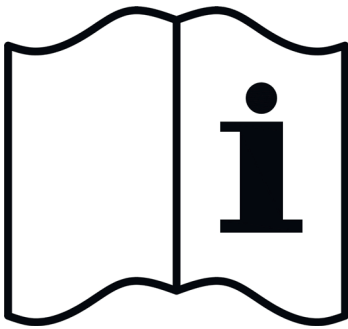


# Translation of the original operating manual

VETTER 1 bar cone pipe stopper



Keep in a safe place for future use



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## 1. Introduction

In order to operate the cone pipe stopper safely and without malfunctions, it is essential to be familiar with and to follow this operating manual and the safety information contained therein.

In addition, the applicable occupational health and safety regulations and accident prevention regulations must be complied with, together with the generally recognised rules of technology.

This operating manual is a component of the product and must be retained throughout the product's service life. If the product is transferred or sold to another party, the user manual must also be transferred to the subsequent user. Knowledge of and compliance with the user manual is a prerequisite for using cone pipe stoppers.

You can find the latest version of this operating manual on our website, "[www.vetter.de](http://www.vetter.de)" under "Support".

## 2. Safety

### 2.1 Symbols in this manual



#### Read the operating manual!

The following symbols are used in the text to indicate safety information and warnings:



#### **DANGER!**

This combination of symbol and signal word indicates an imminently dangerous situation that will result in death or serious injury unless avoided.



#### **WARNING!**

This combination of symbol and signal word indicates a potentially dangerous situation that could result in death or serious injury unless avoided.



#### **CAUTION!**

This combination of symbol and signal word indicates a potentially dangerous situation that could result in minor or light injury unless avoided.



#### **NOTE!**

This combination of symbol and signal word indicates a potentially dangerous situation that could result in property damage unless avoided.



This symbol highlights useful tips and recommendations, as well as information on efficient and trouble-free operation.

## 2.2 Personal protective equipment

### Safety gloves



Safety gloves protect the wearer's hands against friction, abrasion, puncture wounds or deeper injuries.

### Safety shoes



Safety shoes protect the wearer's feet against crushing, falling objects and slipping on slippery surfaces.

### Face, head and ear protection



Face protection protects the wearer's eyes and face against flames, sparks or embers, as well as hot particles and waste gases. Head protection protects the wearer's head against falling objects, suspended loads and impact with stationary objects. Ear protection protects the wearer against hearing damage caused by noise.

### Protective clothing



Protective clothing is close-fitting work clothing with a low tear strength, with tight-fitting sleeves and with no protruding parts.

### 2.3 Intended use

Cone pipe stoppers may only be filled with compressed air, and only using original filling devices. Filling using filling devices procured from third parties shall be considered contrary to the intended use.

Cone pipe stoppers are used exclusively to shut off pipes that are intended for that purpose, to test for leaks in pipelines, and to create a bypass.

The intended use also includes the following:

- ✓ Observing all the information in this user manual
- ✓ Compliance with the maintenance and care intervals specified in the section "Care, maintenance intervals and storage"

Any use other than that described here shall be considered contrary to the intended use. Usage of the cone pipe stoppers contrary to the intended use includes the following:

- ✓ Improper operation, handling or maintenance of the cone pipe stoppers
- ✓ Operating the cone pipe stoppers with faulty safety equipment or improperly attached or non-functioning filling devices
- ✓ Failure to observe the information in the user manual regarding storage, operation and maintenance of the cone pipe stoppers
- ✓ Inadequate monitoring of accessory parts that are subject to wear
- ✓ Improperly performed maintenance work
- ✓ Filling the cone pipe stopper system with flammable, hazardous or aggressive gases and fluids
- ✓ Operation outside the permissible temperature range or in a tropical environment
- ✓ Operating the system in a potentially explosive atmosphere
- ✓ Operating the system in a corrosive or contaminated environment
- ✓ Operating the system in the vicinity of strong magnetic fields
- ✓ Use by private users or users without technical instruction and training

The entire cone pipe stopper may only be used in a temperature range from -20 °C cold-resistant to +55 °C heat-resistant.

## 2.4 Personnel requirements

This section describes the qualifications required for persons performing the various tasks:

An **instructed person** is a person who has verifiably been instructed by the owner about the tasks to which said person has been entrusted, and who has been informed of the possible dangers associated with improper behaviour. This instruction was provided by a person trained and qualified in the relevant discipline.

