyl glycol acetate CAS 111-15-9 CH <sub>3</sub> COOC <sub>2</sub> H <sub>4</sub> OC <sub>2</sub> H <sub>5</sub>	EGEEA C <sub>6</sub> H <sub>12</sub> O <sub>3</sub>	2-Ethoxy ethylacetate Solvent GAC Ethylene glycol monoethyl ether acetate	132.2 4.56 r	0.98	156 313°F	2.7	51 124°F	1.2 (66)	1.2 (66)	1.7 (94)	380 IIA T2
199	2-Ethylhexyl acrylate CAS 103-11-7 CH <sub>2</sub> =CHCOOC <sub>6</sub> H <sub>13</sub>	C <sub>11</sub> H <sub>20</sub> O <sub>2</sub>	2-Propenoic acid-2-ethylhexyl ester 2-Ethylhexyl-2-propenoate Acrylic acid (2-ethylhexyl)ester	184.3 6.36 r	0.89	214 417°F	0.13	82 180°F	0.8 (61)	0.7 (54)	0.8 (61)	245 T3
200	Ethyl lactate CAS 97-64-3 CH <sub>3</sub> CH(OH)COOC <sub>2</sub> H <sub>5</sub>	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	Hydroxypropionic acid ethyl ester Lactic acid ethyl ester Propanoic acid 2-hydroxy ethylester	118.1 4.08 r	1.03	154 309°F	2.9	46 115°F	1.5 (74)			400 IIA T2
201	Ethyl mercaptan CAS 75-08-1 C <sub>2</sub> H <sub>5</sub> SH	EtM C <sub>2</sub> H <sub>6</sub> S	Ethanethiol Mercaptoethane Ethyl sulfhydrylate	62.1 2.14 r 129 v	0.84	35 95°F	579	-45 -49°F	2.8 (72)	2.8 (72)	2.8 (72)	295 IIB T3
202	Ethylmethacrylate CAS 97-63-2 CH <sub>2</sub> =C(CH <sub>3</sub> )COOC <sub>2</sub> H <sub>5</sub>	EMA C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	Methacrylic acid ethylester 2-Methyl-2-propenoic acid ethylester	114.1 3.94 r 110 v	0.91	117 243°F	21	19 66°F	1.4 (67)	1.5 (71)		450 IIA T2
203	Ethylpropionate CAS 105-37-3 C <sub>2</sub> H <sub>5</sub> COOC <sub>2</sub> H <sub>5</sub>	C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	Propionic acid ethylester Ethyl propanoate Propanoic acid ethylester	102.1 3.52 r 129 v	0.89	99 210°F	36	12 54°F	1.8 (77)			455 IIA T1
204	Ethylpropylether CAS 628-32-0 C <sub>2</sub> H <sub>5</sub> OC <sub>3</sub> H <sub>7</sub>	C <sub>6</sub> H <sub>12</sub> O	1-Ethoxypropane Propylethylether	88.2 3.04 r 128 v	0.73	64 147°F	194	<-20 <-4°F	1.7 (62)			IIB
205	Ethyl vinyl ether CAS 109-92-2 CH <sub>2</sub> =CHOC <sub>2</sub> H <sub>5</sub>	EVE C <sub>4</sub> H <sub>8</sub> O	Vinyl ethyl ether Ethoxyethene	72.1 2.49 r 102 v	0.75	36 97°F	564	-45 -49°F	1.7 (51)			200 IIB T4
206	Fluorine CAS 7782-41-4 F <sub>2</sub>	F <sub>2</sub>		38.0 1.31 r	Gas	-188 -306°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
207	Formaldehyde CAS 50-00-0 HCHO	CH <sub>2</sub> O	Methanal Methyl aldehyde Oxomethane	30.0 1.04 r	Gas	-19 -2°F	Gas	Gas	7.0 (88)	7.0 (88)	7.0 (88)	424 IIB T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
197	2 (7.5)	200 (751)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
198	2 (11)	100 (551)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL	
199			Dräger PIR 7000 Typ 340 Polytron IR Typ 340	30 %LEL (§) 25 / 30 %LEL	only for concentrations < 30 %LEL only for concentrations < 30 %LEL
200			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	25 / 100 %LEL 40 / 100 %LEL 15 / 100 %LEL 20 / 100 %LEL 100 %LEL 100 %LEL	
201	0.5 (1.3)	10c (26)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron 7000, XP Tox H2S LC	100 %LEL (§) 40 / 100 %LEL 100 %LEL (§) 10 / 100 %LEL 100 %LEL EtM: 20 / 50 / 100 ppm / LDL = 1 ppm	
202			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3) as Et2O x 2 (50 / 50 / 200 ppm x 2)	S=0.2 (L)
203			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 3000 ppm (3)?	
204			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 2000 ppm (3) 100 %LEL	
205			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL 100 %LEL (?) 100 %LEL (?) 3000 ppm (3) as EO x 2 (20 / 50 / 200 ppm x 2)	polymerizing/sensor poison  S=0.5 (L)
206	1 (1.6)	0.1 (0.16)	Polytron 7000, XP Tox Cl2	F2: 1 / 10 / 50 ppm	
207		0.75 (0.94)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	1000 ppm (?) 1000 ppm (?) 3000 / 5000 ppm (3) FYDE: 20 / 50 / 100 ppm / LDL = 5 ppm	S=1.0

