

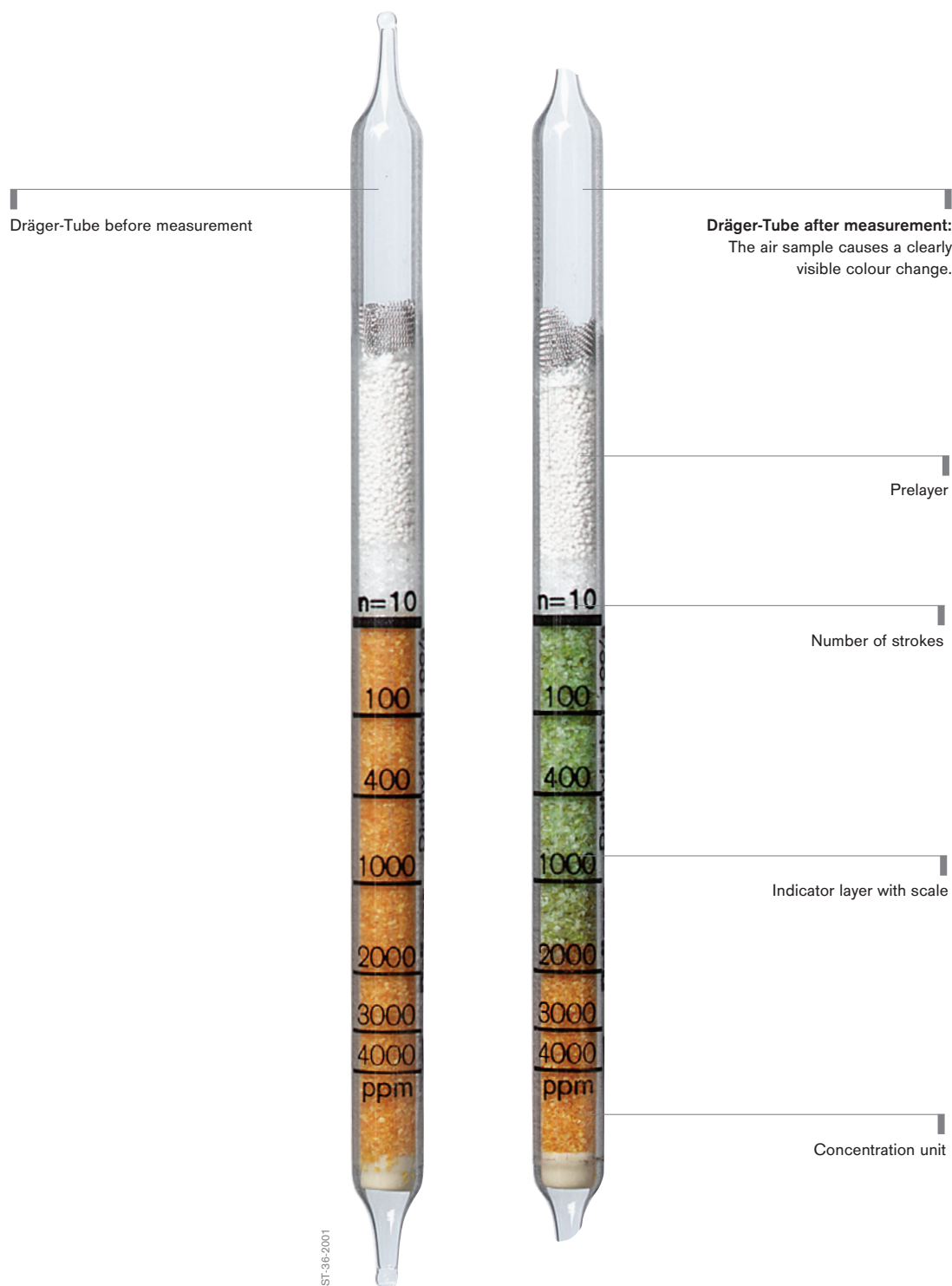


**A laboratory behind glass**

DRÄGER-TUBES

Dräger-Tubes –  
a laboratory  
behind glass.





The Dräger-Tubes are an extremely cost-effective and, above all, reliable method of measurement. Dräger-Tubes have proved themselves a million times over and are used all over the world.



## Dräger-Tubes – a success story.

Dräger-Tubes are the best example for a short-term gas measurement system – and not without good reason, for over seven decades, Dräger, the leading tube manufacturer, has perfected its “laboratory behind glass”; and the more than 100 million tubes sold in the last ten years are testimony to the satisfaction of our customers.

Today, Dräger-Tubes represent one of the classic forms of gas analysis. These versatile tubes make possible countless applications in industry, firefighting, disaster prevention, laboratory work, environmental protection and many other areas which require measurement results to be instantly available so that decisions can be made.

Especially in applications in which individual measurements or low measurement frequencies are sufficient, Dräger-Tubes have advantages compared to electronic measurement equipment. They are comparatively inexpensive to purchase and very easy to use.

Dräger-Tubes provide results immediately after measurement, so there is no need to send samples into a lab for analysis. There is also no need for calibration by the user – the calibration is shown in the form of a scale printed on the tube.

Currently, more than 220 short-term tubes are available for measuring up to 500 gases, and the number is growing year by year. New and more sensitive tubes are developed to meet changing environmental conditions, new legal regulations, falling limit values and special customer requirements. As far as new gases are concerned, the measurement system plays a pioneering

role, and Dräger Safety is a trend-setter when it comes to developing new – even customer-specific – tubes.

### THE FUNCTIONAL PRINCIPLE IS AMAZINGLY SIMPLE

The Dräger-Tube, a sealed glass vial, contains on a solid carrier material a chemical reagent which reacts to a particular gas or vapour with a characteristic colour change. To cause this reaction, a defined volume of ambient air is drawn through the tube using a Dräger-Tube pump. Even small quantities of gas are sufficient, and the user can easily read and analyse the result because of the scale marks printed on the tube.



#### A BESTSELLER WITH GOOD REASON

##### Dräger-Tubes

- deliver a fast and reliable measurement result
- are easy to use, even with safety gloves
- are ideal for spot measurements
- perform their measurements without any power supply
- require no calibration prior to measurement
- offer an impressive level of cost effectiveness

#### DRÄGER VOICE: FOR MORE DETAILED INFORMATION

You can find everything you ever wanted to know about hazardous substances at

[www.draeger-safety.com/voice](http://www.draeger-safety.com/voice).

