



Cable protection for civil engineering

Product overview



Preface

Now into its second generation, our family-owned enterprise combines expertise, a high technical standard, environment protection and energy-awareness with your wishes. Our claim is to always produce the best possible quality, which is how we provide the safety that you require. By choosing Z.I.S., you are opting for a professional and internationally experienced partner on whom you can always rely. Through decades of experience Z.I.S. ensures mature products and quality "made in Germany".



"Your satisfaction with our products is our most important concern. In order to achieve this, we rely on the performance of our motivated staff members and on the continuous improvement of our products and of all our operating processes.

We are proud to have been contributing to the protection of the environment for over 50 years now.

The experience and knowledge that we have acquired over the years allow us to manufacture products of the highest quality from reclaimed or recycled materials from the plastics industry – saving resources and remaining energy-efficient and environmentally friendly.

We focus on a confident and close cooperation between our customers, suppliers and employees. It is this confidence, combined with our flexibility, our know-how and the high quality standard of our products which makes us successful and unique."

A blue ink signature of Olaf Igelbrinck.

Olaf Igelbrinck
Executive partner

A blue ink signature of Heike Igelbrinck.

Heike Igelbrinck
Manager



Z.I.S. Kunststoff GmbH

Cable Protection products for civil engineering

Z.I.S. Kunststoff GmbH is your reliable system supplier for high quality cable protection products, protecting your cables and conduits. Certified according to DIN ISO 9001, we manufacture cable protection systems from extruded plastics.

In our product range you can find everything relating to cable protection. Our core products are cable protection conduits in lengths, on coils or on rolls, as well as cable cover profiles, cover tapes and films, custom profiles and many more too. A broad range of accessories completes our portfolio.

Our products are made from PVC-U, PE-HD or PP. Depending on the designated use and your individual specifications, we can process high quality regrinds from the plastics industry, recycling and reclaim material or virgin material.

Since its establishment in 1970, Z.I.S. Kunststoff GmbH has been manufacturing cable production systems from plastic. Today, our facilities extend to 9,000 m². Our products are used all over Europe, always complying with national and international directives.

By means of ...

- *technical know-how and a high quality level*
- *continuous innovation*
- *moderate expansion*
- *and a constant diversification of our product range*

... we keep our customers satisfied.

Environment & Quality

“When you stop improving, you stop being good”
(Philip Rosenthal, entrepreneur)

This is why, at our production sites, we work according to globally valid quality principles:

- We manufacture our cable covers and cable protection conduits according to the valid state-of-the-art directives and standards.
- Our company is certified according to DIN EN ISO 9001:2015.



Certification according to ISO 9001 is the best known and most widely accepted quality management system. It confirms the quality capability of our company.

- As a member of the DIN, we influence normative policy decisions and actively shape German standardization policy.





- For the continuous enhancement of our products and processes, we work in close scientific exchange with the plastics technology institute (KTP) at the University of Paderborn.



- Our cable protection conduits according to DIN 16874 are certified and externally monitored by the Darmstadt materials testing institute (MPA).



- Our energy management system for improvement of energy efficiency is certified by GUTcert.



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== Z.I.S. Telekommunikationsruhe 100

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Cable conduits and accessories

Z.I.S. Kunststoff cable conduits protect your power and telecommunication cables laid below ground against mechanical damage and are perfectly suitable for the use as hollow pipe systems.

In our product line you may choose between the following designs: products in length, on rolls or in coils.

We provide highest flexibility to you by the choice of the connecting systems as we produce our conduits with plug-in sleeve, adhesive sleeve or with smooth ends.

We provide you with an extensive program making sure that you will find the dimensions required. On request we manufacture special designs regarding colour, imprint and length.

Should you not find the product you are looking for in our catalogue please contact us. We are constantly extending our product range and will certainly be able to offer you a solution.

Advantages for you:

- Best possible protection for cables and wires
- Wide range of products
- Individual imprint and colours
- Flexibility of the connecting system
- Large program of accessories
- Competent consulting

A close-up photograph of a telecommunications device. A thick black cable enters from the left, passing through a circular metal flange with six screws. The flange is mounted on a white plastic housing. Several other connectors and cables are visible, including a silver metal connector on the right and a grey cable at the bottom. The number '50' is visible on the metal flange.

Telecommunication pipe and cable conduits made of PE-HD

Telecommunication pipe and cable conduits made of PE-HD



Standard designs

Cable conduits made of PE-HD, manufactured acc. to DIN 16874 with external supervision by MPA, Darmstadt or DIN 16876

| | |
|----------------------|--|
| Material | PE-HD according to DIN requirements |
| Colour | black |
| Inner surface | inside grooves, to reach max. pulling-in and blowing-in length |
| Delivery type | on rental drums or in coils |
| Labelling | to DIN requirements |

Possible designs

| | |
|--------------------------|---|
| Material | PE 80 / PE 100 acc. to DIN 8074/8075 |
| Coloured | co-extruded stripes |
| Outer surface | coloured co-extruded or solid dyed |
| Inner surface | smooth |
| Type | composite pipes – side by side, parallel, loose wound on reel |
| Delivery type | one-way-drums |
| Individual length | on drums or in coils |
| Labelling | acc. to customer specifications |
| SDR types | SDR 33 - SDR 11 |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | SDR types | In coils (m) | On rolls (m) | Weight (kg/m) |
|----------------------|------------------------|------------------------|-----------|-----------------|-----------------|------------------|
| KSR 32 x 3,0 | 32 | 3,0 | 11 | 4.000 | 100 | 0,272 |
| KSR 40 x 3,7 | 40 | 3,7 | 11 | 3.000 | 100 | 0,430 |
| KSR 50 x 4,6 | 50 | 4,6 | 11 | 2.200 | 100 | 0,666 |
| KSR 63 x 5,8 | 63 | 5,8 | 11 | 1.500 | 100 | 1,050 |
| KSR 75 x 6,8* | 75 | 6,8 | 11 | 1.000 | | 1,470 |

* Inner surface smooth

Intermediate length and special wall thickness are available on request

Plug fitting

Standard design

| | |
|-----------------|--|
| Material | Plastic design |
| Type | pluggable, pressure-tight up to 12 bar |

| Item designation | Pipe diameter (mm) |
|------------------|--------------------|
| STF-TK 32 | 32 |
| STF-TK 40 | 40 |
| STF-TK 50 | 50 |



Screw fitting

Standard design

| | |
|-----------------|--|
| Material | Plastic design |
| Type | screwable, pressure-tight up to 12 bar |

| Item designation | Pipe diameter (mm) |
|------------------|--------------------|
| SRF-TK 32 | 32 |
| SRF-TK 40 | 40 |
| SRF-TK 50 | 50 |
| SRF-TK 63 | 63 |
| SRF-TK 75 | 75 |



Pipe sealing plug

| Standard design | |
|-----------------|---|
| Material | Plastic design |
| Type | with eyelet screw, pressure-tight up to 0,5 bar |

| Item designation | Pipe diameter (mm) |
|------------------|--------------------|
| AS-TK 32 | 26,0 – 31,0 |
| AS-TK 40 | 31,0 – 39,0 |
| AS-TK 50 | 38,0 – 49,0 |
| AS-TK 63 | 47,0 – 62,0 |



Sealing plug

| Standard design | |
|-----------------|----------------------------------|
| Material | PE |
| Type | fitting on plain end, sand tight |

| Item designation | Pipe diameter (mm) |
|------------------|--------------------|
| VS-TK 32 | 32 |
| VS-TK 40 | 40 |
| VS-TK 50 | 50 |
| VS-TK 63 | 63 |
| VS-TK 75 | 75 |



The image shows a close-up, slightly angled view of several stacks of white, cylindrical cable conduits. Each conduit has a black interior and is secured with a red band that has a small, raised rectangular tab. The conduits are arranged in a grid-like pattern, with some in the foreground being more prominent than others in the background. The lighting is bright and even, highlighting the smooth texture of the white plastic.