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
208	Formic acid CAS 64-18-6 HCOOH	CH <sub>2</sub> O <sub>2</sub>	Methanoic acid Hydrogen carboxylic acid	46.0 1.59 r	1.22	101 214°F	45	42 108°F	16.4 (314)	18.0 (345)	18.0 (345)	520 IIA T1
209	Furan CAS 110-00-9 (CH) <sub>4</sub> O	Oxol C <sub>4</sub> H <sub>4</sub> O	Furfuran 1,4-Epoxy-1,3-butadiene Oxacyclopentadiene	68.1 2.35 r 104 v	0.94	32 90°F	658	-50 -58°F	2.3 (65)	2.3 (65)		390 IIB T2
210	Furfuraldehyde CAS 98-01-1 C <sub>4</sub> H <sub>3</sub> OCHO	C <sub>6</sub> H <sub>4</sub> O <sub>2</sub>	Furfural 2-Furaldehyde 2-Furancarboxaldehyde	96.1 3.32 r	1.16	162 324°F	1.4	60 140°F	2.1 (84)	2.1 (84)	2.1 (84)	315 IIB T2
211	Furfuryl alcohol CAS 98-00-0 C <sub>4</sub> H <sub>3</sub> OCH <sub>2</sub> OH	C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	Furfur alcohol 2-Furan methanol 2-Hydroxymethylfuran	98.1 3.39 r	1.13	171 340°F	0.53	75 167°F	1.8 (74)	1.8 (74)	1.8 (74)	390 T2
212	Germanium hydride CAS 7782-65-2 GeH <sub>4</sub>	H <sub>4</sub> Ge	Germane Germanium tetrahydride Germanomethane	76.6 2.64 r	Gas	-88.5 -127°F	Gas	Gas	1.0 (32)			350 T2
213	Germanium tetrachloride CAS 10038-98-9 GeCl <sub>4</sub>	Cl <sub>4</sub> Ge	Tetrachlorogermane	214.4 7.40 r	1.88	82 180°F	97	n.a.	n.a.	n.a.	n.a.	n.a.
214	Germanium tetrafluoride CAS 7783-58-6 GeF <sub>4</sub>	F <sub>4</sub> Ge	Tetrafluorogermane	148.6 5.13 r	Gas	-37 -35°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
215	Halothane CAS 151-67-7 CF <sub>3</sub> CHBrCl	R 123B1 C <sub>2</sub> HBrClF <sub>3</sub>	Fluothrane 2-Bromo-2-chloro-1,1,1-trifluoroethane	197.4 6.81 r	1.87	50.2 122°F	324	n.a.	n.a.	n.a.	n.a.	n.a.
216	n-Heptane CAS 142-82-5 C <sub>7</sub> H <sub>16</sub>	C <sub>7</sub> H <sub>16</sub>		100.2 3.46 r 74 v	0.68	98 208°F	47	-7 19°F	0.8 (33)	0.85 (35)	1.05 (44)	220 IIA T3
217	1-Heptanol CAS 111-70-6 C <sub>7</sub> H <sub>16</sub> OH	C <sub>7</sub> H <sub>16</sub> O	Heptyl alcohol	116.2 4.01 r	0.82	175 347°F	0.15	70 158°F	0.9 (44)	0.9 (44)		275 IIB T3
218	2-Heptanone CAS 110-43-0 CH <sub>3</sub> COC <sub>6</sub> H <sub>11</sub>	MAK C <sub>7</sub> H <sub>14</sub> O	Methyl amyl ketone n-Amyl methyl ketone Methyl pentyl ketone	114.2 3.94 r	0.82	151 304°F	3.4	40 104°F	1.0 (48)	1.1 (52)	1.1 (52)	305 IIA T2
219	Heptene CAS 592-76-7 C <sub>6</sub> H <sub>11</sub> CH=CH <sub>2</sub>	C <sub>7</sub> H <sub>14</sub>	n-Hepten 1-Heptylene	98.2 3.39 r 88 v	0.70	94 201°F	64	-8 18°F	1.0 (41)			250 IIB T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
208	5 (9.6)	5 (9.6)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox AC	25 %LEL (§) 10 / 25 %LEL 10 %LEL // 5000 / 5000 ppm (3) Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm	only for concentrations < 25 %LEL only for concentrations < 25 %LEL only for concentrations < 10 %LEL
209			PEX 3000, SE Ex, FX, XP Ex Polytron 7000, XP Tox OV1	10 // 100 %LEL as Et2O (50 / 50 / 200 ppm)	S=0.4 (L)
210		5 (20)	Polytron 7000, XP Tox OV1	as Aald (50 / 100 / 200 ppm)	S=0.3 (L)
211	10 (41)	50 (204)	Polytron 7000, XP Tox OV1	as IPA (100 / 200 / 300 ppm)	S=0.35 (L)
212		0.2 (0.64)	Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC	GeH4: 0.3 / 1 / 20 ppm / LDL = 0.05 ppm GeH4: 0.3 / 1 / 5 ppm / LDL = 0.02 ppm	
213			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm as SiCl4 (5 / 10 / 20 ppm)	
214			Polytron 7000, XP Tox AC	GeF4: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
215	5 (41)	2c (16)	Pyrolyzer Polytron 7500 PFC	20 ppm / LDL = 0.5 ppm	S=1.2
216	500 (2088)	500 (2088)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 25 / 100 %LEL 40 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	S=0.97 (Propane=1)
217			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 2000 / 5000 ppm (3) 100 %LEL	
218	50 (238)	100 (476)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
219			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
220	Hexafluoro-1.3-butadiene CAS 685-63-2 F <sub>2</sub> C=CF-CF=CF <sub>2</sub>	C <sub>4</sub> F <sub>6</sub>	Perfluoro butadiene	162.0 5.59 r	Gas	6 43°F	Gas	Gas	7.0 (473)			
							1 ppm = 6.75 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.15 ppm			
221	Hexafluoroethane CAS 76-16-4 CF <sub>3</sub> CF <sub>3</sub>	R 116 C <sub>2</sub> F <sub>6</sub>		138.0 4.76 r	Gas	-78.2 -109°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
							1 ppm = 5.75 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.17 ppm			
222	Hexamethyldisilazane CAS 999-97-3 (CH <sub>3</sub> ) <sub>3</sub> Si-NH-Si(CH <sub>3</sub> ) <sub>3</sub>	HMDS C <sub>6</sub> H <sub>19</sub> NSi <sub>2</sub>	Bis-trimethylsilyl-amine Tetramethyl-3-aza-2.4-disilapentane	161.4 5.57 r 103 v	0.78	126 259°F	20	6 43°F	0.8 (54)		0.8 (54)	325 T2
							1 ppm = 6.73 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.15 ppm			
223	Hexamethyldisiloxane CAS 107-46-0 (CH <sub>3</sub> ) <sub>3</sub> Si-O-Si(CH <sub>3</sub> ) <sub>3</sub>	HMDSO C <sub>6</sub> H <sub>18</sub> OSi <sub>2</sub>	Tetramethyl-3-oxa-2.4-disilapentane	162.4 5.61 r 93 v	0.76	101 214°F	28	-8 18°F	0.7 (47)			310 IIB T2
							1 ppm = 6.77 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.15 ppm			
224	n-Hexane CAS 110-54-3 C <sub>6</sub> H <sub>14</sub>	C <sub>6</sub> H <sub>14</sub>		86.2 2.98 r 81 v	0.66	69 156°F	162	-22 -8°F	1.0 (36)	1.0 (36)	1.1 (40)	230 IIA T3
							1 ppm = 3.59 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.28 ppm			
225	1-Hexanol CAS 111-27-3 C <sub>6</sub> H <sub>13</sub> OH	C <sub>6</sub> H <sub>14</sub> O	Hexyl alcohol Amyl carbinol	102.2 3.53 r	0.82	157 315°F	0.9	60 140°F	1.1 (47)	1.1 (47)		280 IIB T3
							1 ppm = 4.26 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.23 ppm			
226	2-Hexanone CAS 591-78-6 CH <sub>3</sub> COC <sub>4</sub> H <sub>9</sub>	MBK C <sub>6</sub> H <sub>12</sub> O	Methyl butyl ketone Butyl methyl ketone	100.2 3.46 r 93 v	0.81	128 262°F	3.5	23 73°F	1.2 (50)	1.2 (50)	1.2 (50)	420 IIA T2
							1 ppm = 4.18 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.24 ppm			
227	3-Hexanone CAS 589-38-8 C <sub>2</sub> H <sub>5</sub> COC <sub>3</sub> H <sub>7</sub>	C <sub>6</sub> H <sub>12</sub> O	Ethylpropylketone	100.2 3.46 r 76 v	0.82	123 253°F	14	20 68°F	1.0 (42)			IIA
							1 ppm = 4.18 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.24 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
220		5 (34)	Pyrolyzer Polytron 3500 C4F6 Pyrolyzer Polytron 7500 PFC	30 ppm C4F6: 2 / 30 ppm / LDL = 0.5 ppm	S = 1.25
221			Pyrolyzer Polytron 7500 PFC	400 ppm / LDL = 10 ppm	S=0.1
222			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL (§) 60 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL as MeOH (20 / 50 / 200 ppm)	S=1.5 (L)
223			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	25 / 100 %LEL 50 / 100 %LEL 15 / 100 %LEL 15 / 100 %LEL 100 %LEL 15 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) as MeOH (20 / 50 / 200 ppm)	S=0.95 (L)
224	50 (180)	500 (1796)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 25 / 100 %LEL // 2500 ppm Gas-Library 25 / 100 %LEL // 2200 ppm Gas-Library 5 / 100 %LEL // 500 ppm Gas-Library 5 / 100 %LEL // 500 ppm Gas-Library 100 %LEL (3) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 30 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval Performance Approval Performance Approval S=0.82 (Propane=1)
225	50 (213)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
226	5 (21)	100 (418)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 3000 ppm (3)?	
227			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 3000 ppm (3)?	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
228	1-Hexene CAS 592-41-6 C <sub>6</sub> H <sub>12</sub> CH=CH <sub>2</sub>	C <sub>6</sub> H <sub>12</sub>	n-Hexene Butyl ethylene	84.2 2.91 r 94 v	0.67	63 145°F	200	-26 -15°F	1.2 (42) 1 mg/m <sup>3</sup> = 0.29 ppm		1.2 (42)	255 IIB T3
229	2-Hexene CAS 592-43-8 CH <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CH=CHCH <sub>3</sub>	C <sub>6</sub> H <sub>12</sub>		84.2 2.91 r 91 v	0.69	69 156°F	193	-20 -4°F	1.2 (42) 1 mg/m <sup>3</sup> = 0.29 ppm			253 T3
230	n-Hexylamine CAS 111-26-2 C <sub>6</sub> H <sub>13</sub> NH <sub>2</sub>	C <sub>6</sub> H <sub>13</sub> N	1-Aminohexane 1-Hexanamine	101.2 3.49 r 172 v	0.77	131 268°F	8.7	27 81°F	2.1 (89) 1 mg/m <sup>3</sup> = 0.24 ppm			270 IIA T3
231	Hydrazine CAS 302-01-2 H <sub>2</sub> N-NH <sub>2</sub>	H <sub>4</sub> N <sub>2</sub>	Diamine Diazane	32.0 1.10 r	1.01	113 235°F	21	40 104°F	4.7 (63) 1 mg/m <sup>3</sup> = 0.75 ppm		2.9 (39)	270 T3
232	Hydrogen CAS 1333-74-0 H <sub>2</sub>	R 702 H <sub>2</sub>		2.0 0.07 r	Gas	-253 -423°F	Gas	Gas	4.0 (3.3) 1 mg/m <sup>3</sup> = 12.00 ppm	4.0 (3.3)	4.0 (3.3)	560 IIC T1
233	Hydrogen bromide CAS 10035-10-6 HBr	HBr	Hydrobromic acid	80.9 2.79 r	Gas	-67 -89°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.30 ppm	n.a.	n.a.	n.a.
234	Hydrogen chloride CAS 7647-01-0 HCl	HCl	Hydrochloric acid Muriatic acid	36.5 1.26 r	Gas	-85 -121°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.66 ppm	n.a.	n.a.	n.a.
235	Hydrogen cyanide CAS 74-90-8 HCN	AC CHN	Hydrocyanic acid Formonitrile Prussic acid	27.0 0.93 r 132 v	0.69	26 79°F	817	<-20 <-4°F	5.4 (61) 1 mg/m <sup>3</sup> = 0.89 ppm	5.4 (61)	5.6 (63)	535 IIB T1
236	Hydrogen fluoride CAS 7664-39-3 HF	HF-A HF	Hydrofluoric acid	20.0 0.69 r	Gas	19.5 67°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 1.20 ppm	n.a.	n.a.	n.a.
237	Hydrogen iodide CAS 10034-85-2 HI	HI		127.9 4.41 r	Gas	-35 -31°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.19 ppm	n.a.	n.a.	n.a.
238	Hydrogen peroxide CAS 7722-84-1 H <sub>2</sub> O <sub>2</sub>	H <sub>2</sub> O <sub>2</sub>	Hydrogen dioxide Hydroperoxide	34.0 1.17 r	1.24	107 225°F	1.9	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.71 ppm	n.a.	n.a.	n.a.
239	Hydrogen selenide CAS 7783-07-5 H <sub>2</sub> Se	H <sub>2</sub> Se	Selenium hydride Dihydrogen selenide Selane	81.0 2.80 r	Gas	-41 -42°F	Gas	Gas	n.a. 1 mg/m <sup>3</sup> = 0.30 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
228			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 20 / 100 %LEL // 2400 ppm Gas-Library 30 / 100 %LEL 8 / 100 %LEL // 960 ppm Gas-Library 100 %LEL (S) 100 %LEL 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
229			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
230			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 / 5000 ppm (3) 100 %LEL	corrosive/sensor poison
231		1 (1.3)	PEX 3000, SE Ex, FX, XP Ex Polytron 3000 N2H4 Polytron 7000, XP Tox N2H4	100 %LEL 1 ppm N2H4: 0.3 / 1 / 3 ppm / LDL = 0.02 ppm	
232			PEX 3000, SE Ex, FX, XP Ex Polytron 3000 H2 Polytron 7000, XP Tox H2	10 // 100 %LEL 1000 / 3000 ppm H2: 500 / 1000 / 3000 ppm / LDL = 15 ppm	SE Ex / PEX 3000: Perf. Approval
233	2 (6.7)	3 (10)	Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	HBr: 3 / 10 / 30 ppm / LDL = 0.5 ppm HBr: 20 / 30 / 100 ppm / LDL = 1 ppm	
234	2 (3.0)	5c (7.6)	Polytron 3000 AC Polytron 3000 HCl Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	20 ppm 30 ppm HCl: 3 / 10 / 30 ppm / LDL = 0.5 ppm HCl: 20 / 30 / 100 ppm / LDL = 1 ppm	
235		10 (11)	Polytron 3000 HCN Polytron 7000, XP Tox HCN	50 ppm HCN: 10 / 50 / 50 ppm / LDL = 1.5 ppm	
236	1 (0.83)	3 (2.5)	Polytron 3000 AC Polytron 7000, XP Tox AC	10 ppm HF: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
237			Polytron 7000, XP Tox AC	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
238		1 (1.4)	Polytron 7000, XP Tox H2O2 HC Polytron 7000, XP Tox H2O2 LC	H2O2: 1000 / 4000 / 7000 ppm H2O2: 1 / 5 / 300 ppm / LDL = 0.1 ppm	LDL = 100 ppm
239	0.015 (0.05)	0.05 (0.17)	Polytron 7000, XP Tox Hydrides	SeH2: 0.5 / 1 / 1 ppm / LDL = 0.3 ppm	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
240	Hydrogen sulfide CAS 7783-06-4 H <sub>2</sub> S	H <sub>2</sub> S	Hydrosulfuric acid Sulphuretted hydrogen Sulfane	34.1 1.18 r	Gas	-60 -76°F	Gas	Gas	3.9 (55)	4.0 (57)	4.0 (57)	270 IIB T3
241	Isopflurane CAS 26675-46-7 CHF <sub>2</sub> -O-CHClCF <sub>3</sub>	C <sub>3</sub> H <sub>2</sub> ClF <sub>5</sub> O	Chlorotrifluoroethylidifluoromethylether Forane	184.5 6.37 r	1.50	48.5 119°F	349	n.a.	n.a.	n.a.	n.a.	n.a.
242	Isoprene CAS 78-79-5 CH <sub>2</sub> =C(CH <sub>3</sub> )CH=CH <sub>2</sub>	C <sub>5</sub> H <sub>8</sub>	2-Methyl-1.3-butadiene	68.1 2.35 r 62 v	0.68	34 93°F	608	-48 -54°F	1.0 (28)		1.5 (43)	220 IIB T3
243	Lead tetraethyl CAS 78-00-2 Pb(C <sub>2</sub> H <sub>5</sub> ) <sub>4</sub>	TEL C <sub>8</sub> H <sub>20</sub> Pb	Tetraethyl lead Tetraethylplumbane	323.4 11.16 r	1.65	180 356°F	0.3	80 176°F	1.8 (243)		1.8 (243)	
244	Mesityl oxide CAS 141-79-7 (CH <sub>3</sub> ) <sub>2</sub> C=CHCOCH <sub>3</sub>	MO C <sub>6</sub> H <sub>10</sub> O	4-Methyl-3-penten-2-one Methyl-i-butylene ketone i-Propylidene acetone	98.1 3.39 r 101 v	0.85	130 266°F	11	24 75°F	1.4 (57)	1.6 (65)	1.4 (57)	340 IIA T2
245	Methacrylic acid CAS 79-41-4 CH <sub>2</sub> =C(CH <sub>3</sub> )COOH	C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	2-Methyl-2-propenoic acid α-Methylacrylic acid	86.1 2.97 r	1.02	161 322°F	0.87	68 154°F	2.1 (75)			385 T2
246	Methane CAS 74-82-8 CH <sub>4</sub>	R 50 CH <sub>4</sub>		16.0 0.55 r	Gas	-162 -260°F	Gas	Gas	4.4 (29)	4.4 (29)	5.0 (33)	595 IIA T1
247	Methanol CAS 67-56-1 CH <sub>3</sub> OH	MeOH CH <sub>4</sub> O	Methyl alcohol Carbinol	32.0 1.10 r 152 v	0.79	65 149°F	130	9 48°F	6.0 (80)	6.0 (80)	6.0 (80)	440 IIA T2
248	Methoxy dihydropyran CAS 4454-05-1 OCH=CH(CH <sub>2</sub> ) <sub>2</sub> CHOCH <sub>3</sub>	MDHP C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	3.4-Dihydro-2-methoxypyran 2-Methoxy-3.4-dihydropyran	114.1 3.94 r 71 v	1.00	127 261°F	12.4	16 61°F	1.0 (48)			210 T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
240		4 (5.7)	Polytron 3000 H2S Polytron 7000, XP Tox H2S Polytron 7000, XP Tox H2S HC Polytron 7000, XP Tox H2S LC Polytron TX H2S	20 / 50 / 100 ppm H2S: 5 / 50 / 100 ppm / LDL = 0.5 ppm H2S: 100 / 500 / 1000 ppm / LDL = 10 ppm H2S: 10 / 50 / 100 ppm / LDL = 1 ppm 20 / 50 / 100 ppm	
241			Pyrolyzer Polytron 7500 PFC	20 ppm / LDL = 0.5 ppm	S=1.3
242			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (S) 50 / 100 %LEL 100 %LEL (2)?	polymerizing/sensor poison
243	0.004 (0.05)	0.006 (0.08)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 2000 ppm (3)	
244		25 (102)	Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	5000 ppm (3)? as EtOH (100 / 200 / 300 ppm)	S=0.6 (L)
245		20 (72)	Polytron 7000, XP Tox OV1	as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
246			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 15 / 100 %LEL // 6600 ppm / 100 vol% 15 / 100 %LEL // 6600 ppm / 100 vol% 30 / 100 %LEL // 13200 ppm Gas-Library 15 / 100 %LEL // 6600 ppm Gas-Library 100 %LEL (1) 20 / 100 %LEL // 1 / 100 vol% (1) 20 / 100 %LEL // 1.0 / 10 vol% (1) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval
247	200 (267)	200 (267)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 10 / 100 %LEL // 5500 ppm Gas-Library 25 / 100 %LEL // 12000 ppm Gas-Library 5 / 100 %LEL // 2750 ppm Gas-Library 5 / 100 %LEL 100 %LEL (3) 5 / 100 %LEL // 3000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) MeOH: 20 / 50 / 200 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=1.2
248			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	35 / 100 %LEL 40 / 100 %LEL 10 / 100 %LEL 15 / 100 %LEL 100 %LEL	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
249	2-Methoxyethanol CAS 109-86-4 CH <sub>3</sub> OC <sub>2</sub> H <sub>4</sub> OH	EGME C <sub>3</sub> H <sub>8</sub> O <sub>2</sub>	Methyl glycol Ethylene glycol monomethyl ether Glycol monomethyl ether	76.1 2.63 r	0.97	124 255°F	8.1	39 102°F	2.5 (79)	1.8 (57)	1.8 (57)	285 IIB T3
									1 mg/m <sup>3</sup> = 3.17 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.32 ppm			
250	1-Methoxy-2-propanol CAS 107-98-2 CH <sub>3</sub> OCH <sub>2</sub> CH(OH)CH <sub>3</sub>	PGME C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	Propylene glycol monomethyl ether 1,2-Propanediol-1-monomethyl ether 1-Methyl propylene glycol-2	90.1 3.11 r	0.92	120 248°F	12	32 90°F	1.8 (68)	1.6 (60)	1.6 (60)	270 IIB T3
									1 mg/m <sup>3</sup> = 3.75 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.27 ppm			
251	1-Methoxy-2-propyl acetate CAS 108-65-6 CH <sub>3</sub> COOC <sub>3</sub> H <sub>7</sub> OCH <sub>3</sub>	PGMEA C <sub>6</sub> H <sub>12</sub> O <sub>3</sub>	Acetic acid methoxy propylic ester 2-Methoxy-1-methylethyl acetate Propylene glycol methylether acetate	132.2 4.56 r	0.97	150 302°F	3.1	43 109°F	1.3 (72)			315 IIB T2
									1 mg/m <sup>3</sup> = 5.51 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.18 ppm			
252	Methyl acetate CAS 79-20-9 CH <sub>3</sub> COOCH <sub>3</sub>	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	Acetic acid methyl ester Methyl ethanoate	74.1 2.56 r 154 v	0.93	57 135°F	230	-13 9°F	3.1 (96)	3.1 (96)	3.1 (96)	505 IIA T1
									1 mg/m <sup>3</sup> = 3.09 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.32 ppm			
253	Methyl acrylate CAS 96-33-3 CH <sub>2</sub> =CHCOOCH <sub>3</sub>	C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	Acrylic acid methyl ester Methyl propenoate Methoxycarbonylethylene	86.1 2.97 r 113 v	0.95	80 176°F	91	-3 27°F	2.0 (72)	1.95 (70)	2.8 (100)	415 IIB T2
									1 mg/m <sup>3</sup> = 3.59 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.28 ppm			
254	Methylallylchloride CAS 563-47-3 CH <sub>2</sub> =C(CH <sub>3</sub> )CH <sub>2</sub> Cl	C <sub>4</sub> H <sub>7</sub> Cl	3-Chloro-2-methyl-1-propene 2-Methylallyl chloride 3-Chloro-i-butene	90.6 3.13 r 140 v	0.93	72 162°F	138	-12 10°F	2.3 (87)	2.1 (79)		540 IIA T1
									1 mg/m <sup>3</sup> = 3.78 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.26 ppm			
255	Methylamine CAS 74-89-5 CH <sub>3</sub> NH <sub>2</sub>	MA CH <sub>5</sub> N	Aminomethane R 630 Monomethylamine	31.1 1.07 r	Gas	-6 21°F	Gas	Gas	4.9 (63)	4.2 (54)	4.9 (63)	430 IIA T2
									1 ppm = 1.30 mg/m <sup>3</sup>			
									1 mg/m <sup>3</sup> = 0.77 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
249	1 (3.2)	25 (79)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	10 // 100 %LEL 30 / 100 %LEL 40 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 5 / 100 %LEL // 2000 ppm (3) 100 %LEL as MeOH (20 / 50 / 200 ppm)	S=1.4 (L)
250	100 (375)	100 (375)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 20 / 100 %LEL // 3200 ppm Gas-Library 20 / 100 %LEL // 3200 ppm Gas-Library 10 / 100 %LEL // 1600 ppm Gas-Library 10 / 100 %LEL 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL	Performance Approval Performance Approval Performance Approval
251	50 (275)		Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	15 / 100 %LEL // 2100 ppm Gas-Library 30 / 100 %LEL 5 / 100 %LEL // 700 ppm Gas-Library 10 / 100 %LEL 100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
252	200 (618)	200 (618)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 15 / 100 %LEL 100 %LEL (?) 20 / 100 %LEL (3) 100 %LEL 20 / 100 %LEL // 5000 ppm (3)	
253	5 (18)	10 (36)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron 7000, XP Tox OV1	30 / 100 %LEL // 6000 ppm Gas-Library 30 / 100 %LEL 30 / 100 %LEL // 6000 ppm Gas-Library 30 / 100 %LEL 100 %LEL (3) as Aald x 2 (50 / 100 / 200 ppm x 2)	S=0.15 (L)
254			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (2)?	corrosive/sensor poison
255	10 (13)	10 (13)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 5 / 100 %LEL 100 %LEL (?) 5 / 100 %LEL // 3000 ppm (3) MA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
256	Methyl bromide CAS 74-83-9 CH <sub>3</sub> Br	R 40B1 CH <sub>3</sub> Br	Bromomethane Monobromomethane	94.9 3.28 r	Gas 1 ppm = 3.95 mg/m <sup>3</sup>	4 39°F	Gas	Gas	8.6 (340) 1 mg/m <sup>3</sup> = 0.25 ppm		10.0 (395)	535 IIA T1
257	2-Methyl-1-butanol CAS 137-32-6 C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )CH <sub>2</sub> OH	C <sub>6</sub> H <sub>12</sub> O	i-Pentanol 2-Methyl butyl alcohol	88.2 3.04 r	1 ppm = 3.68 mg/m <sup>3</sup>	129 264°F	3	40 104°F	1.2 (44) 1 mg/m <sup>3</sup> = 0.27 ppm	1.2 (44)		340 IIA T2
258	Methyl-tert-butyl ether CAS 1634-04-4 CH <sub>3</sub> OC(CH <sub>3</sub> ) <sub>3</sub>	MTBE C <sub>6</sub> H <sub>12</sub> O	tert-Butyl methyl ether 2-Methoxy-2-methyl propane 2-Methyl-2-methoxy propane	88.2 3.04 r 119 v	0.74 1 ppm = 3.68 mg/m <sup>3</sup>	55 131°F	272	-30 -22°F	1.6 (59) 1 mg/m <sup>3</sup> = 0.27 ppm	1.5 (55)	1.6 (59)	435 IIA T2
259	Methyl-i-butylketone CAS 108-10-1 (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> COCH <sub>3</sub>	MiBK C <sub>6</sub> H <sub>12</sub> O	4-Methyl-2-pentanone i-Propyl acetone Hexone	100.2 3.46 r 94 v	0.80 1 ppm = 4.18 mg/m <sup>3</sup>	116 241°F	19	14 57°F	1.2 (50) 1 mg/m <sup>3</sup> = 0.24 ppm	1.2 (50)	1.2 (50)	475 IIA T1
260	2-Methyl-3-butyn-2-ol CAS 115-19-5 CHCC(CH <sub>3</sub> ) <sub>2</sub> OH	C <sub>6</sub> H <sub>8</sub> O	Dimethyl ethynyl carbinol Ethynyl dimethyl carbinol	84.1 2.90 r 98 v	0.86 1 ppm = 3.50 mg/m <sup>3</sup>	104 219°F	20	20 68°F	1.6 (56) 1 mg/m <sup>3</sup> = 0.29 ppm			350 IIB T2
261	Methyl chloride CAS 74-87-3 CH <sub>3</sub> Cl	R 40 CH <sub>3</sub> Cl	Chloromethyl Chloromethane	50.5 1.74 r	Gas 1 ppm = 2.10 mg/m <sup>3</sup>	-24 -11°F	Gas	Gas	7.6 (160) 1 mg/m <sup>3</sup> = 0.48 ppm	7.6 (160)	8.1 (170)	625 IIA T1
262	Methyl chloroformate CAS 79-22-1 ClCOOCH <sub>3</sub>	C <sub>2</sub> H <sub>3</sub> ClO <sub>2</sub>	Chloroformic acid methyl ester Methoxy carbonyl chloride Methyl chlorocarbonate	94.5 3.26 r 362 v	1.22 1 ppm = 3.94 mg/m <sup>3</sup>	72 162°F	137	10 50°F	7.5 (295) 1 mg/m <sup>3</sup> = 0.25 ppm	7.5 (295)	6.7 (264)	475 IIA T1
263	Methylcyclohexane CAS 108-87-2 (CH <sub>2</sub> ) <sub>5</sub> CHCH <sub>3</sub>	MCH C <sub>7</sub> H <sub>14</sub>	Hexahydrotoluene Cyclohexylmethane	98.2 3.39 r 88 v	0.77 1 ppm = 4.09 mg/m <sup>3</sup>	101 214°F	48	-4 25°F	1.1 (45) 1 mg/m <sup>3</sup> = 0.24 ppm	1.0 (41)	1.2 (49)	260 IIA T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
256		20c (79)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (§) 25 / 100 %LEL 100 %LEL (§) 20 / 100 %LEL 100 %LEL (?) 20 / 100 %LEL (3)	
257			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL	
258	50 (184)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 20 / 100 %LEL // 2400 ppm Gas-Library 20 / 100 %LEL 10 / 100 %LEL // 800 ppm Gas-Library 10 / 100 %LEL // 800 ppm Gas-Library 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL	
259	20 (84)	100 (418)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 25 / 100 %LEL // 3000 ppm Gas-Library 20 / 100 %LEL // 2400 ppm Gas-Library 10 / 100 %LEL // 1200 ppm Gas-Library 100 %LEL (§) 100 %LEL (3) 10 / 100 %LEL // 1000 ppm (3) 100 %LEL 30 / 100 %LEL // 4000 ppm (3)	Performance Approval Performance Approval Performance Approval  Performance Approval
260	0.9 (3.2)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3)	
261	50 (105)	100 (210)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	20 / 100 %LEL // 15200 ppm Gas-Library 30 / 100 %LEL 10 / 100 %LEL // 7600 ppm Gas-Library 10 / 100 %LEL // 7600 ppm Gas-Library 100 %LEL 10 / 100 %LEL (3) 20 / 100 %LEL (3) // 1.0 / 2.3 vol% (2)	Performance Approval  Performance Approval
262	0.2 (0.79)		Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (§) 20 / 100 %LEL	
263	200 (818)	500 (2046)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 30 / 100 %LEL 80 / 100 %LEL 5 / 100 %LEL 10 / 100 %LEL 100 %LEL 1000 ppm (3) 100 %LEL	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
264	Methyl ethyl carbonate CAS 623-53-0 (CH <sub>3</sub> O)CO(OC <sub>2</sub> H <sub>5</sub> )	EMC C <sub>4</sub> H <sub>8</sub> O <sub>3</sub>	Carbonic acid ethyl methyl ester Ethyl methyl carbonate	104.1 3.59 r 129 v	1.01	107 225°F		23 73°F	2.0 (87)	2.0 (87)		
							1 ppm = 4.34 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.23 ppm			
265	Methylethyl ether CAS 540-67-0 C <sub>2</sub> H <sub>5</sub> OCH <sub>3</sub>	C <sub>3</sub> H <sub>8</sub> O	Ethylmethyl ether Methoxy ethane	60.1 2.07 r	Gas	7.4 45°F	Gas	Gas	2.0 (50)	2.0 (50)		190 IIB T4
							1 ppm = 2.50 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.40 ppm			
266	2-Methyl-4-ethylhexane CAS 3074-75-7 (CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub>	C <sub>9</sub> H <sub>20</sub>	4-Ethyl-2-methylhexane	128.3 4.43 r 78 v	0.72	134 273°F		21 70°F	0.7 (37)			280 IIA T3
							1 ppm = 5.35 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.19 ppm			
267	Methyl ethyl ketone CAS 78-93-3 CH <sub>3</sub> COC <sub>2</sub> H <sub>5</sub>	MEK C <sub>4</sub> H <sub>8</sub> O	2-Butanone Methyl propanone Ethyl methyl ketone	72.1 2.49 r 84 v	0.80	80 176°F	105	-10 14°F	1.5 (45)	1.5 (45)	1.4 (42)	475 IIB T1
							1 ppm = 3.00 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.33 ppm			
268	Methylethyl sulfide CAS 624-89-5 CH <sub>3</sub> SC <sub>2</sub> H <sub>5</sub>	C <sub>3</sub> H <sub>6</sub> S	Methylthioethane 2-Thiabutane	76.2 2.63 r 102 v	0.84	66 151°F		-15 5°F	1.8 (57)			IIA
							1 ppm = 3.18 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.31 ppm			
269	Methylfluoride CAS 593-53-3 CH <sub>3</sub> F	R 41 CH <sub>3</sub> F	Fluoromethane	34.0 1.17 r	Gas	-78 -108°F	Gas	Gas				
							1 ppm = 1.42 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.71 ppm			
270	Methyl formate CAS 107-31-3 HCOOCH <sub>3</sub>	R 611 C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Formic acid methylester Methyl methanoate Methanoic acid methyl ester	60.1 2.07 r 193 v	0.97	32 90°F	642	-32 -26°F	5.0 (125)	5.0 (125)	4.5 (113)	450 IIA T2
							1 ppm = 2.50 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.40 ppm			
271	5-Methyl-2-hexanone CAS 110-12-3 CH <sub>3</sub> COCH <sub>2</sub> CH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub>	MiAK C <sub>7</sub> H <sub>14</sub> O	Methyl-i-amyl ketone i-Amyl methyl ketone i-Pentyl methyl ketone	114.2 3.94 r	0.89	144 291°F	6	35 95°F	1.0 (48)		1.0 (48)	455 IIA T1
							1 ppm = 4.76 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.21 ppm			
272	Methyl hydrazine CAS 60-34-4 CH <sub>3</sub> NH-NH <sub>2</sub>	MMH CH <sub>6</sub> N <sub>2</sub>	Monomethylhydrazine	46.1 1.59 r 82 v	0.88	87 189°F	50	-8 18°F	2.5 (48)		2.5 (48)	190 T4
							1 ppm = 1.92 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.52 ppm			
273	Methyl iodide CAS 74-88-4 CH <sub>3</sub> I	MeI CH <sub>3</sub> I	Iodomethane Halon 10001	141.9 4.90 r	2.28	42 108°F	443		8.5 (503)			355 T2
							1 ppm = 5.91 mg/m <sup>3</sup>		1 mg/m <sup>3</sup> = 0.17 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
264			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	15 / 100 %LEL 25 / 100 %LEL 15 / 100 %LEL 20 / 100 %LEL 100 %LEL 10 / 100 %LEL // 2000 ppm (3)	
265			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3) 100 %LEL	
266			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
267	200 (601)	200 (601)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 35 / 100 %LEL // 4500 ppm Gas-Library 20 / 100 %LEL // 2800 ppm Gas-Library 25 / 100 %LEL // 3000 ppm Gas-Library 25 / 100 %LEL 100 %LEL (3) 20 / 100 %LEL // 3000 ppm (3) 100 %LEL 30 / 100 %LEL // 5000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval  S=0.68 (Propane=1)
268			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	100 %LEL (\$) 35 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL	
269			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Pyrolyzer Polytron 7500 PFC	100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL (3) 100 ppm / LDL = 5 ppm	S=0.3
270	50 (125)	100 (250)	PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	10 // 100 %LEL 5 / 100 %LEL // 2000 ppm (3)	
271	20 (95)	100 (476)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
272		0.2c (0.38)	Polytron 7000, XP Tox N2H4	MMH: 1 / 1 / 3 ppm / LDL = 0.02 ppm	
273		5 (30)	Polytron 7000, XP Tox CO	CO: 50 / 300 / 1000 ppm	S approx. 1.0