Our Dräger VOICE database contains information about more than 1,600 hazardous substances. In addition, Dräger Safety products that are suitable for measuring and protecting against specific hazardous substances are recommended. Once you have registered – which is quick and free of charge – you can take advantage of this online service at any time, day or night.

#### KNOWLEDGE IN COMPACT FORM

The Dräger-Tubes/CMS handbook is designed to keep you up-to-date with the latest technology and information. It provides a complete overview of all available tubes and systems, their respective applications, and accessories.

Take advantage of our know-how. The range of services we offer – technical applications-related advice, seminars, measurements and analysis, and production of customer-specific tubes – goes far beyond a mere product portfolio.



## Our Dräger-Tube pumps: making measurements a breeze.

Together with the Dräger short-term tubes, these pumps make the perfect team. Whether you choose a manual one-hand pump for single measurements or an automatic pump – what sets Dräger-Tube pumps apart is the fact that they are robust, highly accurate, very low-maintenance, ready for use quickly and easy to handle.

### DRÄGER-TUBE PUMP ACCURO

Handy, reliable, tried and tested a million times over: the Dräger accuro. Because this one-hand pump works without a power supply, it can be used anywhere including potentially explosive areas.\* The sturdy and robust accuro pump can be easily operated using only one hand and is therefore suitable for conducting measurements at places which are difficult to access. The end of each stroke is clearly indicated.



**Dräger accuro®**  
Handy, reliable and tried and tested a million times over



**Dräger X-act® 5000**  
Achieves the correct number of strokes automatically

### AUTOMATIC TUBE PUMP

#### DRÄGER X-ACT 5000

The Dräger X-act 5000 is the new IS approved Dräger-Tube pump. It is designed for measurement with Dräger short-term tubes and sampling tubes or systems. Ease of operation is based on the intuitive menu navigation of the different operating modes and the intelligent pump control using electronics and software. One of the key principles, is the ability to provide the required flow characteristics of the Dräger short-term tubes, reducing the average measurement time of Dräger short-term tubes that require a higher number of strokes. A barcode printed on the label on the back of a Dräger short-term tube box contains all relevant measurement parameters. Simply sliding the barcode over the barcode reader of the pump automatically transfers the name of the substance to be measured, the number of strokes, and the measuring range to

the display. For measurements in technical gases, the properties of the technical gases, must be taken into consideration when evaluating the Dräger short-term tubes. Following the operating steps in the mode "Measurement in Technical Gases", the Dräger X-act 5000 will automatically adjust to the required flow parameter and the measurement result can be read directly. The required parameters for the sample taking can be set directly, without the need for an external flowmeter or a stopwatch.

The Dräger X-act 5000 automatically adjusts the flowrate. After setting the sampling time, the pump can immediately be started. At the end of the measurement the pump will stop automatically. The set data, the elapsed time and the pumped volume will be indicated on the display.

#### Barcode reader

The Dräger X-act® 5000 has a built-in barcode reader which emits an invisible laser beam during normal operation. The Dräger X-act® 5000 is a Class 1M LASER Product with Class 3R internal radiation per the requirements of IEC 60825-1.

**INVISIBLE LASER RADIATION • DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS • CLASS 1M LASER PRODUCT**  
Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers and microscopes) within a distance of 100 mm may pose an eye hazard.

\* Except in conjunction with the following Dräger-Tubes: Halogenated Hydrocarbons 100/a, Oxygen 5%/B, Oxygen 5%/C, Carbon Disulphide 5/a, Sulphuryl Fluoride 1/a, Hydrogen 0.2%/a, Hydrogen 0.5%/a.



## Prepared for every eventuality with the right accessories.

Intelligent accessories ensure that you can perform reliable measurements, even under extreme conditions. With our proven solutions, you could not be better prepared for any application.

### A PERFECT FIT: THE EXTENSION HOSE

For measurements at difficult to reach areas, such as ducts, shafts or tanks, extension hoses of up to 15 meters (49 feet) length for the Dräger accuro and up to 30 meters (98 feet) length for the Dräger X-act 5000 are available. The extension hose is fitted with a tube holder at the free end of the hose. This means that measurements are possible without flushing of the dead volume of the hose.

### NO TEMPERATURE TOO HIGH: THE HOT-AIR PROBE

The hot-air probe allows you to measure extremely hot gases, e.g. in combustion plants. This probe needs to be used whenever the temperature range indicated in the instructions for use for the particular Dräger-Tube is exceeded. The probe, which is connected by a rubber hose to the tube, cools the gas to temperatures below 50 °C (122 °F).

### CUTTING EDGE: THE DRÄGER TO 7000

No bigger than a pencil sharpener, the Dräger TO 7000 opens the glass tip so cleanly that no jagged edges remain on the tube. Simply insert the tube, twist it, and you are ready for measurement. With the white measurement scale printed on the Dräger TO 7000, you have a light background for easy readability.

### WARMTH WITHOUT POWER: THE HOT-PACK HOLDER

Freezing temperatures down to -20 °C (-4 °F) are no problem for the "tube warmer", which requires no electrical power supply. The Dräger Hot-Pack Holder allows Dräger-Tubes to be used even at ambient temperatures below the limits stated in the instructions for use. Extremely cost effective (the tube warmers can be used several hundred times) and easy to use, the Dräger Hot-Pack Holder is the ideal companion when working at below freezing temperatures.



ST-1990-2005

#### Dräger TO 7000

For safe and easy opening of your Dräger-Tubes



ST-1374-2004

#### Hot-Pack Holder for Dräger-Tubes

For measurements even at below-zero temperatures



## We've done the packing for you: complete Aerotest Systems and Simultaneous Test

Dräger Safety has developed a range of measurement systems to meet the requirements of your different applications, and put them together as complete sets. The Dräger-Tube kits deliver fast and efficient results.



Dräger Aerotest systems

### CHECKING AIR QUALITY WITH DRÄGER AEROTEST SYSTEMS

Every day, fire brigade, healthcare and diving professionals rely on compressed air analysis from Dräger Safety. With more than 100 years of experience in this area, we provide measurement technology at the highest level. Our Dräger Aerotest family helps to ensure maximum safety during the measurement of compressed gases.

The Dräger Aerotest system is used to check the quality of the air we breathe. Before compressed air can be used as breathing air, it must meet rigorous quality requirements such as those contained in the EN 12 021 standard and the European Pharmacopoeia. Specially calibrated Dräger-Tubes and the Dräger Aerotest can be used to

detect typical impurities in compressed breathing air quickly and reliably, e.g. CO, CO<sub>2</sub>, humidity and oil. Besides breathing air, oxygen and carbon dioxide can also be analysed in no time at all for purity or for compliance with specific regulations. The Dräger Aerotest Simultaneous Test allows parallel measurement of up to seven different contaminants, with results available in just five minutes. The Dräger Aerotest Simultaneous Test is compact in design and can be connected to standard compressors, compressed air lines and cylinders using standard tools.