An **expert** is a person who, thanks to his or her technical training and experience, possesses sufficient knowledge in the field of pipe shut-off devices and is familiar with the applicable national occupational health and safety regulations, accident prevention regulations and generally recognised rules of technology (e.g. trade association rules, DIN and EN standards, technical rules of other EU member states or other states which are party to the Agreement on the European Economic Area) to the extent that he or she is able to assess the condition and reliability of pipe shut-off devices. (Source: BGI 802)

## 2.5 General information

Compliance with all the applicable occupational health and safety rules, accident prevention regulations (e.g. safety rules of the civil engineering trade associations) and the generally recognised rules of technology is assumed.

## 2.6 Residual risk

Even when all the safety regulations are complied with, residual risks remain when operating the cone pipe stopper, as described below. As the owner/operator, make sure that all persons who work on and with the inflatable pipe stopper system are aware of the residual risks. Follow the instructions that prevent residual risks from causing accidents or damage.

During operation of the cone pipe stopper, there are various residual risks and potential hazards that every operator should be aware of:

During operation of the inflatable pipe stopper system, risks to the operator may occur or the pipe stopper system and other material assets may become damaged in the following cases:

- Operation and handling of the cone pipe stopper by personnel who are not trained and experienced
- Use contrary to the intended use
- Improper maintenance

No modifications or conversions to pipe stoppers, filling devices and filling hoses are permitted. The cone pipe stopper may only be operated with genuine Vetter filling devices and filling hoses. If third-party parts are used, safety may be impaired.

During a water pressure check, the pipeline to be checked must not be directly connected to a pressurised line (e.g. hydrant).

Before and after each use, check that the cone pipe stopper and accessories are in perfect working order. During the visual inspection, look out for the following possible damage:

- ✓ Separation
- ✓ Cuts
- ✓ Punctures
- ✓ Effects of heat/acid
- ✓ The nipples and couplings must be clean, undamaged and fully functioning.

Outside pipelines, 1 bar cone pipe stoppers may only be filled to a maximum of 0.2 bar for the visual inspection.

All the control devices are fitted with a safety relief valve corresponding to the maximum permissible operating pressure for the pipe stopper or test pipe stopper. If the maximum operating pressure of 1 bar is exceeded, the safety relief valve vents. The tolerance for opening and closing the safety relief valves must not exceed  $\pm 10\%$ . The set pressure must not be altered.

If the lead seal on the valve bonnet has been removed, safe functioning is no longer guaranteed and the safety relief valve must be replaced. The permissible inlet pressure to the control devices (labelled on the inlet coupling) must not be exceeded.

### Ejection of the cone pipe stopper



#### **DANGER!**

#### **Risk of death due to ejection of cone pipe stopper!**

A cone pipe stopper that is ejected from the pipe can cause life-threatening injuries.

- Keep away from the vicinity of the pipe's opening.
- Wear safety gloves, safety shoes, face, head and ear protection and protective clothing.



### Flooding of the working area



#### **DANGER!**

**Risk of death due to remaining in the working area in the event of flooding!**

A leak in the cone pipe stopper when there is water trapped in the pipe can result in death by drowning due to flooding of the pipe.

- After filling and shoring the cone pipe stopper, do not remain in the danger zone.
- Make sure that there are no persons present in the shaft or pipe during the filling, testing and draining procedures.
- Before removing the shoring, check that the pipe is depressurised and completely drained.

### Release of gases from shut-off lines



#### **DANGER!**

**Risk of death due to escaping gases from shut-off lines!**

Escaping gases from shut-off lines can lead to life-threatening poisoning or asphyxiation.

- Before working in the working area, take precautionary measures against the release of gases.

### Waste gases and lack of oxygen in the pipe



#### **DANGER!**

**Risk of death due to waste gases and lack of oxygen in the pipe!**

Waste gases and a lack of oxygen can lead to life-threatening poisoning or asphyxiation.

- Check the oxygen concentration before and during work in the pipe.
- Wear safety gloves, safety shoes, face, head and ear protection, protective clothing and respiratory protection.

## Bursting of the cone pipe stopper



### WARNING!

Health risk due to bursting of the cone pipe stopper!

The cone pipe stopper may burst while in use. Bursting of the cone pipe stopper may result in loss of hearing and pressure trauma.