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
274	Methyl mercaptan CAS 74-93-1 CH <sub>3</sub> SH	MeM CH <sub>4</sub> S	Methanethiol Mercaptomethane Methyl sulfhydrylate	48.1 1.66 r	Gas	6 43°F	Gas	Gas	4.1 (82)	4.1 (82)	3.9 (78)	360 IIA T2
275	Methyl methacrylate CAS 80-62-6 CH <sub>2</sub> =C(CH <sub>3</sub> )COOCH <sub>3</sub>	MMA C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methacrylic acid methyl ester Methyl-2-methyl-2-propenoate 2-Methyl-2-propenoic acid methyl ester	100.1 3.46 r 113 v	0.94	101 214°F	40	10 50°F	1.7 (71)	1.7 (71)	1.7 (71)	430 IIA T2
276	N-Methyl morpholine CAS 109-02-4 (CH <sub>2</sub> ) <sub>4</sub> ONCH <sub>3</sub>	NMM C <sub>5</sub> H <sub>11</sub> NO	4-Methyl morpholine	101.2 3.49 r 153 v	0.91	116 241°F	30	13 55°F	2.2 (93)			190 T4
277	2-Methyl pentane CAS 107-83-5 CH <sub>3</sub> CH(CH <sub>3</sub> )C <sub>3</sub> H <sub>7</sub>	C <sub>6</sub> H <sub>14</sub>	Dimethylpropylmethane i-Hexane	86.2 2.98 r 99 v	0.65	60 140°F	229	-40 -40°F	1.2 (43)	1.0 (36)		300 IIA T3
278	3-Methyl pentane CAS 96-14-0 CH <sub>3</sub> CH <sub>2</sub> CH(CH <sub>3</sub> )CH <sub>2</sub> CH <sub>3</sub>	C <sub>6</sub> H <sub>14</sub>	Methylpentane Diethylmethylmethane 1.2.3-Trimethylpropane	86.2 2.98 r 98 v	0.66	63 145°F	205	-40 -40°F	1.2 (43)	1.0 (36)		300 IIA T3
279	Methylpropionate CAS 554-12-1 C <sub>2</sub> H <sub>5</sub> COOCH <sub>3</sub>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	Propanoic acid methylester	88.1 3.04 r 145 v	0.91	80 176°F	84	-2 28°F	2.4 (88)			465 T1
280	Methylpropylether CAS 557-17-5 CH <sub>3</sub> OC <sub>3</sub> H <sub>7</sub>	C <sub>4</sub> H <sub>10</sub> O	1-Methoxypropane Methyl-n-propylether	74.1 2.56 r 108 v	0.73	39 102°F	507	<-20 <-4°F	1.7 (52)			IIIB
281	Methyl propyl ketone CAS 107-87-9 CH <sub>3</sub> COC <sub>3</sub> H <sub>7</sub>	MPK C <sub>6</sub> H <sub>10</sub> O	2-Pentanone Propyl methyl ketone 1-Ethyl acetone	86.1 2.97 r 99 v	0.81	102 216°F	16	7 45°F	1.5 (54)		1.5 (54)	445 IIA T2
282	Methyl-i-propyl ketone CAS 563-80-4 CH <sub>3</sub> COCH(CH <sub>3</sub> ) <sub>2</sub>	MIPK C <sub>6</sub> H <sub>10</sub> O	3-Methyl-2-butanone 1.1-Dimethyl acetone i-Propylmethylketone	86.1 2.97 r 93 v	0.81	94 201°F	53	-1 30°F	1.4 (50)			475 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
274	0.5 (1.0)	10c (20)	Polytron 7000, XP Tox H2S LC	MeM: 20 / 50 / 100 ppm / LDL = 1 ppm	
275	50 (209)	100 (417)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV2	10 // 100 %LEL 20 / 100 %LEL 20 / 100 %LEL // 3400 ppm Gas-Library 15 / 100 %LEL 100 %LEL (\$) 100 %LEL (3) 20 / 100 %LEL // 3000 ppm (3) 100 %LEL MMA: 20 / 50 / 100 ppm / LDL = 5 ppm	polymerizing         S=0.5
276			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3)	
277	500 (1796)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron Pulsar 2	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 1 // 4 / 8 LELm	S=0.88 (Propane=1)
278	500 (1796)	100 (359)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL	
279			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 3000 ppm (3)?	
280			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 2000 ppm (3) 100 %LEL	
281		200 (718)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 15 / 100 %LEL // 2000 ppm (3) 100 %LEL 25 / 100 %LEL // 4000 ppm (3)	
282		200 (718)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3)	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
283	3-Methyl pyridine CAS 108-99-6 (C <sub>6</sub> H <sub>4</sub> N)CH <sub>3</sub>	C <sub>6</sub> H <sub>7</sub> N	3-Picolin	93.1 3.21 r	0.96	144 291°F	6	36 97°F	1.3 (50)	1.4 (54)	1.3 (50)	538 IIA T1
									1 mg/m <sup>3</sup> = 0.26 ppm			
284	N-Methylpyrrolidone CAS 872-50-4 (CH <sub>2</sub> ) <sub>3</sub> CONCH <sub>3</sub>	NMP C <sub>6</sub> H <sub>9</sub> NO	N-Methyl-2-pyrrolidinone 1-Methyl-2-pyrrolidone	99.1 3.42 r	1.03	203 397°F	0.3	86 187°F	1.5 (62)			265 IIA T3
									1 mg/m <sup>3</sup> = 0.24 ppm			
285	Methylsilane CAS 992-94-9 SiH <sub>3</sub> CH <sub>3</sub>	MMS CH <sub>3</sub> Si	Silaethane Monomethylsilane	46.1 1.59 r	Gas	-58 -72°F	Gas	Gas	1.3 (25)			160 T4
									1 mg/m <sup>3</sup> = 0.52 ppm			
286	α-Methyl styrene CAS 98-83-9 C <sub>6</sub> H <sub>5</sub> C(CH <sub>3</sub> )=CH <sub>2</sub>	AMS C <sub>9</sub> H <sub>10</sub>	i-Propenyl benzene (1-Methyl ethenyl)benzene 2-Phenyl propene	118.2 4.08 r	0.91	166 331°F	3	40 104°F	0.9 (44)	0.8 (39)		455 IIB T1
									1 mg/m <sup>3</sup> = 0.20 ppm			
287	Morpholine CAS 110-91-8 (CH <sub>2</sub> ) <sub>4</sub> ONH	C <sub>4</sub> H <sub>9</sub> NO	Tetrahydro-1.4-oxazine Diethylene oximide	87.1 3.01 r	1.00	129 264°F	10.6	31 88°F	1.8 (65)	1.4 (51)	1.4 (51)	275 IIA T3
									1 mg/m <sup>3</sup> = 0.28 ppm			
288	Nitric acid CAS 7697-37-2 HNO <sub>3</sub>	HNO <sub>3</sub>	Hydrogen nitrate	63.0 2.17 r	1.52	84 183°F	56	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.38 ppm			
289	Nitrobenzene CAS 98-95-3 C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>	C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>		123.1 4.25 r	1.20	211 412°F	0.2	88 190°F	1.4 (72)	1.7 (87)	1.8 (92)	480 IIB T1
									1 mg/m <sup>3</sup> = 0.19 ppm			
290	Nitrogen dioxide CAS 10102-44-0 NO <sub>2</sub>	NTO NO <sub>2</sub>	Nitrogen peroxide Nitrogen tetroxide	46.0 1.59 r	1.44	21 70°F	1000	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.52 ppm			
291	Nitrogen monoxide CAS 10102-43-9 NO	NO	Nitric oxide	30.0 1.04 r	Gas	-152 -242°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.80 ppm			
292	Nitrogen trifluoride CAS 7783-54-2 NF <sub>3</sub>	F <sub>3</sub> N	Trifluoro ammonia Trifluoro amine	71.0 2.45 r	Gas	-129 -200°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.34 ppm			
293	2-Nitropropane CAS 79-46-9 (CH <sub>3</sub> ) <sub>2</sub> CHNO <sub>2</sub>	2-NP C <sub>3</sub> H <sub>7</sub> NO <sub>2</sub>	Nitro-i-propane Dimethylnitromethane	89.1 3.08 r	0.99	120 248°F	17	26 79°F	2.2 (82)		2.6 (97)	425 IIB T2
									1 mg/m <sup>3</sup> = 0.27 ppm			
294	Nitrous oxide CAS 10024-97-2 N <sub>2</sub> O	R 744a N <sub>2</sub> O	Dinitrogen monoxide Laughing gas Hyponitrous acid anhydride	44.0 1.52 r	Gas	-88 -126°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.55 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
283			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000	30 / 100 %LEL 50 / 100 %LEL 40 / 100 %LEL 40 / 100 %LEL 100 %LEL	
284	20 (83)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	10 / 10 %LEL (§) 10 / 10 %LEL 5000 ppm (3)	only for concentrations < 10 %LEL only for concentrations < 10 %LEL
285			Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC	MMS: 5 / 20 / 20 ppm / LDL = 0.05 ppm MMS: 1 / 5 / 20 ppm / LDL = 0.05 ppm	
286	50 (246)	50 (246)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	100 %LEL (§) 40 / 100 %LEL 100 %LEL (§) 55 / 100 %LEL 100 %LEL (2) as Aald (50 / 100 / 200 ppm)	S=0.4 (L)
287	10 (36)	20 (73)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL (§) 10 / 100 %LEL 100 %LEL (3) 1000 ppm (3) 100 %LEL as NH3 x 4 (50 / 100 ppm x 4)	S=0.25 (L)
288		2 (5.3)	Polytron 7000, XP Tox AC	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
289	0.2 (1.0)	1 (5.1)	PEX 3000, SE Ex, FX	10 %LEL	only with 10%-LEL-sensor
290		5c (9.6)	Polytron 3000 NO2 Polytron 7000, XP Tox NO2 Polytron TX NO2 ne	10 ppm NO2: 5 / 10 / 100 ppm / LDL = 0.3 ppm 20 ppm	
291		25 (31)	Polytron 3000 NO Polytron 7000, XP Tox NO	50 ppm NO: 30 / 50 / 200 ppm / LDL = 3 ppm	
292		10 (30)	Pyrolyzer Polytron 3500 NF3 Pyrolyzer Polytron 7500 NF3	50 ppm NF3: 5 / 50 / 50 ppm / LDL = 0.3 ppm	
293		25 (93)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (§) 30 / 100 %LEL	
294	100 (183)	25 (46)	Polytron IR N2O	300 / 1000 ppm	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
295	n-Nonane CAS 111-84-2 C <sub>9</sub> H <sub>20</sub>	C <sub>9</sub> H <sub>20</sub>		128.3 4.43 r	0.72	151 304°F	5	31 88°F	0.7 (37)	0.7 (37)	0.8 (43)	205 IIA T3
									1 mg/m <sup>3</sup> = 5.35 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.19 ppm			
296	5-Nonanone CAS 502-56-7 (C <sub>4</sub> H <sub>9</sub> ) <sub>2</sub> CO	C <sub>9</sub> H <sub>18</sub> O	Dibutyl ketone Valerone	142.2 4.91 r	0.82	188 370°F	0.4	65 149°F	0.8 (47)			330 T2
									1 mg/m <sup>3</sup> = 5.93 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.17 ppm			
297	2.5-Norbornadiene CAS 121-46-0 CH <sub>2</sub> ((CH=CH)CH) <sub>2</sub>	BCHD C <sub>7</sub> H <sub>8</sub>	Bicyclo(2.2.1)hepta-2.5-diene Bicycloheptadiene	92.1 3.18 r 63 v	0.91	90 194°F	69	-11 12°F	1.0 (38)			350 T2
									1 mg/m <sup>3</sup> = 3.84 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.26 ppm			
298	Octafluoro cyclopentene CAS 559-40-0 CF=CF(CF <sub>2</sub> ) <sub>3</sub>	PFC C <sub>5</sub> F <sub>8</sub>	Perfluoro cyclopentene	212.0 7.32 r	1.58	27 81°F	818	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 8.83 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.11 ppm			
299	Octamethyl cyclotetrasiloxane CAS 556-67-2 ((CH <sub>3</sub> ) <sub>2</sub> SiO) <sub>4</sub>	OMCTS C <sub>8</sub> H <sub>24</sub> O <sub>4</sub> Si <sub>4</sub>		296.6 10.24 r	0.96	175 347°F	1.33	51 124°F	0.75 (93)			400 IIB T2
									1 mg/m <sup>3</sup> = 12.36 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.08 ppm			
300	Octamethyl trisiloxane CAS 107-51-7 ((CH <sub>3</sub> ) <sub>3</sub> SiO) <sub>2</sub> Si(CH <sub>3</sub> ) <sub>2</sub>	OMTSO C <sub>8</sub> H <sub>24</sub> O <sub>2</sub> Si <sub>3</sub>		236.5 8.16 r 180 v	0.82	152 306°F	5	29 84°F	1.0 (99)			418 T2
									1 mg/m <sup>3</sup> = 9.85 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.10 ppm			
301	n-Octane CAS 111-65-9 C <sub>8</sub> H <sub>18</sub>	C <sub>8</sub> H <sub>18</sub>		114.2 3.94 r 81 v	0.70	126 259°F	14	12 54°F	0.8 (38)	0.8 (38)	1.0 (48)	205 IIA T3
									1 mg/m <sup>3</sup> = 4.76 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.21 ppm			
302	1-Octene CAS 111-66-0 CH <sub>2</sub> =CHC <sub>6</sub> H <sub>13</sub>	C <sub>8</sub> H <sub>16</sub>	1-Octylene Caprylene	112.2 3.87 r 79 v	0.71	121 250°F	23	10 50°F	0.8 (37)	0.8 (37)	0.9 (42)	240 T3
									1 mg/m <sup>3</sup> = 4.68 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> = 0.21 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
295		200 (1069)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 25 / 100 %LEL // 1750 ppm Gas-Library 25 / 100 %LEL // 1600 ppm Gas-Library 5 / 100 %LEL // 350 ppm Gas-Library 5 / 100 %LEL // 350 ppm Gas-Library 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL	SE Ex / PEX 3000: Perf. Approval Performance Approval  Performance Approval  Performance Approval
296			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 / 5000 ppm (3) 100 %LEL	
297			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3)	
298		2 (18)	Pyrolyzer Polytron 3500 C5F8 Pyrolyzer Polytron 7500 PFC	30 ppm C5F8: 2 / 30 ppm / LDL = 0.5 ppm	S = 1.0
299			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	30 / 100 %LEL 60 / 100 %LEL 25 / 100 %LEL 25 / 100 %LEL 100 %LEL 20 / 100 %LEL (3)	
300			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (\$) 40 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (?) 30 / 100 %LEL // 2000 ppm (3)	
301	500 (2379)	500 (2379)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 25 / 100 %LEL // 2000 ppm Gas-Library 25 / 100 %LEL // 2000 ppm Gas-Library 5 / 100 %LEL // 400 ppm Gas-Library 5 / 100 %LEL // 400 ppm Gas-Library 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 30 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=0.55 (Propane=1)
302			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
303	Oxygen CAS 7782-44-7 O <sub>2</sub>	R 732 O <sub>2</sub>		32.0 1.10 r	Gas 1 ppm = 1.33 mg/m <sup>3</sup>	-183 -297°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.75 ppm	n.a.	n.a.	n.a.
304	Ozone CAS 10028-15-6 O <sub>3</sub>	O <sub>3</sub>		48.0 1.66 r	Gas 1 ppm = 2.00 mg/m <sup>3</sup>	-112 -170°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.50 ppm	n.a.	n.a.	n.a.
305	Paraldehyde CAS 123-63-7 (CH <sub>3</sub> CHO) <sub>3</sub>	PCHO C <sub>6</sub> H <sub>12</sub> O <sub>3</sub>	Paracetaldehyde 2.4.6-Trimethyl-1.3.5-trioxane	132.2 4.56 r 108 v	0.99 1 ppm = 5.51 mg/m <sup>3</sup>	124 255°F	10	27 81°F	1.3 (72) 1 mg/m <sup>3</sup> = 0.18 ppm	1.3 (72)		235 IIA T3
306	1.1.1.3.3-Pentafluoro butane CAS 406-58-6 CF <sub>3</sub> CH <sub>2</sub> CF <sub>2</sub> CH <sub>3</sub>	R 365 C <sub>4</sub> H <sub>6</sub> F <sub>5</sub>	HFC 365mfc	148.1 5.11 r 281 v	1.25 1 ppm = 6.17 mg/m <sup>3</sup>	40 104°F	433	<-27 <-17°F	3.8 (234) 1 mg/m <sup>3</sup> = 0.16 ppm	3.6 (222)		590 T1
307	Pentafluoroethane CAS 354-33-6 CF <sub>3</sub> CHF <sub>2</sub>	R 125 C <sub>2</sub> H <sub>2</sub> F <sub>5</sub>		120.0 4.14 r	Gas 1 ppm = 5.00 mg/m <sup>3</sup>	-48.5 -55°F	Gas	n.a.	n.a. 1 mg/m <sup>3</sup> = 0.20 ppm	n.a.	n.a.	n.a.
308	2.2.4.6.6-Pentamethylheptane CAS 13475-82-6 ((CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> ) <sub>2</sub> CHCH <sub>3</sub>	iC12 C <sub>12</sub> H <sub>26</sub>	i-Dodecane	170.3 5.88 r	0.75 1 ppm = 7.10 mg/m <sup>3</sup>	180 356°F	1	43 109°F	0.5 (35) 1 mg/m <sup>3</sup> = 0.14 ppm			430 IIA T2
309	i-Pentane CAS 78-78-4 CH <sub>3</sub> CH(CH <sub>3</sub> )C <sub>2</sub> H <sub>5</sub>	C <sub>5</sub> H <sub>12</sub>	2-Methylbutane Isopentane	72.2 2.49 r 94 v	0.62 1 ppm = 3.01 mg/m <sup>3</sup>	28 82°F	765	<-20 <-4°F	1.3 (39) 1 mg/m <sup>3</sup> = 0.33 ppm	1.3 (39)	1.4 (42)	420 IIA T2
310	n-Pentane CAS 109-66-0 C <sub>5</sub> H <sub>12</sub>	C <sub>5</sub> H <sub>12</sub>		72.2 2.49 r 79 v	0.63 1 ppm = 3.01 mg/m <sup>3</sup>	36 97°F	565	-40 -40°F	1.1 (33) 1 mg/m <sup>3</sup> = 0.33 ppm	1.1 (33)	1.5 (45)	260 IIA T3
311	3-Pentanol CAS 584-02-1 C <sub>2</sub> H <sub>5</sub> CH(OH)C <sub>2</sub> H <sub>5</sub>	C <sub>5</sub> H <sub>12</sub> O	Diethylcarbinol 1-Ethyl-1-propanol	88.2 3.04 r	0.82 1 ppm = 3.68 mg/m <sup>3</sup>	116 241°F	8	30 86°F	1.2 (44) 1 mg/m <sup>3</sup> = 0.27 ppm	1.2 (44)		360 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
303			Polytron 3000 O2 Polytron 3000 O2 LS Polytron 7000, XP Tox O2 Polytron 7000, XP Tox O2 LS Polytron TX O2 LS	5 / 25 / 100 vol% 25 vol% 5 / 25 / 100 vol% 5 / 10 / 25 vol% 25 vol%	
304		0.1 (0.20)	Polytron 3000 O3 Polytron 7000, XP Tox O3	0.5 ppm O3: 0.5 / 1 / 5 ppm / LDL = 0.01 ppm	
305			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL? 100 %LEL (2)?	
306			Polytron IR Ex, IR Ex IL	100 %LEL (2)	
307			Pyrolyzer Polytron 7500 PFC	60 ppm / LDL = 2 ppm	S=0.4
308			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3)	
309	1000 (3008)		PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 25 / 100 %LEL 30 / 100 %LEL 5 / 100 %LEL 5 / 100 %LEL 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	S=0.96 (Propane=1)
310	1000 (3008)	1000 (3008)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL // 2750 ppm Gas-Library 25 / 100 %LEL // 3000 ppm Gas-Library 5 / 100 %LEL // 700 ppm Gas-Library 5 / 100 %LEL // 700 ppm Gas-Library 100 %LEL (3) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=1.14 (Propane=1)
311			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (§) 10 / 100 %LEL 2000 ppm (3) 100 %LEL	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
312	1-Pentene CAS 109-67-1 C <sub>3</sub> H <sub>7</sub> CH=CH <sub>2</sub>	C <sub>5</sub> H <sub>10</sub>	n-Amylene n-Pentylene Propylethylene	70.1 2.42 r 96 v	0.64	30 86°F	708	<-20 <-4°F	1.4 (41)		1.5 (44)	280 T3
									1 mg/m <sup>3</sup> = 0.34 ppm			
313	Phosgene CAS 75-44-5 COCl <sub>2</sub>	CG CCl <sub>2</sub> O	Carbonyl chloride Carbon oxychloride	98.9 3.41 r	Gas	8 46°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.24 ppm			
314	Phosphine CAS 7803-51-2 PH <sub>3</sub>	H <sub>3</sub> P	Hydrogen phosphide Phosphorus hydride	34.0 1.17 r	Gas	-88 -126°F	Gas	Gas	1.6 (23)		1.8 (26)	150 T4
									1 mg/m <sup>3</sup> = 0.71 ppm			
315	Phosphorus oxychloride CAS 10025-87-3 POCl <sub>3</sub>	POCL Cl <sub>3</sub> OP	Phosphorus chloride Phosphorus oxytrichloride	153.3 5.29 r	1.68	105 221°F	36	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.16 ppm			
316	Phosphorus trichloride CAS 7719-12-2 PCl <sub>3</sub>	Cl <sub>3</sub> P	Phosphorus chloride	137.3 4.74 r	1.57	76 169°F	127	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.17 ppm			
317	Picoline CAS 109-06-8 (C <sub>5</sub> H <sub>4</sub> N)CH <sub>3</sub>	C <sub>6</sub> H <sub>7</sub> N	2-Methylpyridine 2-Picoline	93.1 3.21 r 87 v	0.94	128 262°F	12	27 81°F	1.4 (54)		1.2 (47)	535 IIA T1
									1 mg/m <sup>3</sup> = 0.26 ppm			
318	α-Pinene CAS 80-56-8 C <sub>10</sub> H <sub>16</sub>	C <sub>10</sub> H <sub>16</sub>	2.6.6-Trimethylbicyclo(3.1.1)hept-2-ene	136.2 4.70 r	0.86	155 311°F	5	33 91°F	0.8 (45)			255 T3
									1 mg/m <sup>3</sup> = 0.18 ppm			
319	Piperidine CAS 110-89-4 (CH <sub>2</sub> ) <sub>5</sub> NH	PIP C <sub>6</sub> H <sub>11</sub> N	Hexahydropyridine Pentamethylene imine	85.2 2.94 r 93 v	0.86	106 223°F	33	4 39°F	1.5 (53)			320 IIA T2
									1 mg/m <sup>3</sup> = 0.28 ppm			
320	Propane CAS 74-98-6 C <sub>3</sub> H <sub>8</sub>	R 290 C <sub>3</sub> H <sub>8</sub>	Dimethyl methane	44.1 1.52 r	Gas	-42 -44°F	Gas	Gas	1.7 (31)	1.7 (31)	2.1 (39)	470 IIA T1
									1 mg/m <sup>3</sup> = 0.54 ppm			



# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
321	i-Propanol CAS 67-63-0 (CH <sub>3</sub> ) <sub>2</sub> CHOH	IPA C <sub>3</sub> H <sub>8</sub> O	i-Propyl alcohol 2-Propanol Dimethyl carbinol	60.1 2.07 r 96 v	0.78 1 ppm = 2.50 mg/m <sup>3</sup>	82 180°F	43	12 54°F	2.0 (50)	2.0 (50)	2.0 (50)	425 IIA T2
322	n-Propanol CAS 71-23-8 C <sub>3</sub> H <sub>7</sub> OH	NPA C <sub>3</sub> H <sub>8</sub> O	n-Propyl alcohol 1-Propanol Ethyl carbinol	60.1 2.07 r 98 v	0.80 1 ppm = 2.50 mg/m <sup>3</sup>	97 207°F	20	22 72°F	2.1 (53)	2.1 (53)	2.2 (55)	385 IIB T2
323	i-Propenylacetate CAS 108-22-5 CH <sub>3</sub> COOC(CH <sub>3</sub> )=CH <sub>2</sub>	C <sub>6</sub> H <sub>8</sub> O <sub>2</sub>	Methylvinyl acetate 1-Propen-2-ol acetate Acetic acid i-propenyl ester	100.1 3.46 r 110 v	0.91 1 ppm = 4.17 mg/m <sup>3</sup>	97 207°F	23	4 39°F	1.6 (67)	1 mg/m <sup>3</sup> = 0.24 ppm		395 IIA T2
324	Propine CAS 74-99-7 CH <sub>3</sub> CCH	C <sub>3</sub> H <sub>4</sub>	Methyl acetylene Allylene 1-Propyne	40.1 1.38 r	Gas 1 ppm = 1.67 mg/m <sup>3</sup>	-23 -9°F	Gas	Gas	1.8 (30)	1.7 (28)	1.7 (28)	340 IIB T2
325	Propionic acid CAS 79-09-4 C <sub>2</sub> H <sub>5</sub> COOH	C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	Propanoic acid Methyl acetic acid Carboxyethane	74.1 2.56 r	0.99 1 ppm = 3.09 mg/m <sup>3</sup>	141 286°F	4.9	52 126°F	2.9 (90)	2.1 (65)	2.9 (90)	485 IIA T1
326	Propionic acid anhydride CAS 123-62-6 (C <sub>2</sub> H <sub>5</sub> CO) <sub>2</sub> O	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>	Propanoic acid anhydride	130.1 4.49 r	1.02 1 ppm = 5.42 mg/m <sup>3</sup>	167 333°F	1	73 163°F	1.3 (70)	1.3 (70)		315 T2
327	Propionic aldehyde CAS 123-38-6 C <sub>2</sub> H <sub>5</sub> CHO	C <sub>3</sub> H <sub>6</sub> O	Propanal Propyl aldehyde	58.1 2.01 r 104 v	0.80 1 ppm = 2.42 mg/m <sup>3</sup>	49 120°F	343	<-20 <-4°F	2.3 (56)	2.0 (48)	2.6 (63)	190 IIB T4
328	i-Propoxyethanol CAS 109-59-1 (CH <sub>3</sub> ) <sub>2</sub> CHOC <sub>2</sub> H <sub>4</sub> OH	EGiPE C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	Ethylene glycol i-propyl ether i-Propyl glycol	104.2 3.60 r	0.90 1 ppm = 4.34 mg/m <sup>3</sup>	142 288°F	3.5	43 109°F	1.4 (61)	1 mg/m <sup>3</sup> = 0.23 ppm		240 IIB T3