A wide selection of Aerotest systems is available for checking compressed gases for purity. We have put the sets together for you in a handy case.



ST-1670-2004

### DRÄGER SIMULTANEOUS TEST SETS SAVE VALUABLE TIME IN HAZARDOUS SITUATIONS

Before you can take specific action to protect personnel and property, you need specific information about the hazard. Air contamination, e.g. from hazardous waste sites, fires, chemical or transport accidents, poses particular challenges. Whenever it is important for you to track down every conceivable potential gas hazard as quickly as possible, the Dräger Simultaneous Test Sets are multi-gas detectors which provide a fast basis for reliable decision-making – right on-site.

Dräger Simultaneous Test Sets comprise five Dräger-Tubes arranged in parallel in a rubber sleeve. Via an adapter, the air to be tested is drawn through all the tubes simultaneously using the gas detector pump. The concentration of gases to be

measured can be seen from markings on the tubes, which range from “non-hazardous” to “extremely hazardous”. We have developed three Simultaneous Test Sets for specialized applications such as fires or accidents involving hazardous goods transports: the Dräger Simultaneous Test Sets I and II for the measurement of inorganic fumes, and set III for the measurement of organic vapours. In addition, there are six other Dräger Simultaneous Test Sets available in conjunction with an adapter and the Dräger-Tube pump for all kinds of different applications.

We are happy to advise and assist you with working out specific measurement strategies and putting together individual Simultaneous Test Sets to suit your needs.



ST-1362-2004

**Dräger Simultaneous Test Set**  
Parallel measurement of five gases



## ALL DRÄGER-TUBES AT A GLANCE.

| Dräger-Tubes                                                        | Standard Range of Measurement<br>(20 °C (68 °F), 1,013 hPa) | Measurement Time<br>(min.) | Order Code |
|---------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|------------|
| Acetaldehyde 100/a                                                  | 100 – 1,000 ppm                                             | 5                          | 67 26 665  |
| Acetic Acid 5/a                                                     | 5 – 80 ppm                                                  | 30 s                       | 67 22 101  |
| Acetone 40/a (5)                                                    | 40 – 800 ppm                                                | 1                          | 81 03 381  |
| Acetone 100/b                                                       | 100 – 12,000 ppm                                            | 4                          | CH 22 901  |
| Acid Test                                                           | qualitative                                                 | 3 s                        | 81 01 121  |
| Acrylonitrile 0.5/a (5)                                             | 1 – 20 ppm                                                  | 2                          | 67 28 591  |
|                                                                     | 0.5 – 10 ppm                                                | 4                          |            |
| Acrylonitrile 5/b                                                   | 5 – 30 ppm                                                  | 30 s                       | CH 26 901  |
| Activation tube for use in conjunction with Formaldehyde 0.2/a tube |                                                             |                            | 81 01 141  |
| Alcohol 25/a                                                        | – n-Butanol<br>– Ethanol<br>– Methanol<br>– i-Propanol      | 5                          | 81 01 631  |
| Alcohol 100/a                                                       | 100 – 3,000 ppm                                             | 1.5                        | CH 29 701  |
| Amine-Test                                                          | qualitative                                                 | 5 s                        | 81 01 061  |
| Ammonia 0.25/a                                                      | 0.25 – 3 ppm                                                | 1                          | 81 01 711  |
| Ammonia 2/a                                                         | 2 – 30 ppm                                                  | 1                          | 67 33 231  |
| Ammonia 5/a                                                         | 5 – 70 ppm<br>50 – 700 ppm                                  | 1<br>6 s                   | CH 20 501  |
| Ammonia 5/b                                                         | 5 – 100 ppm                                                 | 10 s                       | 81 01 941  |
| Ammonia 0.5 %/a                                                     | 0.5 – 10 Vol.-%                                             | 20 s                       | CH 31 901  |
| Aniline 0.5/a                                                       | 0.5 – 10 ppm                                                | 4                          | 67 33 171  |
| Aniline 5/a                                                         | 1 – 20 ppm                                                  | 3                          | CH 20 401  |
| Arsine 0.05/a                                                       | 0.05 – 3 ppm                                                | 6                          | CH 25 001  |
| Benzene 0.25/a                                                      | 0.25 – 2 ppm<br>2 – 10 ppm                                  | 5<br>1                     | 81 03 691  |
| Benzene 1/a                                                         | 1 ppm                                                       | 3                          | 81 03 641  |
| Benzene 2/a (5)                                                     | 2 – 60 ppm                                                  | 8                          | 81 01 231  |
| Benzene 5/a                                                         | 5 – 40 ppm                                                  | 3                          | 67 18 801  |
| Benzene 5/b                                                         | 5 – 50 ppm                                                  | 8                          | 67 28 071  |
| BTX (Toluene 5/b)                                                   | 50 – 300 ppm                                                | 1                          | 81 01 661  |
| Carbon Dioxide 100/a                                                | 100 – 3,000 ppm                                             | 4                          | 81 01 811  |
| Carbon Dioxide 0.1 %/a                                              | 0.5 – 6 Vol.-%<br>0.1 – 1.2 Vol.-%                          | 30 s<br>2.5                | CH 23 501  |
| Carbon Dioxide 0.5 %/a                                              | 0.5 – 10 Vol.-%                                             | 30 s                       | CH 31 401  |
| Carbon Dioxide 1 %/a                                                | 1 – 20 Vol.-%                                               | 30 s                       | CH 25 101  |
| Carbon Dioxide 5 %/A                                                | 5 – 60 Vol.-%                                               | 2                          | CH 20 301  |
| Carbon Disulphide 3/a                                               | 3 – 95 ppm                                                  | 2                          | 81 01 891  |
| Carbon Disulphide 5/a                                               | 5 – 60 ppm                                                  | 3                          | 67 28 351  |
| Carbon Disulphide 30/a                                              | 0.1 – 10 mg/L                                               | 1                          | CH 23 201  |
| Carbon Monoxide 2/a                                                 | 2 – 60 ppm                                                  | 4                          | 67 33 051  |
| Carbon Monoxide 5/c                                                 | 100 – 700 ppm<br>5 – 150 ppm                                | 30 s<br>2.5                | CH 25 601  |
| Carbon Monoxide 8/a                                                 | 8 – 150 ppm                                                 | 2                          | CH 19 701  |
| Carbon Monoxide 10/b                                                | 100 – 3,000 ppm<br>10 – 300 ppm                             | 20 s<br>4                  | CH 20 601  |
| Carbon Monoxide 0.3 %/b                                             | 0.3 – 7 Vol.-%                                              | 30 s                       | CH 29 901  |