Cable conduits made of PE-HD

Cable conduits made of PE-HD

Cable conduits made of PE-HD with plug-in sleeve



Standard designs

Manufactured acc. to DIN 16876

| | |
|----------------------|---|
| Sleeve type | integrally moulded plug-in sleeve (SM) |
| Sealing ring | compression lip sealing ring, type "SX" (inserted in the factory) |
| Sharp end | with plug-in depth marking and chamfer |
| Length | 6 m |
| Colour | black |
| Inner surface | smooth |

Possible designs

| | |
|-------------------------|---|
| Quality | DIN 16874 |
| Length | 1 m to 6 m |
| Coloured stripes | co-extruded |
| Colour | on request |
| Outer surface | coloured, co-extruded or solid-dyed |
| Inner surface | inner grooves for reducing the cable pull-in forces |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | SDR types | Pallet contents (m) | Weight (kg/m) |
|----------------------------|------------------------|------------------------|-----------|------------------------|------------------|
| KSR 63 x 3,0 SM | 63 | 3,0 | 21 | 1020 | 0,586 |
| KSR 110 x 3,4 SM | 110 | 3,4 | 26 | 516 | 1,170 |
| KSR 110 x 4,2 SM | 110 | 4,2 | 26 | 516 | 1,430 |
| KSR 110 x 5,3 SM | 110 | 5,3 | 21 | 516 | 1,770 |
| KSR 110 x 6,3 SM | 110 | 6,3 | 17,6 | 516 | 2,080 |
| KSR 110 x 10,0 ASM* | 110 | 10,0 | 11 | 516 | 3,140 |
| KSR 125 x 3,9 SM | 125 | 3,9 | 26 | 408 | 1,510 |
| KSR 125 x 4,8 SM | 125 | 4,8 | 26 | 408 | 1,840 |
| KSR 125 x 7,1 ASM* | 125 | 7,1 | 17,6 | 408 | 2,660 |
| KSR 140 x 4,3 SM | 140 | 4,3 | 33 | 318 | 1,884 |
| KSR 160 x 4,9 SM | 160 | 4,9 | 26 | 234 | 2,420 |
| KSR 160 x 6,2 SM | 160 | 6,2 | 26 | 234 | 3,040 |
| KSR 160 x 9,1 ASM* | 160 | 9,1 | 17,6 | 234 | 4,360 |

*ASM = attached plug-in sleeve

Cable conduits and blanks made of PE-HD with smooth ends



Standard design

Manufactured acc. to DIN 16876

| | |
|----------------------|-----------------------|
| Length | 6 m |
| Smooth ends | onesided with chamfer |
| Colour | black |
| Inner surface | smooth |

Possible designs

| | |
|-------------------------|---|
| Quality | DIN 16874 |
| Length | 1 m to 6 m |
| Coloured stripes | co-extruded |
| Colour | on request |
| Outer surface | coloured, co-extruded or solid dyed |
| Inner surface | inner grooves for reducing the cable pull-in forces |
| Labelling | acc. to customer specifications |
| Chamfer | two-sides or without |

| Item designation | Outer diameter (mm) | SDR type | Wall thickness (mm) | Pallet contents (m) | Weight (kg/m) |
|-------------------------|------------------------|----------|------------------------|------------------------|------------------|
| KSR 32 x 3,0 GE | 32 | 11 | 3,0 | | 0,272 |
| KSR 40 x 3,7 GE | 40 | 11 | 3,7 | | 0,430 |
| KSR 50 x 4,6 GE | 50 | 11 | 4,6 | 1200 | 0,666 |
| KSR 63 x 3,0 GE | 63 | 21 | 3,0 | 1020 | 0,586 |
| KSR 63 x 5,8 GE | 63 | 11 | 5,8 | 1020 | 1,050 |
| KSR 75 x 6,8 GE | 75 | 11 | 6,8 | | 1,470 |
| KSR 110 x 3,4 GE | 110 | 33 | 3,4 | 516 | 1,170 |
| KSR 110 x 4,2 GE | 110 | 26 | 4,2 | 516 | 1,430 |
| KSR 110 x 5,3 GE | 110 | 21 | 5,3 | 516 | 1,770 |
| KSR 110 x 6,3 GE | 110 | 17,6 | 6,3 | 516 | 2,080 |
| KSR 110 x 10 GE | 110 | 11 | 10,0 | 516 | 3,140 |
| KSR 125 x 3,9 GE | 125 | 33 | 3,9 | 408 | 1,510 |
| KSR 125 x 4,8 GE | 125 | 26 | 4,8 | 408 | 1,840 |
| KSR 125 x 7,1 GE | 125 | 17,6 | 7,1 | 408 | 2,660 |
| KSR 140 x 4,3 GE | 140 | 33 | 4,3 | 318 | 1,884 |
| KSR 160 x 4,9 GE | 160 | 33 | 4,9 | 234 | 2,420 |
| KSR 160 x 6,2 GE | 160 | 26 | 6,2 | 234 | 3,040 |
| KSR 160 x 9,1 GE | 160 | 17,6 | 9,1 | 234 | 4,360 |

Cable conduit bends made of PE-HD



Standard design

| | |
|---------------------|---|
| Material | PE-HD, manufactured acc. to DIN 16876 |
| Sleeve type | plug-in sleeve |
| Sealing ring | Compression lip sealing ring, type „SX“ (inserted in the factory) |
| Radius | 1 m |
| Degrees | 15°, 30°, 45° or 90° |
| Colour | black |

Possible designs

| | |
|----------------|------------|
| Radius | on request |
| Degrees | on request |

| Item designation | Outer diameter (mm) | Wall thickness (mm) |
|----------------------------|---------------------|---------------------|
| BG-KSR 110 x 4,2 SM | 110 | 4,2 |
| BG-KSR 110 x 6,3 SM | 110 | 6,3 |
| BG-KSR 125 x 3,9 SM | 125 | 3,9 |
| BG-KSR 160 x 4,9 SM | 160 | 4,9 |

PE-HD Double plug-in sleeve



Standard design

| | |
|-----------------|---|
| Type | Sleeve type collar (with inner stop position and two lip sealing rings) |
| Material | PE-HD |
| Colour | black |

| Item designation | Outer diameter (mm) | Length (mm) |
|-------------------------|---------------------|-------------|
| DM-KSR 63 x 2,2 | 63 | 220 |
| DM-KSR 110 x 4,3 | 110 | 295 |
| DM-KSR 125 x 4,9 | 125 | 245 |
| DM-KSR 140 x 8,0 | 140 | 278 |
| DM-KSR 160 x 6,2 | 160 | 266 |

Flexible cable conduit bends



„Short type“ with plug-in sleeve and plain end

| | |
|-----------------|--------------------|
| Material | PE-HD |
| Colour | black |
| Type | up to 45° bendable |

| Item designation | Dimensions (mm) | Length* from - to (mm) |
|--------------------|--------------------|---------------------------|
| Flexb 5045 | 50 x 6,0 | 445 - 510 |
| Flexb 6345 | 63 x 6,0 | 600 - 680 |
| Flexb 7545 | 75 x 6,0 | 660 - 740 |
| Flexb 9045 | 90 x 6,0 | 770 - 870 |
| Flexb 11045 | 110 x 6,0 | 910 - 1030 |
| Flexb 12545 | 125 x 6,0 | 1100 - 1215 |
| Flexb 14045 | 140 x 6,0 | 1220 - 1340 |
| Flexb 16045 | 160 x 6,0 | 1130 - 1400 |