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
321	200 (501)	400 (1002)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 20 / 100 %LEL // 4000 ppm Gas-Library 20 / 100 %LEL // 4000 ppm Gas-Library 10 / 100 %LEL // 2000 ppm Gas-Library 10 / 100 %LEL 100 %LEL (3) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3) IPA: 100 / 200 / 300 ppm / LDL = 10 ppm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval  Performance Approval Performance Approval  S=0.3
322		200 (501)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 25 / 100 %LEL 25 / 100 %LEL 5 / 100 %LEL 10 / 100 %LEL 100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 25 / 100 %LEL // 5000 ppm (3) as EtOH (100 / 200 / 300 ppm)	          S=0.85 (L)
323	10 (42)		Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 80 / 100 %LEL (2)	
324		1000 (1671)	PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (2)?	
325	10 (31)	10 (31)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL (\$) 20 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL (3) 100 %LEL	
326			Polytron IR Ex, IR Ex IL	100 %LEL (3)	
327			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (\$) 20 / 100 %LEL 100 %LEL (?) 80 / 100 %LEL (2)	
328	5 (22)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
329	i-Propyl acetate CAS 108-21-4 CH <sub>3</sub> COOCH(CH <sub>3</sub> ) <sub>2</sub>	C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	Acetic acid i-propyl ester Acetic acid 1-methylethyl ester	102.1 3.52 r 130 v	0.88 1 ppm = 4.25 mg/m <sup>3</sup>	89 192°F	62	2 36°F	1.8 (77)	1.7 (72)	1.8 (77)	425 IIA T2
330	n-Propyl acetate CAS 109-60-4 CH <sub>3</sub> COOC <sub>3</sub> H <sub>7</sub>	C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	Acetic acid propyl ester	102.1 3.52 r 122 v	0.89 1 ppm = 4.25 mg/m <sup>3</sup>	102 216°F	33	10 50°F	1.7 (72)	1.7 (72)	1.7 (72)	455 IIA T1
331	i-Propylamine CAS 75-31-0 (CH <sub>3</sub> ) <sub>2</sub> CHNH <sub>2</sub>	C <sub>3</sub> H <sub>9</sub> N	2-Aminopropane 2-Propylamine 2-Propanamine	59.1 2.04 r 107 v	0.69 1 ppm = 2.46 mg/m <sup>3</sup>	32 90°F	637	-50 -58°F	2.0 (49)	2.3 (57)	2.3 (57)	400 IIA T2
332	n-Propylamine CAS 107-10-8 C <sub>3</sub> H <sub>7</sub> NH <sub>2</sub>	C <sub>3</sub> H <sub>9</sub> N	1-Aminopropane 1-Propylamine 1-Propanamine	59.1 2.04 r 102 v	0.72 1 ppm = 2.46 mg/m <sup>3</sup>	49 120°F	339	-44 -47°F	2.0 (49)	2.0 (49)		320 IIA T2
333	n-Propylbenzene CAS 103-65-1 C <sub>6</sub> H <sub>5</sub> C <sub>3</sub> H <sub>7</sub>	C <sub>9</sub> H <sub>12</sub>	1-Phenylpropane	120.2 4.15 r	0.86 1 ppm = 5.01 mg/m <sup>3</sup>	159 318°F	3	39 102°F	0.8 (40)			450 IIA T2
334	i-Propyl-2-bromo-i-butyrate CAS 51368-55-9 (CH <sub>3</sub> ) <sub>2</sub> CBrCOOC <sub>3</sub> H <sub>7</sub>	BiBi C <sub>7</sub> H <sub>13</sub> BrO <sub>2</sub>	2-Bromo i-butyric acid i-propylester i-Propyl-2-bromo-2-methylpropionate	209.1 7.22 r	1.23 1 ppm = 8.71 mg/m <sup>3</sup>	170 338°F	1.33	63 145°F				585 T1
335	i-Propylchloride CAS 75-29-6 (CH <sub>3</sub> ) <sub>2</sub> CHCl	IPC C <sub>3</sub> H <sub>7</sub> Cl	2-Chloropropane	78.5 2.71 r 159 v	0.86 1 ppm = 3.27 mg/m <sup>3</sup>	35 95°F	570	-32 -26°F	2.8 (92)	2.8 (92)		590 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
329		250 (1064)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (\$) 100 %LEL (\$) 100 %LEL (?) 15 / 100 %LEL // 2500 ppm (3) 100 %LEL 20 / 100 %LEL // 4000 ppm (3)	
330		200 (851)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES	10 // 100 %LEL 25 / 100 %LEL 30 / 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 100 %LEL 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3)	
331	5 (12)	5 (12)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL 35 / 100 %LEL 100 %LEL (\$) 10 / 100 %LEL 100 %LEL 2000 ppm (3) 100 %LEL i-PA: 100 / 200 ppm / LDL = 10 ppm	corrosive/sensor poison
332			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL	corrosive/sensor poison
333			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 25 / 100 %LEL 100 %LEL (\$) 100 %LEL (\$) 100 %LEL (\$) 100 %LEL (?) 3000 ppm (3)?	
334			Polytron IR Ex, IR Ex IL Polytron IR Ex ES	1000 ppm (3) 3000 ppm (3)	
335			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL	100 %LEL 100 %LEL (\$) 25 / 100 %LEL 3000 ppm (3)?	corrosive/sensor poison