| Dräger-Tubes                                                            | Standard Range of Measurement<br>(20 °C (68 °F), 1,013 hPa) | Measurement Time<br>(min.) | Order Code |
|-------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|------------|
| Carbon Monoxide 0.3 %/b                                                 | 0.3 – 7 Vol.-%                                              | 30 s                       | CH 29 901  |
| Respiratory CO Test Kit (5)                                             |                                                             |                            | CH 00 270  |
| Carbon Tetrachloride 0.1/a                                              | 0.1 – 5 ppm                                                 | 2.5                        | 81 03 501  |
| Carbon Tetrachloride 1/a                                                | 1 – 15 ppm                                                  | 6                          | 81 01 021  |
| Chlorine 0.2/a                                                          | 0.2 – 3 ppm<br>3 – 30 ppm                                   | 3<br>30 s                  | CH24 301   |
| Chlorine 0.3/b                                                          | 0.3 – 5 ppm                                                 | 8                          | 67 28 411  |
| Chlorine 50/a                                                           | 50 – 500 ppm                                                | 20 s                       | CH 20 701  |
| Chlorine Dioxide 0.025/a specific                                       | 0.025 – 0,1 ppm<br>0,1 – 1 ppm                              | 7.5<br>2.5                 | 81 03 491  |
| Chlorobenzene 5/a (5)                                                   | 5 – 200 ppm                                                 | 3                          | 67 28 761  |
| Chloroform 2/a (5)                                                      | 2 – 10 ppm                                                  | 9                          | 67 28 861  |
| Chloroformates 0.2/b                                                    | 0.2 – 10 ppm                                                | 3                          | 67 18 601  |
| Chloroprene 5/a                                                         | 5 – 60 ppm                                                  | 3                          | 67 18 901  |
| Chloropicrine 0.1/a                                                     | 0.1 – 2 ppm                                                 | 7.5                        | 81 03 421  |
| Chromic Acid 0.1/a (9)                                                  | 0.1 – 0.5 mg/m <sup>3</sup>                                 | 8                          | 67 28 681  |
| Cyanide 2/a                                                             | 2 – 15 mg/m <sup>3</sup>                                    | 2                          | 67 28 791  |
| Cyanogen Chloride 0.25/a                                                | 0.25 – 5 ppm                                                | 5                          | CH 19 801  |
| Cyclohexane 40/a                                                        | 40 – 200 ppm<br>300 – 3,000 ppm                             | 75 s<br>15 s               | 81 03 671  |
| Cyclohexylamine 2/a                                                     | 2 – 30 ppm                                                  | 4                          | 67 28 931  |
| Diesel Fuel                                                             | 25 – 200 mg/m <sup>3</sup>                                  | 30 s                       | 81 03 475  |
| Diethyl Ether 100/a                                                     | 100 – 4,000 ppm                                             | 3                          | 67 30 501  |
| Dimethyl Formamide 10/b                                                 | 10 – 40 ppm                                                 | 3                          | 67 18 501  |
| Dimethyl Sulphate 0.005/c (9)                                           | 0.005 – 0.05 ppm                                            | 50                         | 67 18 701  |
| Dimethyl Sulphide 1/a (5)                                               | 1 – 15 ppm                                                  | 15                         | 67 28 451  |
| Epichlorohydrin 5/b                                                     | 5 – 50 ppm                                                  | 8                          | 67 28 111  |
| Ethyl Acetate 200/a                                                     | 200 – 3,000 ppm                                             | 5                          | CH 20 201  |
| Ethyl Benzene 30/a                                                      | 30 – 400 ppm                                                | 2                          | 67 28 381  |
| Ethylene 0.1/a (5)                                                      | 0.2 – 5 ppm                                                 | 30                         | 81 01 331  |
| Ethylene 50/a                                                           | 50 – 2,500 ppm                                              | 6                          | 67 28 051  |
| Ethylene Glycol 10 (5)                                                  | 10 – 180 mg/m <sup>3</sup>                                  | 7                          | 81 01 351  |
| Ethylene Oxide 1/a (5)                                                  | 1 – 15 ppm                                                  | 8                          | 67 28 961  |
| Ethylene Oxide 25/a                                                     | 25 – 500 ppm                                                | 6                          | 67 28 241  |
| Ethyl Formate                                                           | 20 – 500 ppm                                                | 5                          | 81 03 541  |
| Ethyl Glycol Acetate 50/a                                               | 50 – 700 ppm                                                | 3                          | 67 26 801  |
| Fluorine 0.1/a                                                          | 0.1 – 2 ppm                                                 | 5                          | 81 01 491  |
| Formaldehyde 0.2/a                                                      | 0.5 – 5 ppm                                                 | 1.5                        | 67 33 081  |
| Activation Tube for use in conjunction with<br>Formaldehyde 0.2/a tube  |                                                             |                            | 81 01 141  |
| Formaldehyde 2/a                                                        | 2 – 40 ppm                                                  | 30 s                       | 81 01 751  |
| Formic Acid 1/a                                                         | 1 – 15 ppm                                                  | 3                          | 67 22 701  |
| Halogenated Hydrocarbons 100/a (8)                                      | 100 – 2,600 ppm                                             | 1                          | 81 01 601  |
| Hexane 10/a                                                             | 10 – 200 ppm<br>300 – 2,500 ppm                             | 5<br>1                     | 81 03 681  |
| Hydrazine 0.01/a                                                        | 0.5 – 6 ppm<br>0.01 – 0.4 ppm                               | 1<br>20                    | 81 03 351  |
| Hydrazine 0.25/a                                                        | 0.25 – 10 ppm<br>0.1 – 5 ppm                                | 1<br>2                     | CH 31 801  |
| Hydrocarbon 2/a                                                         | 2 – 24 mg/L                                                 | 5                          | 81 03 581  |
| Hydrocarbon 0.1 %/c                                                     | 0.1 – 1.3 Vol.-%                                            | 2                          | 81 03 571  |
| Hydrochloric Acid 0.2/a                                                 | 0.2 – 3 ppm<br>3 – 20 ppm                                   | 2<br>40 s                  | 81 03 481  |
| Hydrochloric Acid 1/a                                                   | 1 – 10 ppm                                                  | 2                          | CH 29 501  |
| Hydrochloric Acid 50/a                                                  | 500 – 5,000 ppm<br>50 – 500 ppm                             | 30 s<br>4                  | 67 28 181  |
| Hydrochloric Acid /Nitric Acid 1/a – Hydrochloric Acid<br>– Nitric Acid | 1 – 10 ppm<br>1 – 15 ppm                                    | 1.5<br>3                   | 81 01 681  |
| Hydrocyanic Acid 0.5/a                                                  | 0.5 – 5 ppm<br>5 – 50 ppm                                   | 10<br>2                    | 81 03 601  |
| Hydrogen 0.2 %/a                                                        | 0.2 – 2.0 Vol.-%                                            | 1                          | 81 01 511  |
| Hydrogen 0.5 %/a                                                        | 0.5 – 3.0 Vol.-%                                            | 1                          | CH 30 901  |
| Hydrogen Fluoride 0.5/a                                                 | 0.5 – 15 ppm<br>10 – 90 ppm                                 | 2<br>25 s                  | 81 03 251  |

