

# CEE plugs and receptacles

## Zone 22.



Dust tight.  
Prooved.  
Plugs and recep-  
tacles up to 63A.

# ■ Plugs and receptacles for hazardous areas, zone 22

## Well protected against danger.



Rugged enclosures with good chemical resistance and a high degree of IP protection – these features make MENNEKES plugs and receptacles the products of choice for industrial use in zone 22 hazardous areas.



The MENNEKES range of plugs and receptacles: wall mounted receptacles with mechanical DUO interlock and the matching plugs with the appropriate number of poles and rated current to IP 67. Wall mounted receptacles only accommodate plugs with the same rated voltage, rated current and number of poles.

The dust proof test in accordance with EN 60529 demonstrates: MENNEKES zone 22 plugs and receptacles stay clean – at least inside and this is what counts.



All information at a glance

**IP 67** protection

**T60°C** maximum outside temperature of the enclosure in service

**3 D** protection against dust explosions, **zone 22**

**II** not for underground use

Free space for approval no. of the test authority

## Meets all requirements of zone 22



MENNEKES plugs and receptacles 16A, 32A and 63A with 3, 4 or 5 poles and for various voltages.

Load-break switch-disconnector designed for maximum power according to AC 3 and AC 23.



High degree of safety in every detail. The enclosure can only be opened using approved tools.

Ergonomic ribs and wings for optimal handling.



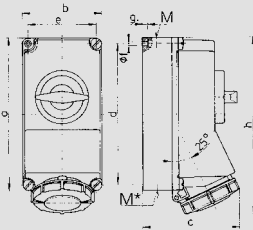
Uniform contact pressure across the sealed area.



# MENNEKES switched and interlocked receptacles and plugs

for use in hazardous areas where combustible dust is present to meet zone 22 requirements.

Voltages and frequencies not quoted are available on request.



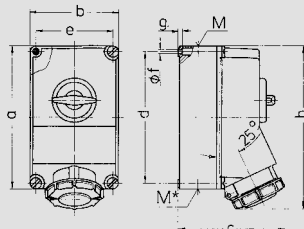
Drawing	Amp.	16			32		
		Poles			3	4	5
Dim. in mm	a	225	225	225	225	225	225
	b	118	118	118	118	118	118
	c	144	146	147	152	152	153
	d	208	208	208	208	208	208
	e	101	101	101	101	101	101
	f	6,3	6,3	6,3	6,3	6,3	6,3
	g	8	8	8	8	8	8
	h	252	255	259	268	268	274
	M	1xM25 en 1xM32	1xM25 en 1xM32	1xM25 en 1xM32	1xM25 en 1xM32	1xM25 en 1xM32	1xM25 en 1xM32
	Max. cable diam. (mm)	2x25	2x25	2x25	2x25	2x25	2x25
Terminals for conductor cross section (mm <sup>2</sup> ) min.-max.	1,5	1,5	1,5	2,5	2,5	2,5	
	-4	-4	-4	-10	-10	-10	

## Receptacles for ZONE 22

switched, with mechanical DUO interlock, explosion-proof cable entry and explosion-proof sealing plug

☯ IP 67

Product group 1011. Type 7413 shown.



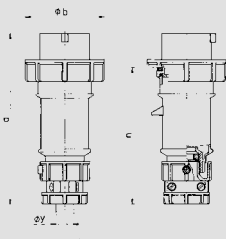
Drawing	Amp.	63		
		Poles		
Dim. in mm	a	264	264	264
	b	163	163	163
	c	196	196	196
	d	240	240	240
	e	140	140	140
	f	8,1	8,1	8,1
	g	8	8	8
	h	300	300	300
	M	40	40	40
	Max. cable diam. (mm)	40	40	40
Terminals for conductor cross section (mm <sup>2</sup> ) min.-max.	32	32	32	
	6	6	6	
	-25	-25	-25	

## Receptacles for ZONE 22

switched, with mechanical DUO interlock, explosion-proof cable entry and explosion-proof sealing plug

☯ IP 67

Product group 1011. Type 7417 shown.