*compressed to stretched length



„Long type“ with plug-in sleeve and plain end

| | |
|-----------------|--------------------|
| Material | PE-HD |
| Colour | black |
| Type | up to 90° bendable |

| Item designation | Dimensions (mm) | Length* from - to (mm) |
|--------------------|--------------------|---------------------------|
| Flexb 5090 | 50 x 6,0 | 710 - 850 |
| Flexb 6390 | 63 x 6,0 | 905 - 1040 |
| Flexb 7590 | 75 x 6,0 | 1060 - 1210 |
| Flexb 9090 | 90 x 6,0 | 1275 - 1445 |
| Flexb 11090 | 110 x 6,0 | 1275 - 1710 |
| Flexb 12590 | 125 x 6,0 | 1875 - 2105 |
| Flexb 14090 | 140 x 6,0 | 2105 - 2300 |
| Flexb 16090 | 160 x 6,0 | 2060 - 2480 |

*compressed to stretched length

Spacers

Standard design

| | |
|-----------------|------------------------------|
| Material | PP |
| Type | Space for 2, 4, 6 or 8 pipes |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|---------------------|
| AH-VW 50 | 50 |
| AH-VW 63 | 63 |
| AH-VW 75 | 75 |
| AH-VW 90 | 90 |
| AH-VW 110 | 110 |
| AH-VW 125 | 125 |
| AH-VW 140 | 140 |
| AH-VW 160 | 160 |
| AH-VW 200 | 200 |

End caps

Standard design

| | |
|-----------------|----------------------------------|
| Material | PE-HD* |
| Type | fitting for pipe and sleeve ends |
| Colour | black |

*also available as PP



| Item designation | Outer diameter (mm) |
|------------------|---------------------|
| VK-VW 50 | 50 |
| VK-VW 63 | 63 |
| VK-VW 75 | 75 |
| VK-VW 90 | 90 |
| VK-VW 110 | 110 |
| VK-VW 125 | 125 |
| VK-VW 140 | 140 |
| VK-VW 160 | 160 |
| VK-VW 200 | 200 |

Cable conduits made of PP



Cable conduits made of PP with plug-in sleeve



Standard design

Manufactured acc. to DIN 16878 or prEN 14285

| | |
|----------------------|---|
| Sleeve type | integrally moulded plug-in sleeve (SM) |
| Sealing ring | compression lip sealing ring, type "SX" (inserted in the factory) |
| Sharp end | with plug-in depth marking and chamfer |
| Length | 6 m |
| Colour | black |
| Inner surface | smooth |

Possible designs

| | |
|-------------------------|---|
| Length | 1 m bis 6 m |
| Coloured stripes | co-extruded |
| Colour | on request |
| Outer surface | fcoloured, co-extruded or solid-dyed |
| Inner surface | inner grooves for reducing the cable pull-in forces |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | SN type | Pallet contents (m) | Weight (kg/m) |
|-------------------------|------------------------|------------------------|---------|------------------------|------------------|
| KSR 63 x 3,0 SM | 63 | 3,0 | 16 | 1020 | 0,586 |
| KSR 110 x 3,4 SM | 110 | 3,4 | 4 | 516 | 1,120 |
| KSR 110 x 4,2 SM | 110 | 4,2 | 4 | 516 | 1,370 |
| KSR 110 x 4,7 SM | 110 | 4,7 | 8 | 516 | 1,590 |
| KSR 110 x 5,3 SM | 110 | 5,3 | 16 | 516 | 1,770 |
| KSR 110 x 6,3 SM | 110 | 6,3 | 16 | 516 | 2,020 |
| KSR 125 x 3,9 SM | 125 | 3,9 | 4 | 408 | 1,450 |
| KSR 125 x 4,8 SM | 125 | 4,8 | 4 | 408 | 1,765 |
| KSR 140 x 4,3 SM | 140 | 4,3 | 4 | 318 | 1,884 |
| KSR 160 x 4,9 SM | 160 | 4,9 | 4 | 234 | 2,320 |
| KSR 160 x 6,2 SM | 160 | 6,2 | 4 | 234 | 2,965 |
| KSR 160 x 6,9 SM | 160 | 6,9 | 8 | 234 | 3,350 |

Cable conduits and blanks made of PP with smooth ends



Standard design

Manufactured acc. to DIN 16878 or prEN 14285

| | |
|----------------------|-----------------------|
| Length | 6 m |
| Smooth ends | onesided with chamfer |
| Colour | black |
| Inner surface | smooth |

Possible designs

| | |
|-------------------------|---|
| Length | 1 m to 6 m |
| Coloured stripes | co-extruded |
| Colour | on request |
| Outer surface | coloured, co-extruded or solid dyed |
| Inner surface | inner grooves for reducing the cable pull-in forces |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | SN type | Pallet contents (m) | Weight (kg/m) |
|-------------------------|------------------------|------------------------|---------|------------------------|------------------|
| KSR 63 x 3,0 GE | 63 | 3,0 | 16 | 1020 | 0,586 |
| KSR 110 x 3,4 GE | 110 | 3,4 | 4 | 516 | 1,120 |
| KSR 110 x 4,2 GE | 110 | 4,2 | 4 | 516 | 1,370 |
| KSR 110 x 4,7 GE | 110 | 4,7 | 8 | 516 | 1,590 |
| KSR 110 x 5,3 GE | 110 | 5,3 | 16 | 516 | 1,770 |
| KSR 110 x 6,3 GE | 110 | 6,3 | 16 | 516 | 2,020 |
| KSR 125 x 3,9 GE | 125 | 3,9 | 4 | 408 | 1,450 |
| KSR 125 x 4,8 GE | 125 | 4,8 | 4 | 408 | 1,765 |
| KSR 140 x 4,3 GE | 140 | 4,3 | 4 | 318 | 1,884 |
| KSR 160 x 4,9 GE | 160 | 4,9 | 4 | 234 | 2,320 |
| KSR 160 x 6,2 GE | 160 | 6,2 | 4 | 234 | 2,965 |
| KSR 160 x 6,9 GE | 160 | 6,9 | 8 | 234 | 3,350 |

Spacers

Standard design

| | |
|-----------------|------------------------------|
| Material | PP |
| Type | Space for 2, 4, 6 or 8 pipes |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|---------------------|
| AH-VW 50 | 50 |
| AH-VW 63 | 63 |
| AH-VW 75 | 75 |
| AH-VW 90 | 90 |
| AH-VW 110 | 110 |
| AH-VW 125 | 125 |
| AH-VW 140 | 140 |
| AH-VW 160 | 160 |
| AH-VW 200 | 200 |

End caps

Standard design

| | |
|-----------------|----------------------------------|
| Material | PE-HD |
| Type | fitting for pipe and sleeve ends |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|---------------------|
| VK-VW 50 | 50 |
| VK-VW 63 | 63 |
| VK-VW 75 | 75 |
| VK-VW 90 | 90 |
| VK-VW 110 | 110 |
| VK-VW 125 | 125 |
| VK-VW 140 | 140 |
| VK-VW 160 | 160 |
| VK-VW 200 | 200 |

Cable conduit bends made of PP



Standard design

| | |
|---------------------|---|
| Material | PP, manufactured acc. to DIN 16878 |
| Sleeve type | plug-in sleeve |
| Sealing ring | Compression lip sealing ring, type „SX“ (inserted in the factory) |
| Radius | 1 m |
| Degrees | 15°, 30°, 45° or 90° |
| Colour | black |

Possible designs

| | |
|----------------|------------|
| Radius | on request |
| Degrees | on request |

| Item designation | Outer diameter (mm) | Wall thickness (mm) |
|-------------------|---------------------|---------------------|
| BG-KSR 110 | 110 | 4,2 |
| BG-KSR 110 | 110 | 6,3 |
| BG-KSR 125 | 125 | 3,9 |
| BG-KSR 160 | 160 | 4,9 |