| Dräger-Tubes                                              | Standard Range of Measurement<br>(20 °C (68 °F), 1,013 hPa) | Measurement Time<br>(min.) | Order Code |
|-----------------------------------------------------------|-------------------------------------------------------------|----------------------------|------------|
| Hydrogen Fluoride 1.5/b                                   | 1.5 – 15 ppm                                                | 2                          | CH 30 301  |
| Hydrogen Peroxide 0.1/a                                   | 0.1 – 3 ppm                                                 | 3                          | 81 01 041  |
| Hydrogen Sulphide 0.2/a                                   | 0.2 – 5 ppm                                                 | 5                          | 81 01 461  |
| Hydrogen Sulphide 0.2/b                                   | 0.2 – 6 ppm                                                 | 55 s                       | 81 01 991  |
| Hydrogen Sulphide 0.5/a                                   | 0.5 – 15 ppm                                                | 6                          | 67 28 041  |
| Hydrogen Sulphide 1/c                                     | 10 – 200 ppm                                                | 20 s                       | 67 19 001  |
|                                                           | 1 – 20 ppm                                                  | 3                          |            |
| Hydrogen Sulphide 1/d                                     | 10 – 200 ppm                                                | 1                          | 81 01 831  |
|                                                           | 1 – 20 ppm                                                  | 10                         |            |
| Hydrogen Sulphide 2/a                                     | 20 – 200 ppm                                                | 20 s                       | 67 28 821  |
|                                                           | 2 – 20 ppm                                                  | 3.5                        |            |
| Hydrogen Sulphide 2/b                                     | 2 – 60 ppm                                                  | 30 s                       | 81 01 961  |
| Hydrogen Sulphide 5/b                                     | 5 – 60 ppm                                                  | 4                          | CH 29 801  |
| Hydrogen Sulphide 100/a                                   | 100 – 2,000 ppm                                             | 30 s                       | CH 29 101  |
| Hydrogen Sulphide 0.2 %/A                                 | 0.2 – 7 Vol.-%                                              | 2                          | CH 28 101  |
| Hydrogen Sulphide 2 %/a                                   | 2 – 40 Vol.-%                                               | 1                          | 81 01 211  |
| Simultan. Tube H <sub>2</sub> S + SO <sub>2</sub> 0.2 %/a | 0.2 – 7 Vol.-%                                              | 2                          | CH 28 201  |
| Iodine 0.1/a                                              | 1 – 5 ppm                                                   | 1                          | 81 03 521  |
|                                                           | 0.1 – 0.6 ppm                                               | 5                          |            |
| Mercaptan 0.1/a                                           | 0.1 – 25 ppm                                                | 3                          | 81 03 281  |
|                                                           | 3 – 15 ppm                                                  | 40 s                       |            |
| Mercaptan 0.5/a                                           | 0.5 – 5 ppm                                                 | 5                          | 67 28 981  |
| Mercaptan 20/a                                            | 20 – 100 ppm                                                | 2.5                        | 81 01 871  |
| Mercury Vapour 0.1/b                                      | 0.05 – 2 mg/m³                                              | 10                         | CH 23 101  |
| Methyl Acrylate 5/a                                       | 5 – 200 ppm                                                 | 5                          | 67 28 161  |
| Methyl Bromide 0.2/a                                      | 0.2 – 8 ppm                                                 | 8                          | 81 03 391  |
| Methyl Bromide 0.5/a                                      | 5 – 30 ppm                                                  | 2                          | 81 01 671  |
|                                                           | 0.5 – 5 ppm                                                 | 5                          |            |
| Methyl Bromide 3/a (5)                                    | 10 – 100 ppm                                                | 1                          | 67 28 211  |
|                                                           | 3 – 35 ppm                                                  | 2.5                        |            |
| Methyl Bromide 5/b                                        | 5 – 50 ppm                                                  | 1                          | CH 27 301  |
| Methylene Chloride 20/a                                   | 20 – 200 ppm                                                | 7                          | 81 03 591  |
| Natural Gas Odorization,<br>Tertiary Butylmercaptan       | 3 – 15 mg/m³<br>1 – 10 mg/m³                                | 3<br>5                     | 81 03 071  |
| Natural Gas Test (5)                                      | qualitative                                                 | 40 s                       | CH 20 001  |
| Nickel Tetracarbonyl 0.1/a (9)                            | 0.1 – 1 ppm                                                 | 5                          | CH 19 501  |
| Nitric Acid 1/a                                           | 5 – 50 ppm                                                  | 2                          | 67 28 311  |
|                                                           | 1 – 15 ppm                                                  | 4                          |            |
| Nitrogen Dioxide 0.1/a                                    | 0,1 – 5 ppm                                                 | 75 s                       | 81 03 631  |
|                                                           | 5 – 30 ppm                                                  | 30 s                       |            |
| Nitrogen Dioxide 2/c                                      | 5 – 100 ppm                                                 | 1                          | 67 19 101  |
|                                                           | 2 – 50 ppm                                                  | 2                          |            |
| Nitrous Fumes 0.2/a                                       | 0.2 – 6 ppm                                                 | 75 s                       | 81 03 661  |
|                                                           | 5 – 30 ppm                                                  | 30 s                       |            |
| Nitrous Fumes 0.1/a                                       | 0.1 – 5 ppm                                                 | 75 s                       | 81 03 631  |
|                                                           | 5 – 30 ppm                                                  | 15 s                       |            |
| Nitrous Fumes 20/a                                        | 20 – 500 ppm                                                | 30 s                       | 67 24 001  |
| Nitrous Fumes 50/a                                        | 250 – 2,000 ppm<br>50 – 1,000 ppm                           | 40 s<br>80 s               | 81 01 921  |
| Nitrous Fumes 100/c                                       | 100 – 1,000 ppm<br>500 – 5,000 ppm                          | 1.5<br>1.5                 | CH 27 701  |
| Oil 10/a-P                                                | 0.1 – 1 mg/m³                                               | 25                         | 67 28 371  |
| Oil Mist 1/a                                              | 1 – 10 mg/m³                                                | 25                         | 67 33 031  |
| Olefine 0.05%/a<br>– Propylene<br>– Butylene              | 0.06 – 3.2 Vol.-%<br>0.04 – 2.4 Vol.-%                      | 5                          | CH31 201   |
| Organ. Arsenic Compounds and Arsine                       | 0.3 mg/m³ as AsH <sub>3</sub>                               | 3                          | CH26 303   |
| Organic Basic Nitrogen Compounds                          | 1 mg/m³ threshold value                                     | 1.5                        | CH25 903   |
| Oxygen 5 %/B (8)                                          | 5 – 23 Vol.-%                                               | 1                          | 67 28 081  |
| Oxygen 5 %/C                                              | 5 – 23 Vol.-%                                               | 1                          | 81 03 261  |
| Ozone 0.05/b                                              | 0.05 – 0.7 ppm                                              | 3                          | 67 33 181  |
| Ozone 10/a                                                | 20 – 300 ppm                                                | 20 s                       | CH 21 001  |
| Pentane 100/a                                             | 100 – 1,500 ppm                                             | 15 s                       | 67 24 701  |
| Perchloroethylene 0.1/a                                   | 0.5 – 4 ppm<br>0.1 – 1 ppm                                  | 3<br>9                     | 81 01 551  |