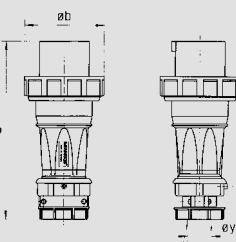


Drawing	Amp.	16			32		
		Poles			3	4	5
Dim. in mm	a	162	172	186	199	199	213
	b	71	79	89	95	95	102
	n	129	139	152	157	157	172
	y	19	19	22	24,5	24,5	28,5
	Conductor cross section (mm <sup>2</sup> ) min.-max.	1	1	1	2,5	2,5	2,5
	-2,5	-2,5	-2,5	-6	-6	-6	

**Plugs for ZONE 22**  
with cable gland and external strain relief

☯ IP 67

Product group 2011. Type 3510 shown.

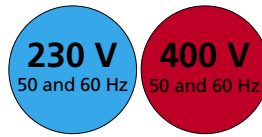
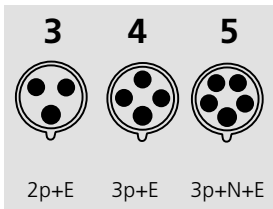


Drawing	Amp.	63		
		Poles		
Dim. in mm	a	246	246	246
	b	114	114	114
	y	36	36	36
	Conductor cross section (mm <sup>2</sup> ) min.-max.	6	6	6
	-16	-16	-16	

**Plugs for ZONE 22**  
with cable gland and external strain relief

☯ IP 67

Product group 2011. Type 3514 shown.



3pol. 4pol. 5pol. 3pol. 4pol. 5pol.  
6h 9h 9h 9h 6h 6h

Ampere  
No. of poles

Std. Pack.

Weight

CAT. NO.

Quantity g/each



16 3  
16 4  
16 5

7409

7410  
7411

1 1060  
1 1100  
1 1150

32 3  
32 4  
32 5

7412

7413  
7414

1 1165  
1 1180  
1 1230



63 3  
63 4  
63 5

7415

7416  
7417

1 2500  
1 2530  
1 2660



16 3  
16 4  
16 5

3500

3501  
3502

1 205  
1 260  
1 295

32 3  
32 4  
32 5

3503

3510  
3511

1 320  
1 345  
1 410



63 3  
63 4  
63 5

3512

3513  
3514

1 592  
1 707  
1 770



Our plugs and receptacles are tested and approved by the accredited testing authority. Zulassungs-Nr. BVS 04 E 125

# ■ Plugs and receptacles for hazardous areas with combustible dust according to zone 22

## **Terms of dust explosion protection, provisions, guidelines, standards**

### **Terms**

#### **Excerpt from EN 50281-3:2002 (VDE 0165 part 102:2003-05)**

“Equipment for use in the presence of combustible dust – Part 3: Classification of areas where combustible dusts are or may be present” and

#### **Excerpt from EN 50281-1-1:1998 (VDE 0170/0171 part 15-1-1:1999-10)**

“Electrical equipment for use in the presence of combustible dust – Part 1-1: Electrical equipment protected by enclosures – Construction and testing”.

### **Area**

Three-dimensional **place**.

### **Atmospheric conditions**

(Ambient conditions)

Situations where pressure and temperature fluctuations may occur. Temperature: -20 °C up to +60 °C; pressure: 80 kPa (0.8 bar) to 110 kPa (1.1 bar), air with normal oxygen content (21% V/V).

### **Dust**

Small solids, including fibres and other floating particles which may be suspended in the atmosphere for some time but deposit due to their own weight (including dust and coarse dust).

### **Combustible dust**

Dust which may burn or glow in the air and which may form explosive mixtures with air at atmospheric pressure and at normal temperatures.

### **Conductible dust**

Dust with a specific electric resistance which is equal or less than  $10^3 \Omega \times m$ .

### **Explosive dust atmosphere**

A mixture of air and combustible dust or fibres under atmospheric conditions where ignition causes a self-perpetuating reaction.