PE-HD Double plug-in sleeve



Standard design

| | |
|-----------------|---|
| Type | Sleeve type collar (with inner stop position and two lip sealing rings) |
| Material | PE-HD |
| Colour | black |

| Item designation | Outer diameter (mm) | Length (mm) |
|-------------------------|---------------------|-------------|
| DM-KSR 63 x 2,2 | 63 | 220 |
| DM-KSR 110 x 4,3 | 110 | 295 |
| DM-KSR 125 x 4,9 | 125 | 245 |
| DM-KSR 140 x 8,0 | 140 | 278 |
| DM-KSR 160 x 6,2 | 160 | 266 |

Flexible cable conduit bends



„Short type“ with plug-in sleeve and plain end

| | |
|-----------------|--------------------|
| Material | PE-HD |
| Colour | black |
| Type | up to 45° bendable |

| Item designation | Dimensions (mm) | Length* from - to (mm) |
|--------------------|--------------------|---------------------------|
| Flexb 5045 | 50 x 6,0 | 445 - 510 |
| Flexb 6345 | 63 x 6,0 | 600 - 680 |
| Flexb 7545 | 75 x 6,0 | 660 - 740 |
| Flexb 9045 | 90 x 6,0 | 770 - 870 |
| Flexb 11045 | 110 x 6,0 | 910 - 1030 |
| Flexb 12545 | 125 x 6,0 | 1100 - 1215 |
| Flexb 14045 | 140 x 6,0 | 1220 - 1340 |
| Flexb 16045 | 160 x 6,0 | 1130 - 1400 |

*compressed to stretched length



„Long type“ with plug-in sleeve and plain end

| | |
|-----------------|--------------------|
| Material | PE-HD |
| Colour | black |
| Type | up to 90° bendable |

| Item designation | Dimensions (mm) | Length* from - to (mm) |
|--------------------|--------------------|---------------------------|
| Flexb 5090 | 50 x 6,0 | 710 - 850 |
| Flexb 6390 | 63 x 6,0 | 905 - 1040 |
| Flexb 7590 | 75 x 6,0 | 1060 - 1210 |
| Flexb 9090 | 90 x 6,0 | 1275 - 1445 |
| Flexb 11090 | 110 x 6,0 | 1275 - 1710 |
| Flexb 12590 | 125 x 6,0 | 1875 - 2105 |
| Flexb 14090 | 140 x 6,0 | 2105 - 2300 |
| Flexb 16090 | 160 x 6,0 | 2060 - 2480 |

*compressed to stretched length



Cable conduits made of PVC-U

Cable conduits made of PVC-U with adhesive sleeve



Standard design

Manufactured acc. to DIN 16875

| | |
|--------------------|-----------------------|
| Sleeve type | adhesive sleeve |
| Smooth ends | onesided with chamfer |
| Length | 6 m |
| Colour | black / anthracite |

Possible designs

| | |
|------------------|--|
| Length | 1 m to 6 m |
| Colour | special colours are available on request |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | | | Pallet contents (m) | Weight (kg/m) |
|--------------------------|------------------------|------------------------|---------|---------|------------------------|------------------|
| | | Range 2 | Range 3 | Range 4 | | |
| KSR 50 x 1,8 KM* | 50 | | 1,8 | | 1.200 | 0,422 |
| KSR 63 x 1,9 KM* | 63 | | 1,9 | | 816 | 0,562 |
| KSR 63 x 3,0 KM | 63 | | | 3,0 | 816 | 0,854 |
| KSR 75 x 2,2 KM* | 75 | | 2,2 | | 630 | 0,782 |
| KSR 75 x 3,6 KM | 75 | | | 3,6 | 630 | 1,220 |
| KSR 90 x 2,7 KM* | 90 | | 2,7 | | 432 | 1,130 |
| KSR 110 x 2,2 KM | 110 | 2,2 | | | 300 | 1,160 |
| KSR 110 x 3,2 KM* | 110 | | 3,2 | | 300 | 1,640 |
| KSR 110 x 5,3 KM | 110 | | | 5,3 | 300 | 2,610 |
| KSR 125 x 2,5 KM | 125 | 2,5 | | | 204 | 1,480 |
| KSR 125 x 3,7 KM | 125 | | 3,7 | | 204 | 2,130 |
| KSR 125 x 6,0 KM | 125 | | | 6,0 | 204 | 3,340 |
| KSR 140 x 4,1 KM | 140 | | 4,1 | | 180 | 2,650 |
| KSR 160 x 3,2 KM | 160 | 3,2 | | | 234 | 2,400 |
| KSR 160 x 4,7 KM | 160 | | 4,7 | | 234 | 3,440 |
| KSR 160 x 7,7 KM | 160 | | | 7,7 | 234 | 5,470 |
| KSR 200 x 3,9 KM | 200 | 3,9 | | | 90 | 3,650 |

*as standard size also available in 1m lengths

Cable conduits made of PVC-U with plug-in sleeve

Standard design

Manufactured acc. to DIN 16875

Sleeve type plug-in sleeve

Sealing ring inserted in the factory

Smooth ends onesided with plug-in depth marking and chamfer

Length 6 m

Colour black / anthracite

Possible designs

Length 1 m to 6 m

Colour special colours are available on request

Labelling acc. to customer specifications

| Item designation | Outer diameter (mm) | Wall thickness (mm) | | Pallet contents (m) | Weight (kg/m) |
|-------------------------|------------------------|------------------------|---------|------------------------|------------------|
| | | Range 3 | Range 4 | | |
| KSR 110 x 3,2 SM | 110 | 3,2 | | 300 | 1,640 |
| KSR 110 x 5,3 SM | 110 | | 5,3 | 300 | 2,610 |
| KSR 125 x 3,7 SM | 125 | 3,7 | | 204 | 2,130 |
| KSR 125 x 6,0 SM | 125 | | 6,0 | 204 | 3,340 |
| KSR 160 x 4,7 SM | 160 | 4,7 | | 234 | 3,440 |
| KSR 160 x 7,7 SM | 160 | | 7,7 | 234 | 5,470 |

Cable conduits made of PVC-U with smooth ends



Standard design

Manufactured acc. to DIN 16875

| | |
|--------------------|-----------------------|
| Length | 6 m |
| Smooth ends | onesided with chamfer |
| Colour | black / anthracite |

Possible designs

| | |
|------------------|---|
| Length | 1 m to 6 m |
| Type | intermediate lenght and special colour on request |
| Colour | special colours are available on request |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | | | Pallet contents (m) | Weight (kg/m) |
|-------------------------|------------------------|------------------------|---------|---------|------------------------|------------------|
| | | Range 2 | Range 3 | Range 4 | | |
| KSR 32 x 1,8 GE | 32 | | | 1,8 | 3.018 | 0,264 |
| KSR 50 x 1,8 GE | 50 | | 1,8 | | 1.200 | 0,422 |
| KSR 63 x 1,9 GE | 63 | | 1,9 | | 816 | 0,562 |
| KSR 63 x 3,0 GE | 63 | | | 3,0 | 816 | 0,854 |
| KSR 75 x 2,2 GE | 75 | | 2,2 | | 630 | 0,782 |
| KSR 75 x 3,6 GE | 75 | | | 3,6 | 630 | 1,220 |
| KSR 90 x 2,7 GE | 90 | | 2,7 | | 432 | 1,130 |
| KSR 110 x 2,2 GE | 110 | 2,2 | | | 300 | 1,160 |
| KSR 110 x 5,3 GE | 110 | | | 5,3 | 300 | 2,610 |
| KSR 125 x 2,5 GE | 125 | 2,5 | | | 204 | 1,480 |
| KSR 125 x 3,7 GE | 125 | | 3,7 | | 204 | 2,130 |
| KSR 125 x 6,0 GE | 125 | | | 6,0 | 204 | 3,340 |
| KSR 140 x 4,1 GE | 140 | | 4,1 | | 180 | 2,650 |
| KSR 160 x 3,2 GE | 160 | 3,2 | | | 234 | 2,400 |
| KSR 160 x 4,7 GE | 160 | | 4,7 | | 234 | 3,440 |
| KSR 160 x 7,7 GE | 160 | | | 7,7 | 234 | 5,470 |
| KSR 200 x 3,9 GE | 200 | 3,9 | | | 90 | 3,650 |