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
336	n-Propylchloride CAS 540-54-5 C <sub>3</sub> H <sub>7</sub> Cl	R 280 C <sub>3</sub> H <sub>7</sub> Cl	1-Chloropropane	78.5 2.71 r 143 v	0.89	47 117°F	375	-18 0°F	2.6 (85)	2.4 (79)		520 IIA T1
337	Propylene CAS 115-07-1 CH <sub>2</sub> =CHCH <sub>3</sub>	R 1270 C <sub>3</sub> H <sub>6</sub>	Propene Methyl ethene	42.1 1.45 r	Gas	-48 -54°F	Gas	Gas	2.0 (35)	2.0 (35)	2.0 (35)	485 IIA T1
338	Propylene oxide CAS 75-56-9 CH <sub>3</sub> CHCH <sub>2</sub> O	PO C <sub>3</sub> H <sub>6</sub> O	1,2-Epoxy propane 1,2-Propene oxide Methyloxirane	58.1 2.01 r 83 v	0.83	34 93°F	588	-37 -35°F	1.9 (46)	1.9 (46)	2.3 (56)	430 IIB T2
339	n-Propylformate CAS 110-74-7 HCOOC <sub>3</sub> H <sub>7</sub>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	Formic acid propylester Methanoic acid propylester	88.1 3.04 r 133 v	0.91	81 178°F	84	-3 27°F	2.2 (81)			360 IIA T2
340	i-Propyl mercaptan CAS 75-33-2 (CH <sub>3</sub> ) <sub>2</sub> CHSH	iPM C <sub>3</sub> H <sub>8</sub> S	2-Propanethiol 2-Propyl mercaptan	76.2 2.63 r 104 v	0.82	53 127°F	300	-20 -4°F	1.8 (57)			1 mg/m <sup>3</sup> = 0.31 ppm
341	n-Propyl mercaptan CAS 107-03-9 C <sub>3</sub> H <sub>7</sub> SH	nPM C <sub>3</sub> H <sub>8</sub> S	1-Propanethiol 1-Propyl mercaptan 3-Mercaptopropane	76.2 2.63 r 102 v	0.84	68 154°F	160	-15 5°F	1.8 (57)			1 mg/m <sup>3</sup> = 0.31 ppm IIA
342	i-Propylnitrate CAS 1712-64-7 (CH <sub>3</sub> ) <sub>2</sub> CHONO <sub>2</sub>	C <sub>3</sub> H <sub>7</sub> NO <sub>3</sub>	Nitric acid i-propylester Nitric acid 1-methylethylester	105.1 3.63 r	1.04	101 214°F	53	11 52°F		2.0 (88)		175 IIB T4
343	2-Propyn-1-ol CAS 107-19-7 HCCCH <sub>2</sub> OH	C <sub>3</sub> H <sub>4</sub> O	Propargyl alcohol Ethyngyl carbinol 2-Propynyl alcohol	56.1 1.94 r	0.95	115 239°F	15	33 91°F	2.8 (65)	2.4 (56)		365 IIB T2
344	Pyridine CAS 110-86-1 C <sub>5</sub> H <sub>5</sub> N	C <sub>5</sub> H <sub>5</sub> N	Azine Azabenzene	79.1 2.73 r 86 v	0.98	115 239°F	20	17 63°F	1.7 (56)	1.7 (56)	1.8 (59)	550 IIA T1
345	Sevoflurane CAS 28523-86-6 CH <sub>2</sub> F-O-CH(CF <sub>3</sub> ) <sub>2</sub>	C <sub>4</sub> H <sub>8</sub> F <sub>7</sub> O	Hexafluoro-2-(fluoromethoxy)propane	200.1 6.91 r	1.50	58.5 137°F	210	n.a.	n.a.	n.a.	n.a.	n.a.
346	Silane CAS 7803-62-5 SiH <sub>4</sub>	H <sub>4</sub> Si	Monosilane Silicon tetrahydride Silicane	32.1 1.11 r	Gas	-112 -170°F	Gas	Gas				1 mg/m <sup>3</sup> = 0.75 ppm
347	Silicon tetrachloride CAS 10026-04-7 SiCl <sub>4</sub>	Cl <sub>4</sub> Si	Tetrachlorosilane	169.9 5.86 r	1.48	57 135°F	260	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 7.08 ppm			1 mg/m <sup>3</sup> = 0.14 ppm

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
336			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 3000 ppm (3)?	corrosive/sensor poison
337			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Polytron 7000, XP Tox OV1 Polytron Pulsar 2	10 // 100 %LEL 20 / 100 %LEL // 4000 ppm Gas-Library 25 / 100 %LEL // 4000 ppm Gas-Library 15 / 100 %LEL // 3000 ppm Gas-Library 20 / 100 %LEL 100 %LEL (3) 25 / 100 %LEL // 5000 ppm (3) 40 / 100 %LEL // 1.0 / 2.3 vol% (2) C3H6: 30 / 50 / 100 ppm / LDL = 5 ppm 1 // 4 / 8 LELm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval Performance Approval Performance Approval S=0.7 S=0.68 (Propane=1)
338		100 (242)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron 7000, XP Tox OV1	10 // 100 %LEL 15 / 100 %LEL // 2850 ppm Gas-Library 20 / 100 %LEL // 3800 ppm Gas-Library 15 / 100 %LEL // 2850 ppm Gas-Library 100 %LEL (?) 100 %LEL (3) 20 / 100 %LEL // 5000 ppm (3) PO: 20 / 50 / 200 ppm / LDL = 5 ppm	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval S=0.8
339			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 3000 ppm (3)?	
340			Polytron 7000, XP Tox H2S LC	iPM: 20 / 50 / 100 ppm / LDL = 1 ppm	
341		0.5c (1.6)	Polytron 7000, XP Tox H2S LC	nPM: 20 / 50 / 100 ppm / LDL = 1 ppm	
342			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 3000 ppm (3)	
343	2 (4.7)	1 (2.3)	PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL? 100 %LEL (2)?	
344		5 (16)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 80 / 100 %LEL (2) 40 / 100 %LEL // 1.0 / 2.3 vol% (2)	
345			Pyrolyzer Polytron 7500 PFC	10 ppm / LDL = 0.2 ppm	S=2.4
346		5 (6.7)	Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC	SiH4: 5 / 5 / 50 ppm / LDL = 0.05 ppm SiH4: 1 / 5 / 20 ppm / LDL = 0.05 ppm	
347			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	TeCS: 3 / 10 / 30 ppm / LDL = 0.5 ppm TeCS: 5 / 10 / 20 ppm / LDL = 0.2 ppm	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
348	Silicon tetrafluoride CAS 7783-61-1 SiF <sub>4</sub>	F <sub>4</sub> Si	Tetrafluorosilane	104.1 3.59 r	Gas	-65 -85°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.23 ppm			
349	Styrene CAS 100-42-5 C <sub>8</sub> H <sub>8</sub> CH=CH <sub>2</sub>	C <sub>8</sub> H <sub>8</sub>	Vinyl benzene Ethenyl benzene Phenylethylene	104.2 3.60 r	0.91	145 293°F	7	32 90°F	1.0 (43)	1.0 (43)	0.9 (39)	490 IIA T1
									1 mg/m <sup>3</sup> = 0.23 ppm			
350	Sulfur hexafluoride CAS 2551-62-4 SF <sub>6</sub>	F <sub>6</sub> S		146.1 5.04 r	Gas	-63.8 -83°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.16 ppm			
351	Sulphur dioxide CAS 7446-09-5 SO <sub>2</sub>	R 764 O <sub>2</sub> S	Sulfurous oxide	64.1 2.21 r	Gas	-10 14°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.37 ppm			
352	Sulphur trioxide CAS 7446-11-9 SO <sub>3</sub>	O <sub>3</sub> S	Sulphuric acid anhydride	80.1 2.76 r	1.97	45 113°F	255	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.30 ppm			
353	Tetrachloroethene CAS 127-18-4 C <sub>2</sub> Cl <sub>4</sub>	PER C <sub>2</sub> Cl <sub>4</sub>	Perchloroethylene Tetrachloroethylene Ethylene tetrachloride	165.8 5.72 r	1.62	121 250°F	19	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.14 ppm			
354	Tetraethyl orthosilicate CAS 78-10-4 (C <sub>2</sub> H <sub>5</sub> O) <sub>4</sub> Si	TEOS C <sub>8</sub> H <sub>20</sub> O <sub>4</sub> Si	Tetraethoxysilane Tetraethyl silicate Silicic acid tetraethylester	208.3 7.19 r	0.93	169 336°F	2	37 99°F	0.8 (69)	0.45 (39)	0.9 (78)	230 IIB T3
									1 mg/m <sup>3</sup> = 0.12 ppm			
355	1.1.1.2-Tetrafluoro ethane CAS 811-97-2 CF <sub>3</sub> CH <sub>2</sub> F	R 134a C <sub>2</sub> H <sub>2</sub> F <sub>4</sub>		102.0 3.52 r	Gas	-26 -15°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.24 ppm			
356	Tetrafluoro ethene CAS 116-14-3 C <sub>2</sub> F <sub>4</sub>	PFE C <sub>2</sub> F <sub>4</sub>	Perfluoroethylene	100.0 3.45 r	Gas	-76 -105°F	Gas	Gas	10.5 (438)	10.0 (417)		240 IIB T3
									1 mg/m <sup>3</sup> = 0.24 ppm			
357	1.3.3.3-Tetrafluoroprop-1-ene trns CAS 1645-83-6 CF <sub>3</sub> CH=CHF	R 1234ze C <sub>3</sub> H <sub>2</sub> F <sub>4</sub>	HFO 1234ze HFC 1234ze	114.0 3.94 r	Gas	-19 -2°F	Gas	Gas	6.2 (295)			290 T3
									1 mg/m <sup>3</sup> = 0.21 ppm			
358	Tetrahydro benzaldehyde CAS 100-50-5 C <sub>6</sub> H <sub>8</sub> CHO	THB C <sub>7</sub> H <sub>10</sub> O	3-Cyclohexene-1-aldehyde 3-Cyclohexene-1-carboxaldehyde 4-Formyl-1-cyclohexene	110.2 3.80 r	0.97	164 327°F	2.1	47 117°F	0.9 (41)			
									1 mg/m <sup>3</sup> = 0.22 ppm			
359	Tetrahydrofuran CAS 109-99-9 (CH <sub>2</sub> ) <sub>4</sub> O	THF C <sub>4</sub> H <sub>8</sub> O	Diethylene monoxide Tetramethylene oxide 1.4-Epoxybutane	72.1 2.49 r 76 v	0.89	64 147°F	193	-20 -4°F	1.5 (45)	1.5 (45)	2.0 (60)	230 IIB T3
									1 mg/m <sup>3</sup> = 0.33 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
348			Polytron 7000, XP Tox AC	SiF4: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
349	20 (87)	100 (434)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex ES Polytron 7000, XP Tox OV2	10 // 100 %LEL 35 / 100 %LEL // 3850 ppm Gas-Library 20 / 100 %LEL // 1800 ppm Gas-Library 100 %LEL (2) 40 / 100 %LEL // 1.0 vol% (2) Styr: 20 / 50 / 100 ppm / LDL = 5 ppm	polymerizing/sensor poison Performance Approval Performance Approval S=0.5 (L)
350	1000 (6088)	1000 (6088)	Pyrolyzer Polytron 7500 PFC	SF6: 1000 / 1000 ppm / LDL = 20 ppm	S = 0.03
351		5 (13)	Polytron 3000 SO2 Polytron 7000, XP Tox SO2 Polytron TX SO2 ne	10 ppm SO2: 5 / 10 / 100 ppm / LDL = 0.5 ppm 20 ppm	
352			Polytron 7000, XP Tox AC	30 ppm L	Only presence indication (aerosol)
353		100 (691)	Pyrolyzer Polytron 7500 PFC	30 ppm / LDL = 0.5 ppm	S=1.1
354	1.4 (12)	100 (868)	Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
355	1000 (4250)		Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex, IR Ex IL Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	3.0 / 3.0 vol% 3.0 / 3.0 vol% 2.0 / 2.3 vol% (2) 1.5 / 2.3 vol% (2) TeFE: 500 / 500 ppm / LDL = 1 ppm	S = 0.6
356			Pyrolyzer Polytron 7500 PFC	30 ppm / LDL = 0.5 ppm	S=1.0
357			Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 / 100 %LEL 100 / 100 %LEL	
358			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3)	
359	50 (150)	200 (601)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 20 / 100 %LEL 20 / 100 %LEL 5 / 100 %LEL 5 / 100 %LEL // 750 ppm Gas-Library 100 %LEL (3) 10 / 100 %LEL // 2000 ppm (3) 100 %LEL 40 / 100 %LEL // 1.0 / 2.3 vol% (2) THF: 30 / 50 / 200 ppm / LDL = 5 ppm	S=0.75