### **Areas where combustible dusts are or may be present**

In potentially explosive areas where combustible dust is or may be present in quantities which require special care with respect to design, installation and use of equipment so as to prevent the ignition of an explosive dust/air mixture. Potentially explosive areas where combustible dust is or may be present are classified into zones based on the frequency and duration of the occurrence of explosive dust/air mixtures.

### **Glow ignition temperature (of a dust layer)**

The lowest temperature of a hot surface where a dust layer of a defined thickness ignites (see EN 50281-2-1).

### **Ignition temperature (of a dust cloud)**

The lowest temperature of the hot inner wall of a furnace at which a cloud of dust ignites in the furnace (see EN 50281-2-1).

### **Dust ignition protection**

All relevant measures defined in the standards (e. g. protection against dust ingress and limitation of the surface temperature) applicable to electrical equipment so as to prevent the ignition of a dust layer or dust cloud (e. g. ignition protection by an enclosure – EN 50281-1-1).

**Dust-tight enclosure**

An enclosure which prevents the ingress of dust particles in visible quantities (IP protection to EN 60529: IP 6X).

**Dust-protected enclosure**

An enclosure which does not fully prevent the ingress of dust but which ensures that dust cannot enter in sufficient quantities so as to affect safe operation of the equipment. Dust must not accumulate in places within the enclosure where it might present an ignition risk (IP protection to EN 60529: IP 5X).

**Maximum surface temperature**

The maximum temperature which is reached by any part of the surface of electrical equipment when testing under defined conditions without a dust layer.

NOTE: This temperature is measured under testing conditions. A thicker dust layer may lead to a higher temperature due to the thermal insulation effect of the dust.

**Maximum permissible surface temperature**

The maximum temperature that may occur on the surface of electrical equipment used as intended without giving rise to glow ignition. The maximum permissible surface temperature depends on the type of dust, the thickness of the dust layer and the application of a safety factor, see EN 50281-1-2:1998.

**Equipment group II**

This classification applies to equipment for use in all areas (except for underground work in mines and their equipment above ground which may be subject to a risk from mine gas), which may be exposed to an explosive atmosphere. Equipment group II is classified into three categories, depending on the occurrence of an explosive atmosphere in the application area.

**Equipment group II category 1**

Equipment which is designed so that it may be operated in accordance with the parameters specified by the manufacturer and with a very high degree of safety. Equipment in this category is intended for use in areas where an explosive atmosphere consisting of a dust/air mixture is **constantly** present or **present on a long-term basis** or **frequently** present.

Equipment in this category must provide the required degree of safety even in the rare case of failure of the equipment and is therefore provided with explosion protection so that

- in the event of failure of a protection device, there is at least a second independent protection device to ensure the required level of safety, and
- in the event of the occurrence of two independent faults, the required safety level is ensured.

**Equipment group II category 2**

Equipment which is designed so that it may be operated in accordance with the parameters specified by the manufacturer and with a high degree of safety. Equipment in this category is intended for use in areas where **occasional** occurrence of an explosive atmosphere with a dust/air mixture is to be expected. The explosion protection devices in this category ensure the required degree of safety even in the case of frequent failures of the equipment or situations where error conditions are usually to be expected.

**Equipment group II category 3**

Equipment which is designed so that it may be operated in accordance with the parameters specified by the manufacturer and with a normal degree of safety. Equipment in this category is intended for use in areas where the occurrence of an explosive atmosphere due to dispersed dust is not to be expected, but if it does occur it will be **rare** and for a short period of time. Equipment in this category ensures the required degree of safety under normal operating conditions.

### **Equipment**

Machines, apparatuses, stationary or mobile appliances, control or equipment components as well as warning and preventive systems which alone or in combination with each other are intended to produce, transfer, store, measure, control and convert power and/or to process materials which have some potential for ignition and may therefore cause explosion.

### **Normal operation**

Situations where the equipment, protective systems and components operate in accordance with their design parameters. The release of small quantities of dust that may form a cloud or a layer (e. g. release from filters) may occur in normal operation.