Cable conduit bends made of PVC-U with adhesive sleeve



Standard design

| | |
|--------------------|------------------------|
| Sleeve type | adhesive sleeve |
| Radius | 1 m |
| Degrees | 15°, 30°, 45° oorr 90° |
| Colour | black |

Possible designs

| | |
|----------------|------------|
| Radius | on request |
| Degrees | on request |

| Item designation | Outer diameter (mm) | Wall thickness (mm) | |
|----------------------------|---------------------|---------------------|---------|
| | | Range 3 | Range 4 |
| BG-KSR 50 x 1,8 KM | 50 | 1,8 | |
| BG-KSR 63 x 1,9 KM | 63 | 1,9 | |
| BG-KSR 63 x 3,0 KM | 63 | | 3,0 |
| BG-KSR 75 x 2,2 KM | 75 | 2,2 | |
| BG-KSR 75 x 3,6 KM | 75 | | 3,6 |
| BG-KSR 90 x 2,7 KM | 90 | | |
| BG-KSR 110 x 3,2 KM | 110 | 3,2 | |
| BG-KSR 110 x 5,3 KM | 110 | | 5,3 |
| BG-KSR 125 x 3,7 KM | 125 | 3,7 | |
| BG-KSR 125 x 6,0 KM | 125 | | 6,0 |
| BG-KSR 140 x 4,1 KM | 140 | | |
| BG-KSR 160 x 4,7 KM | 160 | 4,7 | |
| BG-KSR 200 x 4,0 KM | 200 | | |

Cable conduit bends with plug-in sleeve on request

Sleeve made of PVC-U

Standard design

| | |
|-----------------|-----------------------------|
| Material | PVC-U |
| Type | without inner stop position |
| Colour | black |



| Item designation | Outer diameter (mm) | Length (mm) |
|----------------------------|------------------------|----------------|
| ÜM-KSR 50 x 1,8 KM | 50 | 115 |
| ÜM-KSR 63 x 1,8 KM | 63 | 115 |
| ÜM-KSR 75 x 2,2 KM | 75 | 125 |
| ÜM-KSR 110 x 3,2 KM | 110 | 185 |
| ÜM-KSR 110 x 5,3 KM | 110 | 185 |
| ÜM-KSR 125 x 3,7 KM | 125 | 205 |
| ÜM-KSR 125 x 6,0 KM | 125 | 200 |
| ÜM-KSR 160 x 4,7 KM | 160 | 245 |
| ÜM-KSR 200 x 4,0 KM | 200 | 400 |

Double adhesive sleeve made of PVC-U

Standard design

| | |
|-----------------|-------------------------------------|
| Material | PVC-U |
| Type | with or without inner stop position |
| Colour | black |



| Item designation | Outer diameter (mm) | Length (mm) |
|-----------------------------|------------------------|----------------|
| DKM-KSR 50 x 1,8 KM | 50 | 120 |
| DKM-KSR 63 x 1,8 KM | 63 | 150 |
| DKM-KSR 75 x 2,2 KM | 75 | 155 |
| DKM-KSR 110 x 3,2 KM | 110 | 225 |
| DKM-KSR 110 x 5,3 KM | 110 | 225 |
| DKM-KSR 125 x 3,7 KM | 125 | 265 |
| DKM-KSR 125 x 6,0 KM | 125 | 265 |
| DKM-KSR 160 x 4,7 KM | 160 | 310 |
| DKM-KSR 200 x 4,0 KM | 200 | 400 |

Double plug-in sleeve made of PVC-U

Standard design

| | |
|-----------------|---|
| Material | PVC-U |
| Type | Sleeve type collar (with inner stop position and two lip sealing rings) |
| Colour | black |



| Item designation | Outer diameter (mm) | Length (mm) |
|-----------------------------|------------------------|----------------|
| DSM-KSR 50 x 1,8 SM | 50 | 120 |
| DSM-KSR 63 x 1,8 SM | 63 | 150 |
| DSM-KSR 75 x 2,2 SM | 75 | 155 |
| DSM-KSR 110 x 3,2 SM | 110 | 225 |
| DSM-KSR 110 x 5,3 SM | 110 | 225 |
| DSM-KSR 125 x 3,7 SM | 125 | 265 |
| DSM-KSR 125 x 6,0 SM | 125 | 265 |
| DSM-KSR 160 x 4,7 SM | 160 | 310 |
| DSM-KSR 200 x 4,0 SM | 200 | 400 |

with lip sealing ring on request

Spacers

| Standard design | |
|-----------------|------------------------------|
| Material | PP |
| Type | Space for 2, 4, 6 or 8 pipes |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|------------------------|
| AH-VW 50 | 50 |
| AH-VW 63 | 63 |
| AH-VW 75 | 75 |
| AH-VW 90 | 90 |
| AH-VW 110 | 110 |
| AH-VW 125 | 125 |
| AH-VW 140 | 140 |
| AH-VW 160 | 160 |
| AH-VW 200 | 200 |

End caps

| Standard design | |
|-----------------|----------------------------------|
| Material | PE-HD |
| Type | fitting for pipe and sleeve ends |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|------------------------|
| VK-VW 50 | 50 |
| VK-VW 63 | 63 |
| VK-VW 75 | 75 |
| VK-VW 90 | 90 |
| VK-VW 110 | 110 |
| VK-VW 125 | 125 |
| VK-VW 140 | 140 |
| VK-VW 160 | 160 |
| VK-VW 200 | 200 |



Composite cable conduits

Composite cable conduits made of PE-HD with outer corrugation



Standard design

Manufactured acc. to DIN EN 61386-24

Type with outer corrugation and inner pipe

Type 450 N

Sleeve type Double plug-in sleeve, sand-tight design

Material PE-HD

Length 6 m

Colour Outer surface black

Possible designs

Sleeve type double plug-in sleeve, water-tight design

Length on request

Colour red, yellow, blue, green or orange

| Item designation | Dimensions | | | Pallet contents (m) |
|------------------|------------|-----------------------|-----------------------|------------------------|
| | DN | ø d _i (mm) | ø d _a (mm) | |
| VBR-S 50 | 50 | 39 ^{+1,5} | 50 ^{+1,0} | 1170 |
| VBR-S 63 | 63 | 50 ^{+1,2} | 63 ^{+1,2} | 612 |
| VBR-S 75 | 75 | 61 ^{+1,5} | 75 ^{+1,4} | 978 |
| VBR-S 90 | 90 | 74 ^{+2,0} | 90 ^{+1,7} | 648 |
| VBR-S 110 | 110 | 93 ^{+2,0} | 110 ^{+2,0} | 402 |
| VBR-S 125 | 125 | 107 ^{+2,0} | 125 ^{+2,3} | 306 |
| VBR-S 160 | 160 | 138 ^{+2,5} | 160 ^{+2,3} | 198 |

Composite cable conduits made of PE-HD with outer corrugation in coils



Standard design

Manufactured acc. to DIN EN 61386-24

| | |
|-----------------------------|--|
| Type | with outer corrugation and inner pipe |
| Type | 450 N |
| Sleeve type | Double plug-in sleeve, sand-tight design |
| Material | PE-HD |
| Length | 50 m in coils, with inside cable pull-in aid |
| Colour Outer surface | black |