| Dräger-Tubes                    | Standard Range of Measurement<br>(20 °C (68 °F), 1013 hPa) | Measurement Time<br>(min.) | Order Code |
|---------------------------------|------------------------------------------------------------|----------------------------|------------|
| Perchloroethylene 2/b           | 20 – 300 ppm<br>2 – 40 ppm                                 | 30 s<br>3                  | 81 01 501  |
| Perchloroethylene 10/b          | 10 – 500 ppm                                               | 40 s                       | CH 30 701  |
| Petroleum Hydrocarbons 10/a     | 10 – 300 ppm                                               | 1                          | 81 01 691  |
| Petroleum Hydrocarbons 100/a    | 100 – 2,500 ppm                                            | 30 s                       | 67 30 201  |
| Phenol 1/b                      | 1 – 20 ppm                                                 | 5                          | 81 01 641  |
| Phosgene 0.02/a                 | 0.02 – 1 ppm<br>0.02 – 0.6 ppm                             | 6<br>12                    | 81 01 521  |
| Phosgene 0.05/a                 | 0.04 – 1.5 ppm                                             | 11                         | CH19 401   |
| Phosgene 0.25/c                 | 0.25 – 5 ppm<br>0.01 – 0.3 ppm                             | 1<br>8                     | CH28 301   |
| Phosphine 0.01/a                | 0.1 – 1 ppm<br>0.01 – 0.3 ppm                              | 2.5<br>8                   | 81 01 611  |
| Phosphine 0.1/c                 | 0.5 – 3 ppm<br>0.1 – 1.0 ppm                               | 1<br>2.5                   | 81 03 711  |
| Phosphine 0.1/a                 | 0.1 – 4 ppm                                                | 6                          | CH31 101   |
| Phosphine 0.1/b<br>in Acetylene | 1 – 15 ppm<br>0.1 – 1 ppm                                  | 20 s<br>4                  | 81 03 341  |
| Phosphine 1/a                   | 20 – 100 ppm<br>1 – 20 ppm                                 | 2<br>10                    | 81 01 801  |
| Phosphine 25/a                  | 200 – 10,000 ppm<br>25 – 900 ppm                           | 1.5<br>13                  | 81 01 621  |
| Phosphine 50/a                  | 50 – 1,000 ppm                                             | 2                          | CH 21 201  |
| Phosphoric Acid Ester 0.05/a    | 0.05 ppm                                                   | 5                          | 67 28 461  |
| Polytes                         | qualitative                                                | 1.5                        | CH 28 401  |
| Pyridine 5/A                    | 5 ppm                                                      | 20                         | 67 28 651  |
| Styrene 10/a                    | 10 – 200 ppm                                               | 3                          | 67 23 301  |
| Styrene 10/b                    | 10 – 250 ppm                                               | 3                          | 67 33 141  |
| Styrene 50/a                    | 50 – 400 ppm                                               | 2                          | CH 27 601  |
| Sulphur Dioxide 0.1/a           | 0.1 – 3 ppm                                                | 20                         | 67 27 101  |
| Sulphur Dioxide 0.5/a           | 1 – 25 ppm<br>0.5 – 5 ppm                                  | 3<br>6                     | 67 28 491  |
| Sulphur Dioxide 1/a             | 1 – 25 ppm                                                 | 3                          | CH 31 701  |
| Sulphur Dioxide 20/a            | 20 – 200 ppm                                               | 3                          | CH 24 201  |
| Sulphur Dioxide 50/b            | 400 – 8,000 ppm<br>50 – 500 ppm                            | 15 s<br>3                  | 81 01 531  |
| Sulphuric Acid 1/a (9)          | 1 – 5 mg/m <sup>3</sup>                                    | 100                        | 67 28 781  |
| Sulfuryl Fluoride 1/a (5)       | 1 – 5 ppm                                                  | 3                          | 81 03 471  |
| Tertiary Butylmercaptan         | 3 – 15 mg/m <sup>3</sup>                                   | 3                          | 81 03 071  |
| Natural Gas Odorization         | 1 – 10 mg/m <sup>3</sup>                                   | 5                          |            |
| Tetrahydrothiophene 1/b (5)     | 1 – 10 ppm                                                 | 10                         | 81 01 341  |
| Thioether                       | 1 mg/m <sup>3</sup> threshold value                        | 1.5                        | CH 25 803  |
| Toluene 5/b                     | 50 – 300 ppm<br>5 – 80 ppm                                 | 2<br>10                    | 81 01 661  |
| Toluene 50/a                    | 50 – 400 ppm                                               | 1.5                        | 81 01 701  |
| Toluene 100/a                   | 100 – 1,800 ppm                                            | 1.5                        | 81 01 731  |
| Toluene Diisocyanate 0.02/A (9) | 0.02 – 0.2 ppm                                             | 20                         | 67 24 501  |
| Trichloroethane 50/d (5)        | 50 – 600 ppm                                               | 2                          | CH 21 101  |
| Trichloroethylene 2/a           | 20 – 250 ppm<br>2 – 50 ppm                                 | 1.5<br>2.5                 | 67 28 541  |
| Trichloroethylene 50/a          | 50 – 500 ppm                                               | 1.5                        | 81 01 881  |
| Triethylamine 5/a               | 5 – 60 ppm                                                 | 3                          | 67 18 401  |
| Vinyl Chloride 0.5/b            | 5 – 30 ppm<br>0.5 – 5 ppm                                  | 30 s<br>3                  | 81 01 721  |
| Vinyl Chloride 100/a            | 100 – 3,000 ppm                                            | 4                          | CH 19 601  |
| Water Vapour 0.1                | 1 – 40 mg/L                                                | 2                          | CH 23 401  |
| Water Vapour 0.1/a              | 0.1 – 1.0 mg/L                                             | 1.5                        | 81 01 321  |
| Water Vapour 1/b                | 20 – 40 mg/L<br>1 – 18 mg/L                                | 20 s<br>40 s               | 81 01 781  |
| Water Vapour 3/a                | 3 – 60 lbs/MMcf                                            | 1.5                        | 81 03 031  |
| Xylene 10/a                     | 10 – 400 ppm                                               | 1                          | 67 33 161  |