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
360	1,2,3,4-Tetrahydronaphthalene CAS 119-64-2 C <sub>10</sub> H <sub>12</sub>	C <sub>10</sub> H <sub>12</sub>	Tetraline	132.2 4.56 r	0.97	208 406°F	0.24	71 160°F	0.8 (44)		0.8 (44)	390 T2
361	Tetrahydrothiophene CAS 110-01-0 C <sub>4</sub> H <sub>6</sub> S	THT C <sub>4</sub> H <sub>6</sub> S	Tetramethylene sulfide Thiophane	88.2 3.04 r 61 v	1.00	121 250°F	19.3	13 55°F	1.1 (40)	1.1 (40)		200 IIA T4
362	Tetrakisdimethylaminotitanium CAS 3275-24-9 (C(CH <sub>3</sub> ) <sub>2</sub> N) <sub>4</sub> Ti	TDMAT C <sub>8</sub> H <sub>24</sub> N <sub>4</sub> Ti		224.2 7.74 r	0.95	n.a. 32°F	0.14	87 189°F			0.7 (65)	
363	1,1,3,3-Tetramethyldisiloxane CAS 3277-26-7 (CH <sub>3</sub> SiHCH <sub>3</sub> ) <sub>2</sub> O	TMSO C <sub>4</sub> H <sub>14</sub> OSi <sub>2</sub>	2,4-Dimethyl-3-oxa-2,4-disilapentane	134.3 4.64 r 88 v	0.76	71 160°F	250	-26 -15°F	0.8 (45)		0.18 ppm	240 IIB T3
364	Tetramethyl ethylene diamine CAS 110-18-9 (CH <sub>3</sub> ) <sub>2</sub> NC <sub>2</sub> H <sub>4</sub> N(CH <sub>3</sub> ) <sub>2</sub>	TEMED C <sub>6</sub> H <sub>16</sub> N <sub>2</sub>	1,2-Bis-(dimethyl amino)-ethane	116.2 4.01 r 94 v	0.77	120 248°F	13.3	19 66°F	1.0 (48)		0.21 ppm	145 IIA T4
365	2,2,3,3-Tetramethylpentane CAS 7154-79-2 C <sub>2</sub> H <sub>5</sub> C(CH <sub>3</sub> ) <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	C <sub>9</sub> H <sub>20</sub>	i-Nonane	128.3 4.43 r 84 v	0.76	140 284°F		25 77°F	0.8 (43)		0.19 ppm	430 IIA T2
366	Tetramethylsilane CAS 75-76-3 (CH <sub>3</sub> ) <sub>4</sub> Si	TMS C <sub>4</sub> H <sub>12</sub> Si	Tetramethyl silicane	88.2 3.04 r 85 v	0.65	26 79°F	750	-27 -17°F	1.0 (37)		0.27 ppm	330 IIB T2
367	Thionyl chloride CAS 7719-09-7 SOCl <sub>2</sub>	Cl <sub>2</sub> OS	Sulfurous oxychloride	119.0 4.11 r	1.64	76 169°F	124	n.a.	n.a.	n.a.	n.a.	n.a.
368	Tin tetrachloride CAS 7646-78-8 SnCl <sub>4</sub>	Cl <sub>4</sub> Sn	Tin chloride Stannic chloride	260.5 8.99 r	2.23	114 237°F	24	n.a.	n.a.	n.a.	n.a.	n.a.
369	Titanium tetrachloride CAS 7550-45-0 TiCl <sub>4</sub>	Cl <sub>4</sub> Ti	Titanic chloride	189.7 6.55 r	1.73	136 277°F	13	n.a.	n.a.	n.a.	n.a.	n.a.
370	Toluene CAS 108-88-3 C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub>	C <sub>7</sub> H <sub>8</sub>	Methyl benzene Phenyl methane	92.1 3.18 r 66 v	0.87	111 232°F	29	6 43°F	1.0 (38)	1.0 (38)	1.1 (42)	535 IIA T1
371	Tributylamine CAS 102-82-9 (C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> N	TBA C <sub>12</sub> H <sub>27</sub> N	N,N-Dibutyl-1-butanamine	185.4 6.40 r	0.78	214 417°F	0.3	70 158°F	1.4 (108)		0.13 ppm	190 IIA T4

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
360			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 3000 ppm (3)	
361	50 (184)		Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron 7000, XP Tox H2S LC	100 %LEL (§) 15 / 100 %LEL 100 %LEL THT: 20 / 50 / 100 ppm / LDL = 1 ppm	
362			Polytron 7000, XP Tox NH3 LC	TDMATI: 100 ppm / LDL = 5 ppm	
363			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL (?) 100 %LEL (?) 2000 ppm (3) 100 %LEL as IPA (100 / 200 / 300 ppm)	S=0.4 (L)
364			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 10 / 100 %LEL // 1000 ppm (3)	
365			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
366			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL	100 %LEL (?) 100 %LEL (?) 20 / 100 %LEL // 2000 ppm (3)	
367		1c (5.0)	Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm SOC: 5 / 10 / 20 ppm / LDL = 0.2 ppm	
368			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm TTC: 5 / 10 / 20 ppm / LDL = 0.5 ppm	
369			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm TiTC: 5 / 10 / 20 ppm / LDL = 0.2 ppm	
370	50 (192)	200 (768)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 25 / 100 %LEL // 2750 ppm Gas-Library 20 / 100 %LEL // 2200 ppm Gas-Library 40 / 100 %LEL // 4400 ppm Gas-Library 35 / 100 %LEL // 3600 ppm Gas-Library 100 %LEL (2) 80 / 100 %LEL (2) 40 / 100 %LEL // 1.0 vol% (2)	SE Ex / PEX 3000: Perf. Approval Performance Approval Performance Approval Performance Approval Performance Approval Performance Approval
371			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 2000 / 5000 ppm (3) 100 %LEL	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
372	1.1.1-Trichloroethane CAS 71-55-6 CH <sub>3</sub> CCl <sub>3</sub>	R 140a C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	Methyl chloroform	133.4 4.60 r	1.34	74 165°F	133	n.a.	9.5 (528)		7.5 (417)	490 IIA T1
									1 mg/m <sup>3</sup> = 0.18 ppm			
373	Trichloromethane CAS 67-66-3 CHCl <sub>3</sub>	R 20 CHCl <sub>3</sub>	Chloroform Methane trichloride	119.4 4.12 r	1.49	61 142°F	210	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.20 ppm			
374	Trichloronitromethane CAS 76-06-2 CCl <sub>3</sub> NO <sub>2</sub>	CCl <sub>3</sub> NO <sub>2</sub>	Nitrochloroform Chloropicrin Nitrotrichloromethane	164.4 5.67 r	1.66	112 234°F	22.5	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.15 ppm			
375	1.2.3-Trichloropropane CAS 96-18-4 C <sub>3</sub> H <sub>5</sub> Cl <sub>3</sub>	C <sub>3</sub> H <sub>5</sub> Cl <sub>3</sub>	Trichlorohydrin	147.4 5.09 r	1.39	156 313°F	2.8	74 165°F	3.2 (197)		3.2 (197)	304 IIA T2
									1 mg/m <sup>3</sup> = 0.16 ppm			
376	Trichlorosilane CAS 10025-78-2 SiHCl <sub>3</sub>	TCS HCl <sub>3</sub> Si	Silyltrichloride	135.5 4.68 r 435 v	1.34	32 90°F	660	-50 -58°F	6.9 (390)			195 IIC T4
									1 mg/m <sup>3</sup> = 0.18 ppm			
377	Triethylamine CAS 121-44-8 (C <sub>2</sub> H <sub>5</sub> ) <sub>3</sub> N	TEA C <sub>6</sub> H <sub>15</sub> N	N,N-Diethylethanamine	101.2 3.49 r 104 v	0.73	89 192°F	70	-7 19°F	1.2 (51)	1.2 (51)	1.2 (51)	215 IIA T3
									1 mg/m <sup>3</sup> = 0.24 ppm			
378	Triethylorthoformate CAS 122-51-0 CH(OC <sub>2</sub> H <sub>5</sub> ) <sub>3</sub>	TEOF C <sub>7</sub> H <sub>16</sub> O <sub>3</sub>	Formic acid-o-triethyl ester Triethoxymethane	148.2 5.12 r	0.90	146 295°F	4	30 86°F	0.7 (43)			180 T4
									1 mg/m <sup>3</sup> = 0.16 ppm			
379	1.1.1-Trifluoroethane CAS 420-46-2 CF <sub>3</sub> CH <sub>3</sub>	R 143a C <sub>2</sub> H <sub>3</sub> F <sub>3</sub>	Methylfluoroform	84.0 2.90 r	Gas	-48 -54°F	Gas	Gas	7.1 (249)	6.8 (238)		750 IIA T1
									1 mg/m <sup>3</sup> = 0.29 ppm			
380	Trifluoro methane CAS 75-46-7 CHF <sub>3</sub>	R 23 CHF <sub>3</sub>	Fluoroform	70.0 2.42 r	Gas	-82.2 -116°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
									1 mg/m <sup>3</sup> = 0.34 ppm			
381	Trifluoro methoxy benzene CAS 456-55-3 C <sub>6</sub> H <sub>5</sub> OCF <sub>3</sub>	TFMB C <sub>7</sub> H <sub>5</sub> F <sub>3</sub> O	Phenyl trifluoromethyl ether Trifluoroanisene	162.1 5.60 r 164 v	1.23	102 216°F		12 54°F	2.0 (135)			
									1 mg/m <sup>3</sup> = 0.15 ppm			
382	Trifluoromethyl benzene amine CAS 98-16-8 CF <sub>3</sub> -C <sub>6</sub> H <sub>4</sub> -NH <sub>2</sub>	C <sub>7</sub> H <sub>6</sub> F <sub>3</sub> N	Trifluoromethylanilin 3-Aminobenzo trifluoride	161.1 5.56 r	1.30	187 369°F	1	85 185°F				600 IIA T1
									1 mg/m <sup>3</sup> = 0.15 ppm			

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
372	200 (1112)	350 (1945)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	100 %LEL (§) 60 / 100 %LEL 100 %LEL (?) 80 / 100 %LEL // 2.3 / 2.3 vol% (2) 40 / 100 %LEL (2)	
373	0.5 (2.5)	50c (249)	Pyrolyzer Polytron 7500 PFC	TCM: 100 / 100 ppm / LDL = 1 ppm	S = 0.66
374	0.1 (0.69)	0.1 (0.69)	Pyrolyzer Polytron 7500 PFC	20 ppm / LDL = 0.5 ppm	S=1.3
375		10 (61)	Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340	70 / 100 %LEL 100 %LEL (§) 60 / 100 %LEL 100 %LEL (§)	
376			Polytron 7000, XP Tox AC Polytron 7000, XP Tox HCl	Acid: 3 / 10 / 30 ppm / LDL = 0.5 ppm TrCS: 5 / 10 / 20 ppm / LDL = 0.5 ppm	
377	1 (4.2)	25 (105)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron IR Ex ES Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (§) 35 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 5 / 100 %LEL // 1000 ppm (3) 100 %LEL 20 / 100 %LEL // 3000 ppm (3) TEA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison
378			Polytron IR Ex, IR Ex IL	2000 ppm (3)?	
379			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex ES Pyrolyzer Polytron 7500 PFC	45 / 100 %LEL 50 / 100 %LEL 70 / 100 %LEL (2) 40 ppm / LDL = 1 ppm	S=0.8
380			Pyrolyzer Polytron 7500 PFC	100 ppm / LDL = 2 ppm	S=0.3
381			Dräger PIR 7000 Typ 334 Polytron IR Typ 334	100 %LEL (§) 50 / 100 %LEL	
382			Pyrolyzer Polytron 7500 PFC	60 ppm / LDL = 1 ppm	S=0.5