Possible designs

| | |
|--------------------|---|
| Sleeve type | double plug-in sleeve, water-tight design |
| Length | on request |
| Colour | red, yellow, blue, green or orange |

| Item designation | Dimensions | | | On rolls |
|------------------|------------|-----------------------|--------------------------|----------|
| | DN | ø d _i (mm) | ø d _a (mm) | (m) |
| VBR-F 40 | 40 | 30 ^{+2,0} | 40 ^{+0,8} | 50 |
| VBR-F 50 | 50 | 40 ^{+2,0} | 50 ^{+1,0} | 50 |
| VBR-F 63 | 63 | 50 ^{+2,0} | 63 ^{+1,2} | 50 |
| VBR-F 75 | 75 | 60 ^{+2,0} | 75 ^{+1,4} | 50 |
| VBR-F 90 | 90 | 74 ^{+2,0} | 90 ^{+1,7} | 50 |
| VBR-F 110 | 110 | 93 ^{+2,0} | 110 ^{+2,0} | 50 |
| VBR-F 120 | 120 | 102 ^{+2,0} | 120 ^{+0,5/-0,5} | 50 |
| VBR-F 125 | 125 | 105 ^{+2,5} | 125 ^{+2,3} | 50 |
| VBR-F 160 | 160 | 137 ^{+2,5} | 160 ^{+2,3} | 50 |

Double plug-in sleeve

Standard design

| | |
|-----------------|-------|
| Material | PE-HD |
| Colour | black |



| Item designation | Outer diameter (mm) |
|--------------------|------------------------|
| DSM-VBR 40 | 40 |
| DSM-VBR 50 | 50 |
| DSM-VBR 63 | 63 |
| DSM-VBR 75 | 75 |
| DSM-VBR 90 | 90 |
| DSM-VBR 110 | 110 |
| DSM-VBR 125 | 125 |
| DSM-VBR 160 | 160 |

Profile sealing ring

Standard design

| | |
|---------------|-------|
| Colour | black |
|---------------|-------|



| Item designation | Outer diameter (mm) |
|-------------------|------------------------|
| DR-VBR 40 | 40 |
| DR-VBR 50 | 50 |
| DR-VBR 63 | 63 |
| DR-VBR 75 | 75 |
| DR-VBR 90 | 90 |
| DR-VBR 110 | 110 |
| DR-VBR 125 | 125 |
| DR-VBR 160 | 160 |

Spacers

Standard design

| | |
|-----------------|------------------------------|
| Material | PP |
| Type | Space for 2, 4, 6 or 8 pipes |
| Colour | black |



| Item designation | Outer diameter (mm) |
|------------------|------------------------|
| AH-VW 50 | 50 |
| AH-VW 63 | 63 |
| AH-VW 75 | 75 |
| AH-VW 90 | 90 |
| AH-VW 110 | 110 |
| AH-VW 125 | 125 |
| AH-VW 160 | 160 |



Split pipes



Split pipes

Please select from our range of split pipes for subsequent protection of cables, which have already been laid, or to repair damaged pipe systems.

You will receive our split pipes with three different locking systems as well as different materials individually according to your wishes or fields of application:

- split pipes made of PVC-U or PE-HD with snap-on locking
- split pipes made of PVC-U with H-profile
- split pipes made of PP with locking clamps

For subsequent protection of cables, which have already been laid, or for repairing damaged pipe systems.

- sealed against fine sand
- reusable
- extendable to any length
- the joining of the split pipes does not require any tools
- a continuous pipeline is achieved by offsetting the top split pipe (no sleeves required)

Spilt pipes made of PVC-U with snap-on locking



Use as a repair split pipe:

Our split pipe is constructed in a way that the locking mechanism is on the outside of the pipe, which means that the inner diameter of 100 mm is fully usable without dimensional limitations. Therefore, the split pipe can be clamped over the defective cable conduit like a plaster over a wound.

Standard design

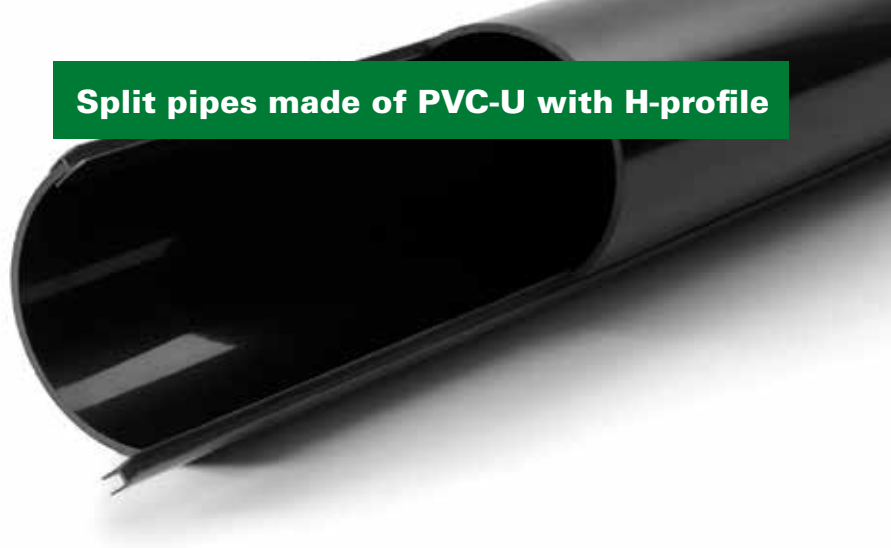
| | |
|-----------------------|--------------|
| Material | PVC-U |
| Locking system | snap-on lock |
| Colour | grey |
| Length | 3 m |

Possible designs

| | |
|------------------|--|
| Length | 1 m to 3 m |
| Colour | special colours are available on request |
| Labelling | acc. to customer specifications |

| Item designation | Outer diameter (mm) | Inner diameter (mm) | Wall thickness (mm) | Pallet contents (m) |
|------------------------|---------------------|---------------------|---------------------|---------------------|
| RHS-R 110 x 3,2 | 116,4 | 110 | 3,2 | 135 |

Split pipes made of PVC-U with H-profile



Standard design

| | |
|-----------------------|-----------|
| Material | PVC-U |
| Locking system | H-profile |
| Colour | black |
| Length | 3 m |

The joining is achieved by connecting the two split pipes. The connection battens (H-profile) are glued on one side. A continuous pipeline is achieved by offsetting the top split pipe (no sleeves required). In addition, the H-profiles can be joined to the split pipes during the final assembly using Tangit plastic glue for PVC-U.

| Item designation | Outer diameter (mm) | Inner diameter (mm) | Wall thickness (mm) | Pallet contents (m) |
|-------------------------|--|---------------------|---------------------|---------------------|
| RHS-H 50 x 1,8 | 50 | 46,4 | 1,8 | 1332 |
| RHS-H 63 x 1,9 | 63 | 59,2 | 1,9 | 855 |
| RHS-H 63 x 3,0 | 63 | 57 | 3,0 | 855 |
| RHS-H 63 x 4,7 | 63 | 53,6 | 4,7 | 855 |
| RHS-H 75 x 2,2 | 75 | 70,6 | 2,2 | 600 |
| RHS-H 75 x 3,6 | 75 | 67,8 | 3,6 | 600 |
| RHS-H 90 x 2,7 | 90 | 84,6 | 2,7 | 372 |
| RHS-H 90 x 4,3 | 90 | 81,4 | 4,3 | 372 |
| RHS-H 110 x 3,2 | see Split pipes with snap-on locking Side 40 | | | |
| RHS-H 110 x 5,3 | 110 | 99,4 | 5,3 | 297 |
| RHS-H 125 x 3,7 | 125 | 117,6 | 3,7 | 216 |
| RHS-H 125 x 6,0 | 125 | 113 | 6,0 | 216 |
| RHS-H 140 x 4,1 | 140 | 131,8 | 4,1 | 138 |
| RHS-H 140 x 6,7 | 140 | 126,6 | 6,7 | 138 |
| RHS-H 160 x 4,7 | 160 | 150,6 | 4,7 | 126 |
| RHS-H 160 x 7,7 | 160 | 144,6 | 7,7 | 126 |
| RHS-H 200 x 4,0 | 200 | 192 | 4,0 | 75 |
| RHS-H 250 x 6,1* | 250 | 237,8 | 6,1 | 35 |
| RHS-H 315 x 7,7* | 315 | 299,6 | 7,7 | 20 |

* Colour red/brown

Split pipes made of PE-HD with snap-on system



Use as a repair split pipe:

Our 120 mm x 5,0 mm split pipe is constructed in a way that the locking mechanism is on the outside of the pipe, which means that the inner diameter of 110mm is fully usable without dimensional limitations. Therefore, the split pipe can be clamped over the defective cable conduit like a plaster over a wound. You don't need to saw off the damaged pipe section!