- Wear safety gloves, safety shoes, face, head and ear protection and protective clothing.
- Carry out maintenance and an inspection after any damage to the cone pipe stopper.
- Immediately put a defective cone pipe stopper out of operation.
- Before inserting the cone pipe stopper, clean the pipe and remove any sharp and rough materials.

## Gases and dusts



### WARNING!

Risk of poisoning from gases and dusts!

Inhaling toxic gases and dusts can result in severe or fatal damage to health.

- Wear safety gloves, safety shoes, face, head and ear protection and protective clothing.
- Make sure that the opening of the pipe is unobstructed.
- Ensure sufficient air circulation.

## Viruses and bacteria



### WARNING!

Risk of infection from viruses and bacteria!

Inhalation of or contact with viruses and bacteria can result in severe or fatal damage to health.

- Wear safety gloves, safety shoes, face, head and ear protection and protective clothing.
- Maintain and clean the cone pipe stopper at regular intervals.

### 3. Operating the cone pipe stopper

#### 3.1 Preparing to insert the cone pipe stopper

This section describes which sources of compressed air you can use to operate the cone pipe stoppers.

- Personnel: - Instructed person
- Protective equipment: - Safety shoes  
- Protective clothing  
- Safety gloves

#### Cone pipe stopper

- ✓ Step 1  
Connect the 1 bar cone pipe stopper to the filling hose.

#### Filling hose

- ✓ Step 2  
Connect the filling hose to the control device.

<b>i</b>	The filling hose, the pipe stopper and the control device must be at the same pressure stage.
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#### Control device

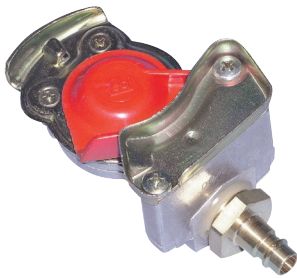
- ✓ Step 3  
Connect the connecting hose for the pressure reducer to the inlet coupling for the control device. Make sure to comply with the permissible inlet pressure for the control device.

#### Air supply hose, 10 m with shut-off valve

The air supply hose with shut-off valve can be used as an extension between the compressed air source and the control device.

<b>i</b>	The maximum inlet pressure to the control device from the compressed air supply must not exceed 2 bar.
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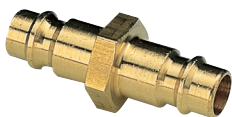




Truck compressed air connection



Dummy coupling



### Stationary compressed air system

Connection to the outlet coupling of a compressed air network



### Adapter fitting for portable compressor

For filling with a portable compressor



The maximum inlet pressure to the control device from the compressed air supply must not exceed 2 bar.

The filling may only be carried out with oil and dust-free compressed air up to a max. temperature of 55 °C.




**The device can also be filled using the enclosed adapter claw/quick-action coupling. The filling has to be done with a corresponding control unit 1.0 bar.**

### 3.2 Inserting the cone pipe stopper into a pipe

This section describes how to insert the cone pipe stopper into a pipe.

- Personnel: - Instructed person
- Protective equipment: - Safety gloves
  - Safety shoes
  - Face, head and ear protection
  - Protective clothing

Before the cone pipe stopper is inserted into a pipe, the pipeline must be checked for damage. The area for the cone pipe stopper in the pipe must be free of deposits, contamination and foreign matter, such as shards and sharp objects. Cone pipe stoppers must be flush with the pipeline along their entire length at the front, and the sealing surface must be in contact with the inner wall of the pipe.

 All cone pipe stoppers must be inserted and shored in pipelines force-fit and form-fit.

- ✓ Make sure that only authorised persons are present in the working area and danger zone. Risk of death!
- ✓ Choose a suitable pipe stopper and/or test pipe stopper according to requirements.
- ✓ Check the stopper and the accessories to be used to ensure that they are complete and free of damage.
- ✓ Damaged stoppers and accessory parts must not be used.
- ✓ Never insert a stopper size into a pipe with a larger diameter.
- ✓ The filling hose and control device must be connected to the pipe stopper before insertion.
- ✓ Mark out and clean the working area.
- ✓ Insert the stopper into the pipe with the front flush along the entire length.
- ✓ Shore the pipe stopper inside the pipe.
- ✓ Exit the shaft and/or pipeline.



**DANGER!**

**Risk of death for persons inside the pipe!**

**Make sure that there are no persons in the danger zone.**

- ✓ From a secure position, fill the pipe stopper to the maximum permissible operating pressure.
- ✓ When used over a longer period, check the pressure at least once an hour.