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
383	Trimethylamine CAS 75-50-3 (CH <sub>3</sub> ) <sub>3</sub> N	TMA C <sub>3</sub> H <sub>9</sub> N	N,N-Dimethylmethanamine	59.1 2.04 r	Gas 1 ppm = 2.46 mg/m <sup>3</sup>	3 37°F	Gas	Gas	2.0 (49) 1 mg/m <sup>3</sup> = 0.41 ppm	2.0 (49)	2.0 (49)	190 IIA T4
384	1.2.4-Trimethylbenzene CAS 95-63-6 C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>3</sub>	C <sub>9</sub> H <sub>12</sub>	Pseudocumene	120.2 4.15 r	0.88 1 ppm = 5.01 mg/m <sup>3</sup>	169 336°F	2.5	50 122°F	0.8 (40) 1 mg/m <sup>3</sup> = 0.20 ppm		0.9 (45)	485 IIA T1
385	1.3.5-Trimethylbenzene CAS 108-67-8 C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>3</sub>	C <sub>9</sub> H <sub>12</sub>	Mesitylene	120.2 4.15 r	0.87 1 ppm = 5.01 mg/m <sup>3</sup>	165 329°F	3	44 111°F	1.0 (50) 1 mg/m <sup>3</sup> = 0.20 ppm	0.8 (40)		550 IIA T1
386	Trimethyl borane CAS 593-90-8 B(CH <sub>3</sub> ) <sub>3</sub>	TMB C <sub>3</sub> H <sub>9</sub> B	Boron trimethyl	55.9 1.93 r	Gas 1 ppm = 2.33 mg/m <sup>3</sup>	-20 -4°F	Gas	Gas			1 mg/m <sup>3</sup> = 0.43 ppm	
387	2.2.4-Trimethyl hexane CAS 16747-26-5 C <sub>2</sub> H <sub>5</sub> CH(CH <sub>3</sub> )CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	C <sub>9</sub> H <sub>20</sub>	i-Nonane	128.3 4.43 r 79 v	0.71 1 ppm = 5.35 mg/m <sup>3</sup>	126 259°F	16	15 59°F	0.7 (37) 1 mg/m <sup>3</sup> = 0.19 ppm			IIA
388	Trimethyl orthoformate CAS 149-73-5 CH(OCH <sub>3</sub> ) <sub>3</sub>	TMOF C <sub>4</sub> H <sub>10</sub> O <sub>3</sub>	Trimethoxymethane Formic acid-o-trimethyl ester	106.1 3.66 r 96 v	0.97 1 ppm = 4.42 mg/m <sup>3</sup>	104 219°F	31.3	13 55°F	1.4 (62) 1 mg/m <sup>3</sup> = 0.23 ppm			255 IIB T3
389	2.2.4-Trimethylpentane CAS 540-84-1 CH <sub>3</sub> CH(CH <sub>3</sub> )CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	C <sub>8</sub> H <sub>18</sub>	i-Octane	114.2 3.94 r 103 v	0.69 1 ppm = 4.76 mg/m <sup>3</sup>	99 210°F	52	-12 10°F	1.0 (48) 1 mg/m <sup>3</sup> = 0.21 ppm	0.7 (33)		410 IIA T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
383		10 (25)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox NH3 LC	100 %LEL 100 %LEL (\$) 30 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL 5 / 100 %LEL // 1000 ppm (3) 100 %LEL TMA: 100 ppm / LDL = 5 ppm	corrosive/sensor poison
384	20 (100)	25 (125)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	10 // 100 %LEL 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 100 %LEL (?) 2000 ppm (3)	
385	20 (100)	25 (125)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	10 // 100 %LEL 30 / 100 %LEL 100 %LEL (\$) 20 / 100 %LEL 100 %LEL (\$) 100 %LEL (?) 2000 ppm (3) 100 %LEL	
386			Polytron 7000, XP Tox Hydrides		on request
387			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	100 %LEL 15 / 100 %LEL 50 / 100 %LEL 10 / 100 %LEL 10 / 100 %LEL 100 %LEL 100 %LEL	
388			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 2000 ppm (3)?	
389			PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL 100 %LEL (\$) 40 / 100 %LEL 100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	

# List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
390	2.4.4-Trimethyl-1-pentene CAS 107-39-1 CH <sub>2</sub> =C(CH <sub>3</sub> )CH <sub>2</sub> C(CH <sub>3</sub> ) <sub>3</sub>	C <sub>8</sub> H <sub>16</sub>	Di-i-butylene	112.2 3.87 r 78 v	0.72	101 214°F	46	-6 21°F	0.8 (37)	1.1 (51)	0.8 (37)	415 IIA T2
391	Trimethyl silane CAS 993-07-7 SiH(CH <sub>3</sub> ) <sub>3</sub>	TMS C <sub>3</sub> H <sub>10</sub> Si	2-Methyl-2-silapropane	74.2 2.56 r	Gas	7 45°F	Gas	Gas	1.3 (40)			235 T3
392	1.3.5-Trioxane CAS 110-88-3 (CH <sub>2</sub> ) <sub>3</sub> O <sub>3</sub>	C <sub>3</sub> H <sub>6</sub> O <sub>3</sub>	Trioxymethylene 1.3.5-Trioxacyclohexane Metaformaldehyde	90.1 3.11 r	1.17	115 239°F	11	45 113°F	3.6 (135)	3.2 (120)		410 IIB T2
393	Tri-n-propylamine CAS 102-69-2 (C <sub>3</sub> H <sub>7</sub> ) <sub>3</sub> N	C <sub>9</sub> H <sub>21</sub> N	N,N-Dipropyl-1-propanamine Tripropyl amine	143.3 4.95 r	0.75	156 313°F	3	35 95°F	0.7 (42)			180 T4
394	Tungsten hexafluoride CAS 7783-82-6 WF <sub>6</sub>	F <sub>6</sub> W		297.8 10.28 r	Gas	17 63°F	Gas	n.a.	n.a.	n.a.	n.a.	n.a.
395	n-Undecane CAS 1120-21-4 C <sub>11</sub> H <sub>24</sub>	C11 C <sub>11</sub> H <sub>24</sub>	Hendecane	156.3 5.40 r	0.74	196 385°F	0.6	61 142°F	0.6 (39)			195 IIA T4
396	Vinyl acetate CAS 108-05-4 CH <sub>3</sub> COOCH=CH <sub>2</sub>	VAM C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	Acetic acid vinyl ester Acetic acid ethenyl ester 1-Acetoxyethylene	86.1 2.97 r 150 v	0.93	72 162°F	121	-8 18°F	2.6 (93)	2.6 (93)	2.6 (93)	385 IIA T2
397	Vinylacetylene CAS 689-97-4 CH <sub>2</sub> =CHCCH	C <sub>4</sub> H <sub>4</sub>	1-Buten-3-yne 3-Butenyne-1	52.1 1.80 r	Gas	5 41°F	Gas	Gas	2.0 (43)			
398	Vinyl chloride CAS 75-01-4 CH <sub>2</sub> =CHCl	VCM C <sub>2</sub> H <sub>3</sub> Cl	Chloroethene Chloroethylene R 1140	62.5 2.16 r	Gas	-13 9°F	Gas	Gas	3.8 (99)	3.6 (94)	3.6 (94)	415 IIA T2
399	Vinylcyclohexane CAS 695-12-5 C <sub>6</sub> H <sub>11</sub> CH=CH <sub>2</sub>	C <sub>8</sub> H <sub>14</sub>	Cyclohexylethene	110.2 3.80 r	0.81	128 262°F		21 70°F				
400	4-Vinyl cyclohexene-1 CAS 100-40-3 C <sub>6</sub> H <sub>9</sub> CH=CH <sub>2</sub>	C <sub>8</sub> H <sub>12</sub>	1.2.5.6-Tetrahydrostyrene 4-Ethenylcyclohexene	108.2 3.73 r 49 v	0.83	128 262°F	14	15 59°F	0.6 (27)	0.8 (36)		265 IIA T3
401	Vinyl fluoride CAS 75-02-5 CH <sub>2</sub> =CHF	R 1141 C <sub>2</sub> H <sub>3</sub> F	Fluoroethene VF	46.0 1.59 r	Gas	-72 -98°F	Gas	Gas	2.9 (56)		2.6 (50)	375 T2

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
390			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	20 / 100 %LEL 30 / 100 %LEL 15 / 100 %LEL 100 %LEL (§) 1000 ppm (3) 100 %LEL as EtOH (100 / 200 / 300 ppm)	S=0.6 (L)
391		5 (15)	Polytron 7000, XP Tox Hydrides Polytron 7000, XP Tox Hydr. SC	TMS: 5 / 20 / 20 ppm / LDL = 0.3 ppm TMS: 1 / 5 / 20 ppm / LDL = 0.2 ppm	
392			PEX 3000, SE Ex, FX, XP Ex	100 %LEL	solid - melting point 62 °C
393			Dräger PIR 7000 Typ 334 Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	25 / 100 %LEL 25 / 100 %LEL 25 / 100 %LEL 5 / 100 %LEL 10 / 100 %LEL 100 %LEL 10 / 100 %LEL // 1000 ppm (3)	
394			Polytron 7000, XP Tox AC	WF6: 3 / 10 / 30 ppm / LDL = 0.5 ppm	
395			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL	
396	5 (18)	4c (14)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Polytron IR Ex ES Polytron 7000, XP Tox OV1	10 // 100 %LEL 100 %LEL (§) 40 / 100 %LEL 40 / 100 %LEL // 1.5 / 2.3 vol% (2) VAc: 20 / 50 / 100 ppm / LDL = 5 ppm	polymerizing/sensor poison  S=0.8
397			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL? 100 %LEL (2)?	polymerizing/sensor poison
398	3 (7.8)	1 (2.6)	PEX 3000, SE Ex, FX, XP Ex Polytron 7000, XP Tox OV1	100 %LEL VC: 20 / 50 / 100 ppm / LDL = 5 ppm	corrosive/sensor poison S=0.8
399			Polytron IR Ex, IR Ex IL	3000 ppm (3)?	
400			Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Polytron IR Ex, IR Ex IL Polytron IR Ex HC Polytron 7000, XP Tox OV1	100 %LEL (?) 100 %LEL (?) 1000 ppm (3) 100 %LEL as EtOH (100 / 200 / 300 ppm)	S=0.5 (L)
401		1 (1.9)	Polytron 7000, XP Tox OV1	as VC (20 / 50 / 100 ppm)	

## List of detectable gases and vapours 2011

No.	Substance Chemical formula	Shortn. S-formula	Further synonyms	Molw. g/mol	Dens. g/ml	Boil. °C	P <sub>20</sub> mbar	Flpt. °C	LEL Germ.	LEL IEC	LEL USA	AIT °C
402	Vinylmethyl ether CAS 107-25-5 CH <sub>2</sub> =CHOCH <sub>3</sub>	VME C <sub>3</sub> H <sub>6</sub> O	Methoxyethene Ethenyl methylether Methylvinyl ether	58.1 2.01 r	Gas 1 ppm = 2.42 mg/m <sup>3</sup>	6 43°F	Gas	Gas	2.2 (53) 1 mg/m <sup>3</sup> = 0.41 ppm			220 IIB T3
403	Vinylmethylketone CAS 78-94-4 CH <sub>3</sub> COCH=CH <sub>2</sub>	MVK C <sub>4</sub> H <sub>6</sub> O	Methylvinylketone 1-Buten-3-one	70.1 2.42 r 111 v	0.83 1 ppm = 2.92 mg/m <sup>3</sup>	81 178°F	100	-7 19°F	2.1 (61) 1 mg/m <sup>3</sup> = 0.34 ppm			491 T1
404	Vinyltrimethoxysilane CAS 2768-02-7 CH <sub>2</sub> =CHSi(OCH <sub>3</sub> ) <sub>3</sub>	VTMOS C <sub>6</sub> H <sub>12</sub> O <sub>3</sub> Si	Ethenyltrimethoxysilane Trimethoxy vinylsilane Trimethoxy silylethene	148.2 5.12 r 67 v	0.97 1 ppm = 6.18 mg/m <sup>3</sup>	124 255°F		23 73°F	0.7 (43) 1 mg/m <sup>3</sup> = 0.16 ppm			235 IIB T3
405	m-Xylene CAS 108-38-3 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	C <sub>8</sub> H <sub>10</sub>	1,3-Dimethylbenzene	106.2 3.67 r 77 v	0.86 1 ppm = 4.43 mg/m <sup>3</sup>	139 282°F	8	25 77°F	1.0 (44) 1 mg/m <sup>3</sup> = 0.23 ppm	1.0 (44)	1.1 (49)	540 IIA T1
406	o-Xylene CAS 95-47-6 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	C <sub>8</sub> H <sub>10</sub>	1,2-Dimethylbenzene	106.2 3.67 r	0.88 1 ppm = 4.43 mg/m <sup>3</sup>	144 291°F	7	30 86°F	1.0 (44) 1 mg/m <sup>3</sup> = 0.23 ppm	1.0 (44)	0.9 (40)	465 IIA T1
407	p-Xylene CAS 106-42-3 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	C <sub>8</sub> H <sub>10</sub>	1,4-Dimethylbenzene	106.2 3.67 r 77 v	0.86 1 ppm = 4.43 mg/m <sup>3</sup>	138 280°F	9	25 77°F	1.0 (44) 1 mg/m <sup>3</sup> = 0.23 ppm	0.9 (40)	1.1 (49)	540 IIA T1
408	Xylene (mixture of isomeres) CAS 1330-20-7 C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub>	C <sub>8</sub> H <sub>10</sub>		106.2 3.67 r 76 v	0.87 1 ppm = 4.43 mg/m <sup>3</sup>	138 280°F	8	27 81°F	1.0 (44) 1 mg/m <sup>3</sup> = 0.23 ppm	1.0 (44)	0.9 (40)	465 IIA T1

No.	TLV Germ.	TLV USA	Detectable with	Suitable measuring ranges	Important remarks
402			Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL	25 / 100 %LEL 30 / 100 %LEL 15 / 100 %LEL 15 / 100 %LEL 100 %LEL 100 %LEL	
403			PEX 3000, SE Ex, FX, XP Ex Polytron IR Ex, IR Ex IL	100 %LEL 5000 ppm (3)?	
404			Polytron IR Ex, IR Ex IL	10 / 100 %LEL // 1000 ppm (3)	
405	100 (443)	100 (443)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 30 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (2) 25 / 100 %LEL // 2500 ppm (3) 20 / 100 %LEL // 3000 ppm (3)	Performance Approval
406	100 (443)	100 (443)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 30 / 100 %LEL // 2500 ppm Gas-Library 25 / 100 %LEL // 1800 ppm Gas-Library 30 / 100 %LEL // 2500 ppm Gas-Library 25 / 100 %LEL // 2000 ppm Gas-Library 100 %LEL (2) 20 / 100 %LEL // 2000 ppm (3) 30 / 100 %LEL // 3000 ppm (3)	Performance Approval Performance Approval Performance Approval
407	100 (443)	100 (443)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 30 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL (2) 25 / 100 %LEL // 2500 ppm (3) 20 / 100 %LEL // 3000 ppm (3)	Performance Approval
408	100 (443)	100 (443)	PEX 3000, SE Ex, FX, XP Ex Dräger PIR 7000 Typ 334 Polytron IR Typ 334 Dräger PIR 7000 Typ 340 Polytron IR Typ 340 Dräger PIR 3000 Polytron IR Ex, IR Ex IL Polytron IR Ex ES	10 // 100 %LEL 100 %LEL (\$) 30 / 100 %LEL 100 %LEL (\$) 25 / 100 %LEL 100 %LEL 25 / 100 %LEL // 2500 ppm (3) 20 / 100 %LEL // 3000 ppm (3)	Performance Approval





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