### **Zones exposed to explosive dust/air mixtures**

Areas exposed to an explosive dust atmosphere are classified into zones on the basis of the frequency and duration of the occurrence of explosive dust/air mixtures. Layers, deposits and accumulations of combustible dust are to be considered in the same way as any other cause leading to the formation of an explosive atmosphere.

#### **Zone 20**

Areas where a hazardous explosive atmosphere is **constantly** present or **present on a long-term basis** or **frequently** present.

#### **Zone 21**

Areas where it is to be expected that hazardous explosive atmospheres will **occasionally** occur under normal operating conditions in the form of a cloud of combustible dust in the air.

#### **Zone 22**

Areas where it is to be expected that hazardous explosive atmospheres in the form of a cloud of combustible dust in the air will not occur under normal operating conditions, and if they do occur, it will only be for a **short period of time**.

## **Examples of zones with explosive dust/air mixtures**

### **Zone 20**

- Areas inside containers enclosing dust: filling funnels, silos, etc., cyclones and filters;
- Dust transporting systems, except for some types of belt and chain conveyors, etc.;
- Mixers, mills, driers, bagging equipment, etc.

### **Zone 21**

- Areas outside containers enclosing dust, in direct proximity to inspection holes for frequent sampling or apertures if explosive dust/air mixtures are present inside;
- Areas outside containers enclosing dust in the proximity of filling and emptying places, belt conveyors, sampling stations, truck unloading places, belt conveyor delivery points, etc., if no protective measures have been taken to prevent the formation of explosive dust/air mixtures;
- Areas outside containers enclosing dust where dust can accumulate and where as a result of the method of working it is to be expected that dust layers are dispersed and therefore explosive dust/air mixtures are formed;
- Areas inside containers enclosing dust where dust clouds are to be expected (but not regularly or for a long period of time or frequently), e. g. in silos (which are filled or emptied only occasionally) or on the dust-coated side of filters which are cleaned at long intervals.



### **Zone 22**

- Aspiration holes of bag filters, in the case of a malfunction when explosive air/dust mixtures may be released;
- Areas in the proximity of equipment which is rarely opened or which tends to leak, if dust can be blown out as a result of an internal overpressure: pneumatic conveyors, flexible connections etc. which may be damaged;
- Storage of bags with dusty contents. During handling, damage to the bags may occur leading to dust leakage;
- Areas which are normally classified as zone 21 may become zone 22 when measures have been taken to prevent the formation of explosive dust/air mixtures. These measures include dust extraction and should be used in the vicinity of bag filling openings, bag emptying points, belt conveyors, sampling stations, truck unloading places, belt conveyor delivery points, etc.;
- Areas where dust layers of limited thickness are formed from which explosive dust/air mixtures may be formed. Only when the dust layer is removed by cleaning before a hazardous dust/air mixture can form are such areas to be considered as non hazardous.

### **Containers enclosing dust**

They are used as parts of equipment in processes where substances are handled, processed, transported, or stored which, among other measures, prevent the release of dust into the ambient atmosphere.

### **Source of dust release**

This is a point or a place from where combustible dust may be released to the atmosphere. The dust may escape from a dust enclosing container or may result from dust deposits.

### **Release sources**

They are classified in order of decreasing hazard as follows:

- Permanent formation of dust clouds: Places where a dust cloud constantly occurs or can be expected over a long period of time or occurs frequently for short periods of time;
- Primary degree of release: A source from which an occasional release of combustible dust can be expected under normal operating conditions;
- Secondary degree of release: A source from which no release of combustible dust can be expected under normal operating conditions. If dust is released, it will only be on rare occasions and for short periods of time.

### **Extent of zones of explosive dust/air mixtures**

The extent of a zone of explosive dust/air mixtures is defined as the distance from the edge of the dust source up to the point (in any direction) where the risk arising from such zone is considered to be non existent. It must be remembered that fine dust can be carried upwards, away from the source, due to the movement of air in a building.