Once work is complete, relieve the pressure via the filling hose or the control device (pressure relief via the knurled screw on the safety relief valve).

This action must always be performed from **outside** the pipeline or shaft.

- ✓ Once the water has fully drained from the shaft/pipeline, discharge the compressed air from the stopper.
- ✓ Now remove the shoring and take the stopper out of the shaft/pipeline.

### 3.3 Shoring



The type of shoring required depends on the structural conditions in the pipe, on the pipe itself and on the expected backpressure.

### 3.4 Shutting off the pipeline



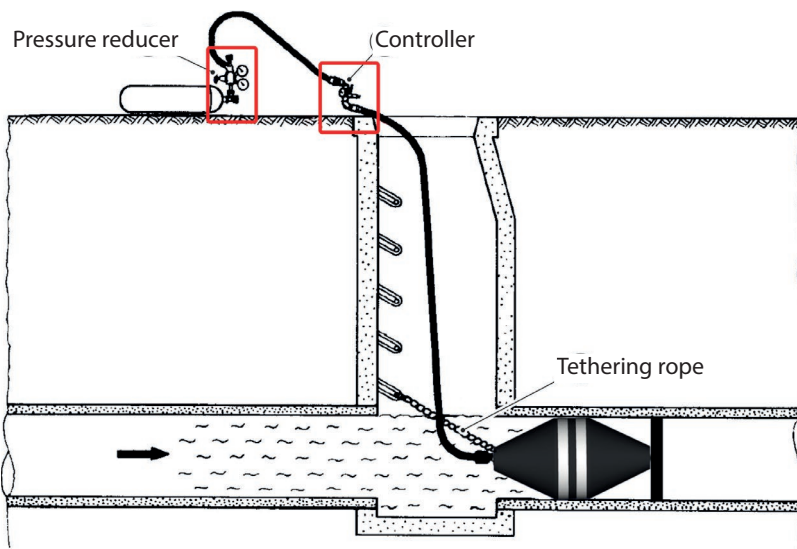
**DANGER!**

**Risk of death for persons in shafts and in pressurised pipelines during a pressure check!**

- Personnel: - Instructed person
- Protective equipment: - Safety gloves
  - Safety shoes
  - Face, head and ear protection
  - Protective clothing

Cone pipe stoppers can be used for different pipe diameters (see label on the cone pipe stopper).

- ✓ Select a cone pipe stopper, filling hose, control device and compressed air source.
- ✓ Make sure that there are no branch pipes, service connections or similar in the section of pipe to be shut off.
- ✓ Connect the cone pipe stopper to the filling hose and control device and insert it into the pipe.
- ✓ From a secure position, fill the cone pipe stopper from above to the maximum permissible operating pressure.
- ✓ If a pipeline is to be shut off with a cone pipe stopper, generally monitor the operating pressure on the control device (e.g. possible pressure changes due to temperature fluctuation). See separate operating manual for the control device.



Due to presentation reasons, the support structure is schematically presented and simplified.

### 3.5 Draining the pipeline

- Personnel: - Instructed person
- Protective equipment: - Safety gloves
  - Safety shoes
  - Face, head and ear protection
  - Protective clothing
- ✓ Before draining the pipeline, make sure that there are no persons in the shaft or pipe. Risk of death!
- ✓ From the control device or using an industrial suction unit and the vacuum adapter, drain the secured pipe stopper until the dammed up liquid can slowly flow past the pipe stopper and shoring.
- ✓ Only remove the shoring or the safeguard for the pipe stopper once the pipeline has been completely drained.



Vacuum adapter Cone pipe stopper  
Artikel-Nr. 1700078400



**DANGER!**

**Risk of death due to removal of the shoring in pressurised pipelines!**

### 3.6 Water and compressed air check

- Personnel: - Instructed person
- Protective equipment: - Safety gloves
  - Safety shoes
  - Face, head and ear protection
  - Protective clothing
- ✓ Always observe the specifications of standard EN 1610 for leak checks on gravity pipelines.
- ✓ Always take suitable measures to secure pipe stoppers and test pipe stoppers against ejection and slipping.

- ✓ Fill the pipelines and vent and measure the test pressure using the test pipe stopper.
- ✓ Shut off the pipeline with the pipe stopper.