Standard design

| | |
|-----------------------|-----------------|
| Material | PE-HD |
| Locking system | snap-on locking |
| Colour | black |
| Length | 3 m |

| Item designation | Outer diameter (mm) | Inner diameter (mm) | Wall thickness (mm) | Pallet contents (m) |
|-------------------------|---------------------|---------------------|---------------------|---------------------|
| RHS-R 50 x 4,0 | 58 | 50 | 4,0 | 330 |
| RHS-R 75 x 4,0 | 83 | 75 | 4,0 | 180 |
| RHS-R 100 x 5,0 | 110 | 100 | 5,0 | 162 |
| RHS-R 110 x 5,0 | 120 | 110 | 5,0 | 144 |
| RHS-R 141 x 9,5 | 160 | 141 | 9,5 | 72 |
| RHS-R 172 x 14,0 | 200 | 172 | 14,0 | 90 |
| RHS-R 195 x 15,0 | 225 | 195 | 15,0 | 90 |

Flexible split pipe bends

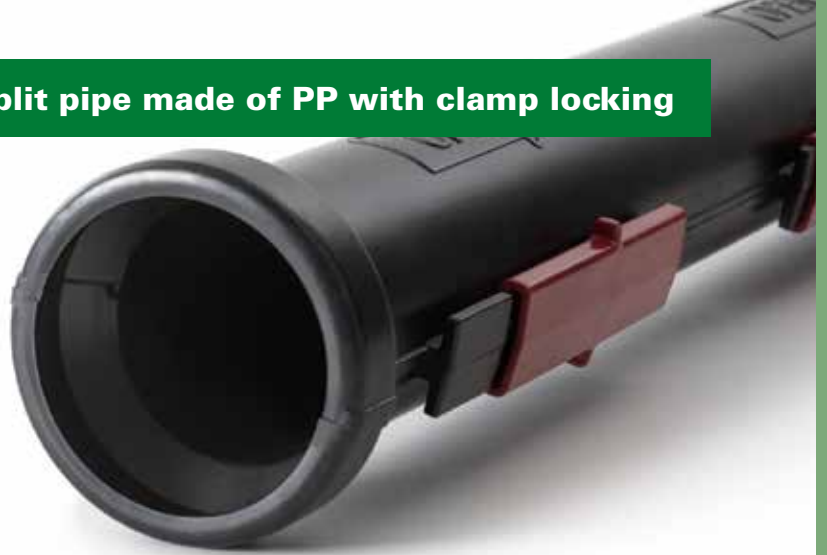
Standard design

| | |
|-----------------|--|
| Material | PE-HD |
| Type | flexible up to 90°, one-sided splitted with locking bolt |
| Colour | black |



| Item designation | Dimensions (mm) | Length (mm) |
|-----------------------|-----------------|-------------|
| RHSB 110 x 5,0 | 110 x 5,0 | 1350 |
| RHSB 120 x 5,0 | 120 x 5,0 | 1300 |
| RHSB 160 x 9,5 | 160 x 9,5 | 1680 |

Split pipe made of PP with clamp locking



For the subsequent protection of cables, which have already been laid.

- Sealed against fine sand
- Reusable
- Including moulded sleeve
- Extendable to any length
- The joining of the split pipes does not require any tools
- Can be angled by 10° per meter in each direction
- 3 red locking clamps are pre-mounted

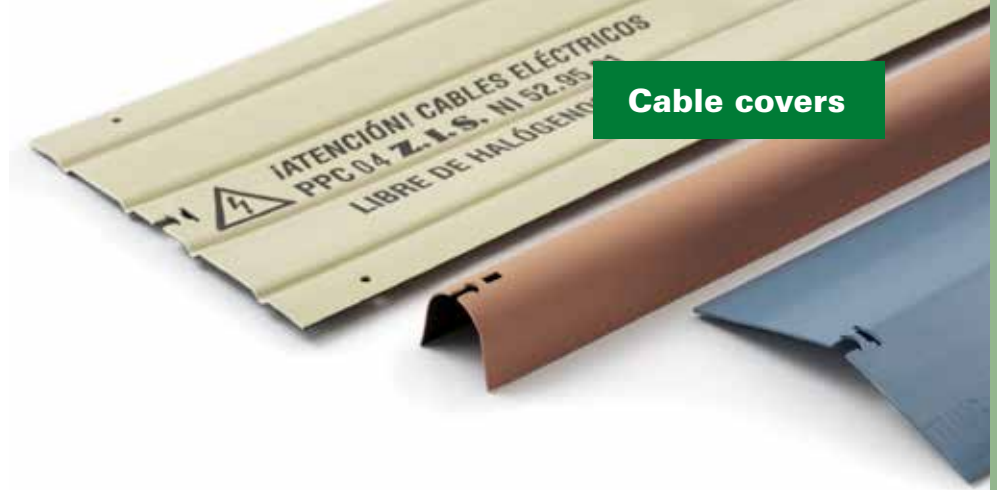
Standard design

| | |
|-----------------------|--------|
| Material | PP |
| Locking system | clamps |
| Colour | black |
| Length | 1 m |

| Item designation | Outer diameter (mm) | Inner diameter (mm) | Wall thickness (mm) | Pallet contents (m) |
|-------------------------|---------------------|---------------------|---------------------|---------------------|
| RHS-V 60 x 5,0 | 60 | 50 | 5,0 | 90 |
| RHS-V 110 x 5,5 | 110 | 99 | 5,5 | 54 |
| RHS-V 160 x 8,0 | 160 | 144 | 8,0 | 24 |
| RHS-V 220 x 10,0 | 220 | 200 | 10,0 | 12 |

Cable covers





Cable covers

Z.I.S. Kunststoff cable covers provide optimum mechanical and visual protection for your cables and wires. For cable and wires, which require particularly robust protection, we may offer our covers with wall thickness of up to 12 mm and extra strong mechanical protection effect.

With our Z.I.S. Easy Lock System we guarantee easy and user-friendly connecting technology. No twisting of 90° is necessary – just put it together and drop.

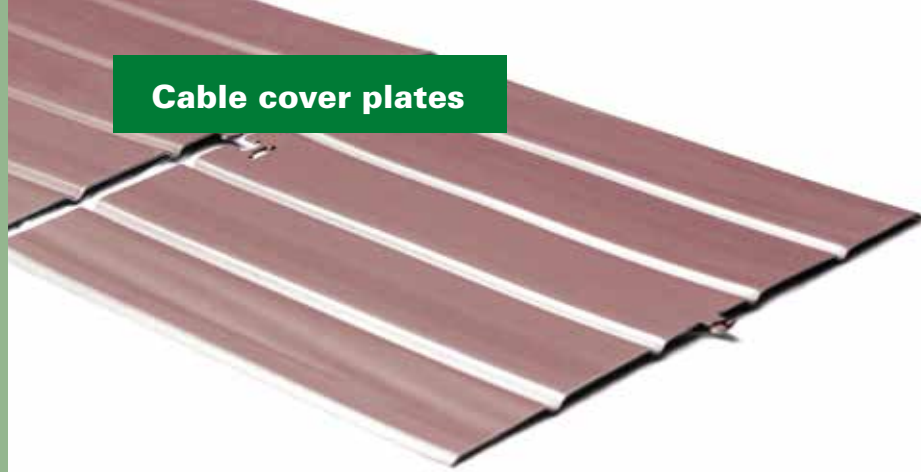
Since many years the use of recycled plastic material is obligatory for the production of Z.I.S. As a result, Z.I.S. has developed a great know-how for the extrusion of highest quality cable protecting products corresponding the requirements mechanically as well as optically.