ST-1362-2004



## DRÄGER SIMULTANEOUS TEST SETS

|                                                                                   | Standard Range of Measurement<br>(20 °C (68 °F), 1013 hPa) | Measurement Time<br>(min.) | Order Code |
|-----------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------|------------|
| Dräger Simultaneous Test Set I                                                    | Inorganic Fumes                                            | 40 s                       | 81 01 735  |
| Dräger Simultaneous Test Set II                                                   | Inorganic Fumes                                            | 40 s                       | 81 01 736  |
| Dräger Simultaneous Test Set III                                                  | Organic Fumes                                              | 2                          | 81 01 770  |
| Dräger Simultaneous Test Set Indicator Substances                                 | Vf dB 10/01                                                | 2                          | 81 03 170  |
| Dräger Clandestine Labtest-Set                                                    | Solvents                                                   | 1                          | 81 03 310  |
| Simultaneous Test Set Fumigation I                                                | Fumigants                                                  | 3                          | 81 03 410  |
| Simultaneous Test Set Fumigation II                                               | Fumigants                                                  | 4                          | 81 03 380  |
| Adapter Dräger Simultaneous Test Set,<br>consisting of cutting holder and adapter |                                                            |                            | 64 00 090  |
| Fit-up aid for 81 03 380                                                          |                                                            |                            | 83 18 110  |

ST-1360-2004



## DRÄGER DIFFUSION TUBES WITH DIRECT INDICATION

| Holder for Dräger-Diffusion-Tubes (pack of 3) |                                                                        |                                                                                 | 67 33 014  |
|-----------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|------------|
| Dräger-Tubes                                  | Standard Range of Measurement<br>for 1 h<br>(20 °C (68 °F), 1,013 hPa) | Standard Range of Meas.<br>for max. Period of Use<br>(20° C (68 °F), 1,013 hPa) | Order Code |
| Ammonia 20/a-D                                | 20 – 1500 ppm                                                          | 2.5 – 200 ppm                                                                   | 81 01 301  |
| Hydrocyanic Acid 20/a-D                       | 20 – 200 ppm                                                           | 2.5 – 25 ppm                                                                    | 67 33 221  |
| Butadiene 10/a-D                              | 10 – 300 ppm                                                           | 1.3 – 40 ppm                                                                    | 81 01 161  |
| Acetic Acid 10/a-D                            | 10 – 200 ppm                                                           | 1.3 – 25 ppm                                                                    | 81 01 071  |
| Ethanol 1000/a-D                              | 1,000 – 25,000 ppm                                                     | 125 – 3,100 ppm                                                                 | 81 01 151  |
| Carbon Dioxide 500/a-D                        | 500 – 20,000 ppm                                                       | 65 – 2,500 ppm                                                                  | 81 01 381  |
| Carbon Dioxide 1 %/a-D                        | 1 – 30 Vol.-%                                                          | 0.13 – 4 Vol.-%                                                                 | 81 01 051  |
| Carbon Monoxide 50/a-D                        | 50 – 600 ppm                                                           | 6 – 75 ppm                                                                      | 67 33 191  |
| Perchloroethylene 200 a/D                     | 200 – 1500 ppm                                                         | 25 – 200 ppm                                                                    | 81 01 401  |
| Hydrochloric Acid 10/a-D                      | 10 – 200 ppm                                                           | 1.3 – 25 ppm                                                                    | 67 33 111  |
| Sulphur Dioxide 5/a-D                         | 5 – 150 ppm                                                            | 0.7 – 19 ppm                                                                    | 81 01 091  |
| Hydrogen Sulphide 10/a-D                      | 10 – 300 ppm                                                           | 1.3 – 40 ppm                                                                    | 67 33 091  |
| Nitrogen Dioxide 10/a-D                       | 10 – 200 ppm                                                           | 1.3 – 25 ppm                                                                    | 81 01 111  |
| Toluene 100/a-D                               | 100 – 3,000 ppm                                                        | 13 – 380 ppm                                                                    | 81 01 421  |
| Trichloroethylene 200/a-D                     | 200 – 1,000 ppm                                                        | 25 – 125 ppm                                                                    | 81 01 441  |

ST-2436-2003



## DRÄGER-TUBES PUMPS AND SYSTEMS AND ACCESSORIES FOR SHORT-TERM MEASUREMENT

|                                                                                                                                                                 | Order Code |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Dräger-Tube Pump accuro® with Tube opener Dräger TO 7000                                                                                                        | 64 00 000  |
| One hand gas measurement system Dräger accuro®:                                                                                                                 | 64 00 260  |
| Gas Detection-set for Dräger accuro®, comprising of: Dräger-Tube Pump accuro®, carrying case, Tube opener Dräger TO 7000 and spare parts set for Dräger accuro® |            |
| Soft Gas Detection-Set, consists of Dräger-Tube Pump accuro®, spare parts set for Dräger accuro®, nylon carrying case                                           | 83 17 186  |
| MGD Kit (Dräger accuro®), consists of: Dräger accuro®, spare part set Dräger accuro®, carrying case Dräger accuro®                                              | 83 18 392  |
| Spare parts set Dräger accuro®                                                                                                                                  | 64 00 220  |