## 4. Care, maintenance intervals and storage

This section describes how to maintain the cone pipe stoppers and which maintenance intervals to observe.

See also:

- ✓ BGR 126
- ✓ BGR 117
- ✓ BGI 802
- ✓ BetrSichV (German Ordinance on Industrial Safety and Health)
- ✓ ArbSchG (German Occupational Safety and Health Act)

### 4.1 Care

After each use, the pipe stopper equipment must be cleaned. Clean with lukewarm water and a soapy solution.

#### **!** NOTE!

Property damage due to cleaning the cone pipe stopper with chemical cleaning agents, hot water and high-pressure cleaners!

Cleaning the device with chemical cleaning agents, hot water, high pressure or high-pressure hot water devices can damage the cone pipe stopper.

– Only use lukewarm water and a soapy solution when cleaning the cone pipe stopper.

Dry at room temperature.



## 4.2 Maintenance intervals

Perform functional checks of the cone pipe stopper at full operating pressure in the maximum permissible pipe diameter in a resistant pipe only. A weak pipe will be burst by the stopper when it is inflated to maximum operating pressure.

When?	What?	What action?	Who?
Before each use	Cone pipe stopper, control devices and filling hoses (safety equipment)	Check for completeness <b>Visual check</b> of the cone pipe stopper filled to max. 0.2 bar and the safety equipment (e.g. for deformation, cracks, damage to fabric, porous surfaces etc.) <b>Functional check</b> of the safety equipment	Expert*
		If there are any safety concerns after the visual check of the cone pipe stopper, the stopper should be sent to the manufacturer for a more thorough <b>functional check</b> .	Manufacturer
After every use	Cone pipe stopper, control devices and filling hoses (safety equipment)	Check for completeness <b>Visual check</b> of the cone pipe stopper filled to max. 0.2 bar and the safety equipment (e.g. for deformation, cracks, damage to fabric, porous surfaces etc.) <b>Functional check</b> of the safety equipment	Expert*
		If there are any safety concerns after the visual check of the cone pipe stopper, the stopper should be sent to the manufacturer for a more thorough <b>functional check</b> .	Manufacturer
At least once a year <i>(otherwise, according to BGI 802, use of the stoppers is prohibited)</i>	Cone pipe stopper, control devices and filling hoses (safety equipment)	Check for completeness <b>Visual check</b> of the cone pipe stopper filled to max. 0.2 bar and the safety equipment (e.g. for deformation, cracks, damage to fabric, porous surfaces etc.) <b>Functional check</b> of the safety equipment	Expert*
		If there are any safety concerns after the visual check of the cone pipe stopper, the stopper should be sent to the manufacturer for a more thorough <b>functional check</b> .	Manufacturer
After every repair	Cone pipe stopper, control devices and filling hoses (safety equipment)	Check for completeness <b>Visual check</b> of the cone pipe stopper filled to max. 0.2 bar and the safety equipment (e.g. for deformation, cracks, damage to fabric, porous surfaces etc.) <b>Functional check</b> of the safety equipment  In addition, a <b>functional check</b> of the stoppers must be carried out at operating pressure in the pipe. The stopper is pressurised with 1 bar in the maximum permissible pipe diameter. The stopper remains in the pipe for 60 minutes following a holding time of 5 minutes. Once these 60 minutes have elapsed, the pressure loss must not exceed 10 %.	Expert*



We recommend having the devices checked by the manufacturer every five years.

Small cracks or cuts in the material (max. 6 cm) can be repaired using the Vetter repair material kit (article no. 1420005500), without problems. See separate operating manual.

Document and file the test results.

If any doubts concerning safety arise during the visual and/or functional check, abort the test and send the stopper together with the equipment to the manufacturer for further testing.

## 4.3 Storage

 <b>NOTE!</b> Property damage due to improper handling and storage!	
Improper handling and storage of the cone pipe stoppers alter their physical characteristics. This can result in damage to the cone pipe stoppers and a reduced service life. – Handle the cone pipe stoppers with care. – Comply with all the storage conditions.	
	If stored and handled correctly, the characteristics of rubber products will remain almost unchanged for a long time.

Note the following storage conditions:

Where possible, store the cone pipe stopper suspended from the towing eyes (**not the couplings**).

The storage area must be cool, dry, free of dust and moderately ventilated.

The temperature in the storage area must be around 15 °C and it must never exceed 25 °C. The temperature must also not fall below -10 °C.