### **Definition of zones**

The definition of the explosive area (zone) must be made on the basis of the operational requirements. The following shall be considered: places of release, possible air motion in the equipment, constructional design, weather effects such as wind and rain for outdoor equipment, type and quantity of dust, grain size, humidity, product throughput, dust deposits, risk of dust dispersion. When defining the zones, the EU directive 1999/92 EC, the decree on operational safety and the explosion protection regulations must be observed.

### **Combustion and explosion parameters of dust**

Ignition temperature, glow ignition temperature and conductivity of dust can be found in the special brochure entitled BIA report (Institut für Arbeitssicherheit – BIA – St. Augustin).

### **Installation of electrical equipment in areas exposed to dust explosion from July 01, 2003**

Areas exposed to dust explosion classified as zones 20, 21 and 22 may occur e. g. in

- Industry
- Chemical, plastic producing and processing, metal processing, pharmaceutical industries, feed industry, rubber, wood, lacquer, leather, food and textile industries.
- Factories, warehouses, potato and other agricultural processing, milk powder producing works, mills and peat processing works, factories for the processing of magnesium; warehouses in agricultural collectives, in docks and in logistics plants associated with the storage of unpacked, combustible plastics and food and the related raw materials.
- Equipment  
Coal processing and coal dust equipment.

Please note:

- EU directive 1999/92 EC
- Decree on operational safety (Betriebssicherheitsverordnung – BetrSichV) dated September 27, 2002
- Explosion protection regulations – EX-RL (BGR 104)
- EN 50281-3:2002 (VDE 0165 part 102:2003-05)  
“Electrical equipment for use in the presence of combustible dust. Classification of areas where combustible dusts are or may be present”.
- EN 50281-1-2:1998 (VDE 0165 part 2:1999-11)  
“Electrical equipment for use in the presence of combustible dust. Selection, installation and maintenance”.

The electrical equipment, protective systems and components used must be in line with the EU directive 94/9 CE (ATEX) and must be designed according to the applicable EN standards. Compliance with the EU directive and standards is demonstrated by a type approval issued by a nominated control body (e. g. PTB, EXAM) and certified by a declaration of conformity issued by the manufacturer.

The surface temperature of the equipment must not be so high that dispersed dust or dust deposited on the equipment may ignite.

For this to apply, the following conditions must be complied with:

- a) The surface temperature must not exceed 2/3 of the ignition temperature in °C of the particular dust/air mixture.
- b) On surfaces where a hazardous deposit of dust capable of glow ignition cannot be effectively prevented, a temperature of 75K below the glow ignition temperature of the dust must not be exceeded. In the case of a layer thickness greater than 5 mm, a further reduction of the surface temperature is necessary. In the case of dust deposits with a layer thickness greater than 5 mm, the temperature of the surface of the enclosure must be further reduced if necessary.
- c) The lower of the values determined according to a) and b) above shall be applicable.

**No connectors or adapters may be used.**

### **Selection of plugs and receptacles for zone 22 areas where combustible dusts are or may be present**

Only plugs and receptacles may be used which are in line with EU directive 94/9 EC (ATEX) and are designed according to standard EN 50281-1-1:1999. Only plugs and receptacles should be used which have been type tested by a nominated control body. Plugs and receptacles must be approved for group IID, at least category 3. In order to prevent dust ingress, the maximum IP protection according to EN 60529, e. g. IP 67 should be used.

**The MENNEKES Ex-plugs and receptacles for use in zone 22 where there is a risk of dust explosion shown on the following pages comply with these requirements.**

**Obligation to retrofit existing equipment by January 01, 2006.**

The decree on operational safety, which converts the EU directive 1999/92 EC into German law, provides that all equipment must be adapted to the required state of the art by January 01, 2006.

In the past, equipment of good industrial quality was used in the former zone 11, which has been replaced by zones 21 and 22, which was **not** approved by a control body and only complied with the requirements of the former VDE standard 0165:1991-02. Therefore, such equipment must be replaced by new equipment according to the EU directive 94/9 EC (ATEX), if a risk assessment by the operator and by the inspection authority so requires.