D-12091-2010



## DRÄGER X-ACT® 5000

Dräger X-act® 5000 is the new Ex-approved automatic Dräger-Tube pump. For the measurement or sample taking of gases, vapours and aerosols the Dräger-X-act® 5000 is used in conjunction with Dräger short-term tubes or sampling tubes and systems.

|                                                                | Order Code |
|----------------------------------------------------------------|------------|
| <b>Dräger X-act® 5000</b>                                      | 45 23 500  |
| incl. shoulder strap, without power supply                     |            |
| <b>Power packs</b>                                             |            |
| Rechargeable battery NiMH, T4                                  | 45 23 520  |
| Alkaline battery pack, T4 w/o batteries (6 batteries required) | 45 23 525  |
| Alkaline battery (6 batteries required)                        | 81 03 594  |
| <b>Charging accessories</b>                                    |            |
| Wall-Wart Charger 100 – 240 VAC (worldwide)                    | 45 23 545  |
| Car charger 12 / 24 V                                          | 45 23 511  |
| <b>Accessories</b>                                             |            |
| SO <sub>2</sub> Filter replacement                             | 81 03 525  |
| Shoulder strap                                                 | 45 23 565  |
| Resistant tube (Dosage)                                        | 65 27 562  |

| Hoses                                                                                                                 | Order Code |
|-----------------------------------------------------------------------------------------------------------------------|------------|
| Extension hose, Dräger accuro® & Dräger X-act® 5000, 1 m, incl. adapter for Simultaneous Test Set                     | 64 00 561  |
| Extension hose, Dräger accuro® & Dräger X-act® 5000, 3 m, incl. adapter for tubes, adapter for hose in a carrying box | 64 00 077  |
| Extension hose, Dräger accuro® & Dräger X-act® 5000, 10 m, incl. adapter for tubes, adapter for hose                  | 64 00 078  |
| Extension hose, Dräger accuro® & Dräger X-act® 5000, 15 m, incl. adapter for tubes, adapter for hose                  | 64 00 079  |
| Extension hose, Dräger X-act® 5000, 30 m, incl. adapter for tubes, adapter for hose                                   | 64 01 175  |

| Accessories                                                               |           |
|---------------------------------------------------------------------------|-----------|
| Fumigation kit orange, w/o content                                        | 83 17 147 |
| Tube opener Dräger TO 7000                                                | 64 01 200 |
| Tube hot pack holder for usage up to 20 °C, incl. adapter and 2 hot packs | 83 16 130 |
| Replacement hot packs (2 pieces)                                          | 83 16 139 |
| Hot air probe for analyzing emissions of combusting plants                | CH00 213  |
| Bar Probe 400 for examination of fumigants in containers                  | 83 17 188 |
| Exhaust gas probe                                                         | CH00 214  |
| Adapter for sampling tubes (NIOSH)                                        | 67 28 639 |

D-11163-2011



## DRÄGER AEROTEST 5000

|                                                                                  | Order Code |
|----------------------------------------------------------------------------------|------------|
| Dräger Aerotest 5000                                                             | 64 01 220  |
| Accessories                                                                      |            |
| Pressure Regulator F3002 for measurements in high pressure systems up to 300 bar | 33 10 794  |

ST-1179-2008



## DRÄGER AEROTEST

|                                                                       | Order Code |
|-----------------------------------------------------------------------|------------|
| Dräger Aerotest Simultan HP, complete incl. Dräger-Tubes              | 65 25 951  |
| Dräger Aerotest Alpha, complete incl. Dräger-Tubes                    | 65 27 150  |
| Dräger MultiTest med. Int., complete incl. Dräger-Tubes               | 65 20 260  |
| Dräger Simultaneoustest CO <sub>2</sub> , complete incl. Dräger-Tubes | 65 26 170  |

**DRÄGER-TUBES FOR APPLICATION WITH DRÄGER AEROTEST**

|                                                                               | Standard Range of Measurement<br>(20 °C (68 °F), 1,013 hPa)                                                                                 | Order Code |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Ammonia 2/a for use in CO <sub>2</sub>                                        | 0.6 – 9 ppm                                                                                                                                 | 67 33 231  |
| Impactor for measurement of oil mist in compressed air                        | 0.1 – 1.0 mg/m <sup>3</sup>                                                                                                                 | 81 03 560  |
| Adapter for Dräger Oil Impactor                                               |                                                                                                                                             | 81 03 557  |
| Carbon dioxide 100/a-P                                                        | 100 – 3,000 ppm                                                                                                                             | 67 28 521  |
| Carbon monoxide 5/a-p                                                         | 5 – 150 ppm                                                                                                                                 | 67 28 511  |
| Nitrous Fumes 0.2/a for use in MultiTest med. Int. / Aerotest CO <sub>2</sub> | 0.2 – 6 ppm<br>5 – 30 ppm                                                                                                                   | 81 03 661  |
| Oil 10/a-P                                                                    | 0.1 – 1 mg/m <sup>3</sup>                                                                                                                   | 67 28 371  |
| Phosphine 0.1/c for use in Aerotest CO <sub>2</sub>                           | 0.1 – 4 ppm                                                                                                                                 | 81 03 711  |
| Sulphur Dioxide 0.5/a for use in MultiTest med. Int.                          | 1 – 25 ppm<br>0.25 – 1 ppm                                                                                                                  | 67 28 491  |
| Sulphur Dioxide 1/a for use in MultiTest med. Int./ Aerotest CO <sub>2</sub>  | 0.5 – 2 ppm                                                                                                                                 | CH 31 701  |
| Hydrogen Sulphide 0.2/a for use in Aerotest CO <sub>2</sub>                   | 0.04 – 1 ppm                                                                                                                                | 81 01 461  |
| Hydrogen Sulphide 1/d for use in MultiTest med. Int.                          | 1 – 20 ppm                                                                                                                                  | 81 01 831  |
| Water Vapour 5/a-P                                                            | 5 – 200 mg/m <sup>3</sup>                                                                                                                   | 67 28 531  |
| Water Vapour 20/a-P                                                           | 20 – 250 mg H <sub>2</sub> O/m <sup>3</sup><br>35 – 500 mg H <sub>2</sub> O/m <sup>3</sup><br>150 – 1500 mg H <sub>2</sub> O/m <sup>3</sup> | 81 03 061  |

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