If there are radiators and pipelines in the storage area, these must be insulated accordingly to ensure that the temperature does not exceed 25 °C. The minimum distance between radiators and the stored goods must be 1 m.

Rubber products must not be stored in damp storage areas. The humidity must be below 65%.

Protect rubber products against light (direct sunlight, artificial light with a high UV proportion). Windows in the storage area must be darkened accordingly.

Make sure that there is no ozone-causing equipment in the storage area.

The storage area must be free of solvents, fuels, lubricants, chemicals, acids etc.

Rubber products must be stored without pressure, tension or similar deformation as this can cause lasting deformation or the formation of cracks.

Some metals, e.g. copper and manganese, are also harmful to rubber products.

## 5. Technical data:

1 bar cone pipe stopper	Pipe diameter mm / inch	Length mm / inch	Nominal content Litre / cu. ft.	Air requirement Litre / cu. ft.	Weight, approx. kg / lbs
<b>250/600 cone pipe stopper</b> 1420005600	250-600 9.8-23.6	1050 41.3	180 6.4	433.5 15.3	5 11
<b>400/1000 cone pipe stopper</b> 1420005700	400-1000 15.7-39.4	1900 74.8	860 30.4	2071.2 73.1	13 28.7
<b>600/1600 cone pipe stopper</b> 1420005000	600 -1600 23.6-63	3180 125.2	3500 123.6	8429.5 297.7	31.8 70.1

Max. operating pressure: 1 bar

Max. backpressure: 0.5 bar

Safety factor: 2:1

Subject to technical modifications as a result of product improvements.

## 6. List of materials and compatibilities

### 6.1 Material list

Product	Material	Carrier material	Production
1 bar cone pipe stopper	CR	Polyester	Cold vulcanised
Filling hoses and air supply hoses	EPDM	Polyester	-

### 6.2 Temperature resistance

Product	Cold-resistant	Cold-flexible	Heat-resistant
1 bar cone pipe stopper	-40 °C	-20 °C	+55 °C
Rubber hoses	-40 °C	-30 °C	+90 °C
<b>Control devices:</b> Fitting design	-20 °C	--	+55 °C

### 6.3 Compatibilities list

The following compatibilities list shows which of the materials (CR, EPDM) in the 1 bar cone pipe stopper, the filling hoses and the air supply hoses are resistant to, partially resistant to and not resistant to various chemicals. Contact between the materials of the products and these chemicals could damage the products.



#### Note!

#### Property damage due to contact between materials and various chemicals!

Improper use of the 1 bar cone pipe stopper, the filling hoses or the air supply hoses could result in damage.

– Avoid contact between the listed chemicals and the 1 bar cone pipe stopper, the filling hoses and the air supply hoses.

## Vetter 1 bar cone pipe stopper

Chemical	Material	
	CR	EPDM
Acetone	o	-
Acetylene	+	-
Alum, aqueous	+	-
Aluminium chloride	+	+
Aniline	-	n.s.
ASTM No. 1 oil	o	-
Benzene	o	n.s.
Benzene	-	-
Boric acid	+	+
Bromine (moist)	-	-
Butyric acid	-	n.s.
Chlorine gas (moist)	-	n.s.
Chlorine (wet)	o	o
Diesel fuel	o	-
Iron chloride	+	+
Petroleum	o	-
Acetic acid	o	o
Fatty acids	+	-
Formaldehyde	+	+
Glucose	+	+
Heating oil	+	-
Potassium chloride	+	+
Calcium chloride	+	+
Calcium nitrate	+	+
Carbon dioxide	+	+
Carbon monoxide	+	+
Copper sulphate	+	+
Glue	+	+
Methyl chloride	-	o
Seawater	+	n.s.
Mineral oils	+	-
Sodium carbonate	+	-
Ozone	+	+
Paraffin	+	-
Perchloric acid	o	+
Phenol (aqueous)	-	+
Phosphoric acid (concentrated)	-	-
Mercury	+	+
Nitric acid (fuming)	-	-
Sulphur oxide (dry)	-	n.s.
Sulphuric acid (50%)	+	-
Nitrogen	+	+
Carbon tetrachloride	-	-
Animal fats	+	+
Toluene	-	-

+ resistant o partially resistant - not resistant  
n.s. not specified

## **Leading emergency pneumatics you can rely on**

We will be glad to help.

### **Vetter GmbH**

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