**MENNEKES Ex-plugs and receptacles for zone 22**

**As a result of their high IP protection and their robust enclosure with good chemical resistance, the MENNEKES EX-plugs and receptacles are well suited for the power supplies of mobile, explosion-proof electrical equipment, for a use in industry in zone 22 areas where an explosive atmosphere in the form of a cloud of combustible dust may arise, in moist rooms and outdoors at ambient temperatures from -20 °C to +40 °C.**

**The surface temperature of the enclosure does not exceed +60 °C, so that there is a sufficient safety margin between the ignition and the glow ignition temperatures of many types of dust. Dust ingress is effectively prevented by the IP 67 dust- and water-proof enclosure according to EN 60529.**

The plugs and receptacles are based on the standardized system for industrial plugs and receptacles to EN 60309-1:1999 and 60309-2:1999. Furthermore, the plugs and receptacles are in line with EN 50281-1-1:1998 "Protection provided by enclosure":

The system of plugs and receptacles is made up of a wall mounted receptacle with mechanical interlocking (DUO interlock) and the matching plug with the appropriate number of poles and rated current, protection IP 67. Only wall mounted receptacles and plugs with the same rated voltage, the same rated current and the same number of poles may be plugged in. All plugs and sockets have a protective (PE) conductor. The wall mounted receptacle is provided with a **disconnecting switch** with a breaking capacity of AC 3 and AC 23 (see technical data). Therefore, overloads can be switched off by the wall-mounted receptacle without risk. The switch is suitable as a main switch and is in line with IEC 60947-3, EN 60947-3 and the VDE provision 660 part 107: Forced activation of contacts during switching off and on. The on and off positions of the switch are marked on the outside of the enclosure of the wall-mounted receptacle. The connecting terminals of the switches are finger-safe according to VDE 0106 part 100 and are protected to IP 20. All external conductors and the neutral conductor are switched. The receptacle insert with contact bushings is ready wired with the switch using single wires. The protective conductor is connected to a separate PE terminal on the switch. The interlocking mechanism is installed in the upper part of the enclosure of the wall-mounted receptacle, so as to prevent the receptacle being switched on without the plug being connected and the plug being unplugged when under load. The plug can only be plugged in or unplugged when the receptacle is switched off. The receptacle can be locked using a padlock when in the off position. The plug is made up of the front portion with the contact carrier, the nickel-plated contact pins and the cover with cable entry.

### **Conformity with standards**

The plugs and receptacles are in conformity with the **EU directive 94/9 EC “Equipment and protective systems intended for use in potentially explosive atmospheres“** and the **EU directive 89/336 EC “Electromagnetic compatibility“**.

The plugs and receptacles and installed components are in line with the following standards, if applicable:  
EN 50281-1-1; DIN EN 50281-1-1:1999-10  
(VDE 0170/0171 part 15-1-1)  
EN 60309-1; DIN EN 60309-1:2000-05  
(VDE 0623 part 1)  
EN 60309-2; DIN EN 60309-2:2000-05  
(VDE 0623 part 20)  
EN 60947-3; DIN EN 60947-3:2001-12  
(VDE 660 part 107)

### **Type testing**

The plugs and receptacles are type tested according to EN 50281-1-1, e. g. by a nominated control body, in accordance with the EU directive 94/9 EC.

**Type testing certificate no.**  
**BVS 04 E 125**

**Identification according to EU directive 94/9 EC:**  
 **II 3 D T 60 °C C E**

### **Protection type**

The ignition protection of the plugs and receptacles according to EN 50281-1-1:1998 is “Protection provided by enclosure“. With the existing seals and the design of the enclosures, IP 67 to EN 60529 is achieved when the hinged cover is closed and the plug is locked using the bayonet ring.

### Technical data plugs and sockets 16 A and 32 A

Wall-mounted receptacles				
Rated current	$I_n$	A	16	32
Rated <b>operating</b> voltage, 3 poles 4 poles, 5 poles	$U_n$	V	200 – 250 380 – 415	
Rated frequency	f	Hz	50 – 60	
Position of earth contact (hour position)		h	6	
Ambient temperature	$T_u$	°C	-20 to +40	
Storage temperature	T	°C	-40 to +80	
IP protection with closed and secured hinged cover or plugged-in plug			IP 67	
<b>Cable entry in the enclosure</b> Number <b>of threads</b> EN 60423	$A_1$	mm	1 x M 32 x 1,5 3 x M 25 x 1,5	
Cable entry, included in the supply		St.	1 x M 25	1 x M 32
Cable cross section for M 32 x 1.5		mm	12,0 to 21	
Cable cross section for M 25 x 1.5		mm	8.0 to 17	
Sealing plug, included in the supply		St.	1 x M 32 2 x M 25	3 x M 25
<b>Cross section for connection</b> , min. – max. of the terminals of the switch one or more wires <b>stranded</b> wire without ferrule <b>stranded</b> wire with ferrule DIN 46228		$mm^2$ $mm^2$ $mm^2$	1.5 – 6 1.5 – 4 1.5 – 4	2.5 – 16 2.5 – 10 2.5 – 10
Technical data of the installed switch				
Rated permanent current, encapsulated	$I_{the}$	A	32	63
Rated breaking capacity				
AC-3 3 poles		kW	5.5	11
3 and 4 poles		kW	7.5	18.5
AC-23 A(B) 2 poles, 1 phase		kW	3	5.5
3 and 4 poles, 3 phases		kW	11	22

Plug				
Rated current	$I_n$	A	16	32
<b>Cable entry</b>				
Cable diameter, min. – max. 3 and 4 poles, 5 poles	D	mm	9 – 19 11.4 – 22	11 – 24.5 11 – 28.5
<b>Cross section for connection</b> , min. – max. <b>stranded</b> wire without ferrule <b>stranded</b> wire with ferrule DIN 46228		$mm^2$ $mm^2$	1 – 2.5 1 – 2.5	2.5 – 6 2.5 – 6

## ■ MENNEKES – the safe choice for the future

**The zone classifications have changed. The degree of trust in our plugs and receptacles has not.**

This is for good reason. Our plugs and receptacles have been used in potentially explosive areas for decades, to the complete satisfaction of our customers. Examples of applications:

- Chemical, plastic production and processing, metal processing, pharmaceutical industries, feed industry, rubber, wood, lacquer, leather, food and textile industries.
- Factories, warehouses, potato and other agricultural processing, milk powder producing works, mills

and peat processing works, factories for the processing of magnesium; warehouses in agricultural collectives, in docks and in logistics plants associated with the storage of unpacked, combustible plastics and food and the related raw materials.

- Coal processing and coal dust equipment.

This position will persist in the future, as the latest MENNEKES plugs and sockets for areas classified as zone 22 comply with all the newly defined requirements. Furthermore they reflect our commitment to outperform standards.



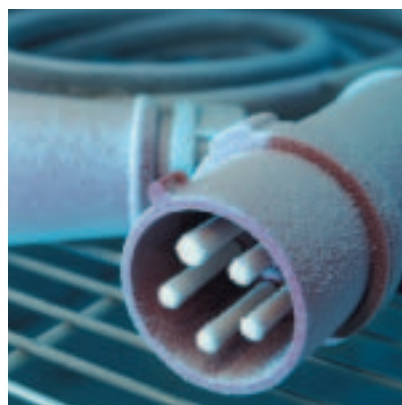
Approved plugs and sockets formerly used in zone 11, hazardous area.

■ Keeps strong. Keeps tight. Keeps up.

Our products are exposed to most extreme conditions. At first in the MENNEKES testing laboratories. Because only those products which pass the toughest tests are applied world wide and are entitled to bear our name.



The permanent burden by cold, heat, dust and water are tested in our laboratories again and again. After this, the products are certified by accredited institutions. According to international standards. For that you can rely on it. At any time. In any case. All over the world.



## Foreign Representatives

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