We offer you an extensive program making sure that you will find the dimensions required. On request we manufacture special sizes and designs regarding colour, imprint, size and length.

Advantages for you:

- Best possible protection for cables and wires
- Wide range of products
- Individual imprint and colours
- Flexibility of the connecting system
- Large program of accessories
- Competent expert advice

Cable cover plates



Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------------|-----------------------------------|
| Material | PE-HD |
| Length | 1.000 mm |
| Colour Oberseite | red |
| Dicke | 2 mm |
| Labelling | Achtung Starkstromkabel |
| Longitudinal locking | using the Z.I.S. Easy Lock System |

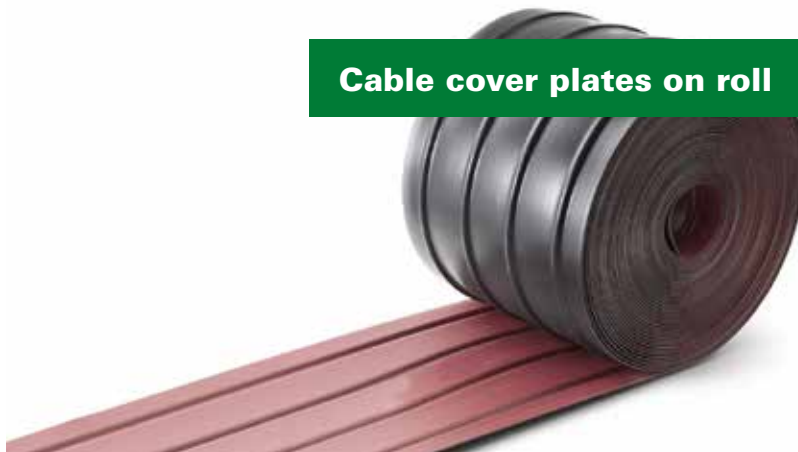
Possible designs

| | |
|-----------------------------|---|
| Cover width | 100 mm to 300 mm |
| Length | 300 mm to 3.000 mm |
| Thickness | 1 mm to 3 mm |
| Material | PE-HD or PVC-U |
| Colour surface | yellow, blue, green, orange, black |
| Longitudinal locking | with or without Z.I.S. Easy Lock System |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Colour surface | | VE (Pcs) | Pallet contents (m) |
|------------------|---------------------|----------------|--------|-------------|------------------------|
| | | red | yellow | | |
| KAPP 120 | 120 | X | X | 50 | 2.000 |
| KAPP 160 | 160 | X | O | 50 | 2.000 |
| KAPP 180 | 180 | X | O | 50 | 2.000 |
| KAPP 200 | 200 | X | O | 25 | 1.500 |
| KAPP 240 | 240 | X | O | 25 | 1.500 |
| KAPP 300 | 300 | X | O | 25 | 1.000 |

X = standard designs, in stock; O = possible designs

Cable cover plates on roll



Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------------|-----------------------------------|
| Material | PE-HD |
| Roll length | 25 or 50 m |
| Colour surface | red |
| Thickness | 2 mm |
| Labelling | Achtung Starkstromkabel |
| Longitudinal locking | using the Z.I.S. Easy Lock System |

Possible designs

| | |
|-----------------------------|---|
| Cover width | 100 mm to 300 mm |
| Length | 25 m to 50 m |
| Thickness | 1 mm to 3 mm |
| Colour surface | yellow, blue, green, black |
| Longitudinal locking | with or without Z.I.S. Easy Lock System |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Unit (m) | Pallet contents (m) |
|-------------------|------------------|----------|---------------------|
| R-KAPP 120 | 120 | 50 | 2.000 |
| R-KAPP 160 | 160 | 50 | 2.000 |
| R-KAPP 180 | 180 | 50 | 2.000 |
| R-KAPP 240 | 240 | 25 | 1.500 |
| R-KAPP 300 | 300 | 25 | 1.000 |

Order related manufacturing, minimum quantities by arrangement

Cable cover plates



With increased mechanical protection

Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------------|---------------------------------------|
| Material | PE-HD |
| Length | 1.000 mm |
| Colour surface | red |
| Thickness | 10 mm |
| Labelling | Achtung Starkstromkabel |
| Longitudinal locking | with punched holes and connection pin |

Possible designs

| | |
|-----------------------------|--|
| Cover width | 100 mm to 290 mm |
| Length | 300 mm to 3.000 mm |
| Thickness | 3 mm to 12 mm |
| Material | PE-HD or PVC-U |
| Colour surface | yellow, blue, green, orange, black |
| Longitudinal locking | with or without punched holes and connection pin |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Unit (Pcs) | Pallet contents (m) |
|------------------|------------------|------------|---------------------|
| KAPP+ 150 | 150 | 10 | 500 |
| KAPP+ 200 | 200 | 10 | 500 |
| KAPP+ 250 | 250 | 10 | 400 |
| KAPP+ 290 | 290 | 10 | 400 |

Order related manufacturing, minimum quantities by arrangement

Also available as cover plates with smooth surfaces



Round covers



Standard design

Manufactured acc. to DIN 54841-5

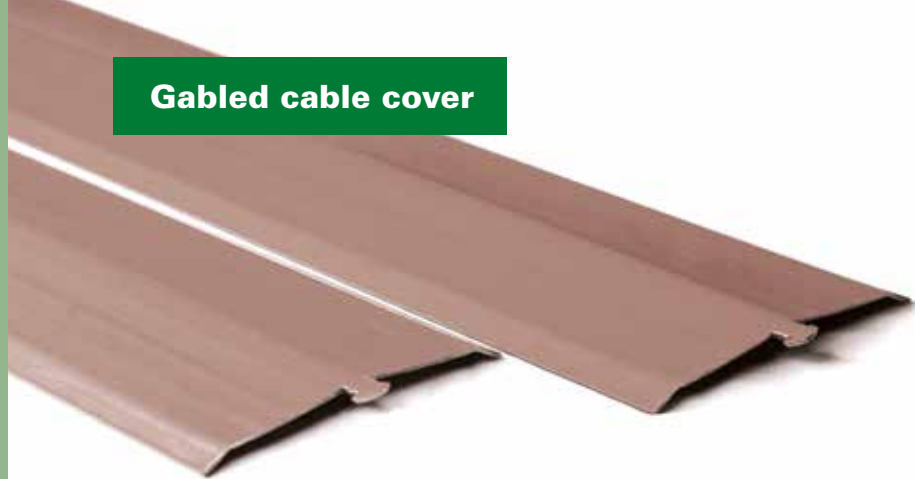
| | |
|-----------------------------|-----------------------------------|
| Material | PE-HD |
| Length | 1.000 mm |
| Colour surface | red |
| Thickness | 2 mm |
| Labelling | without |
| Longitudinal locking | using the Z.I.S. Easy Lock System |

Possible designs

| | |
|-----------------------------|---|
| Cover width | 40 mm to 111 mm |
| Length | 300 mm to 3.000 mm |
| Thickness | up to 3 mm |
| Material | PE-HD or PVC-U |
| Colour surface | yellow, blue, green, black |
| Longitudinal locking | with or without Z.I.S. Easy Lock System |
| Labelling | acc. to customer specifications |

| Item designation | Cover width PE (mm) | Inner diameter (mm) | Unit (pcs) | Pallet contents (m) |
|---------------------|---------------------|---------------------|------------|---------------------|
| KARP 41/45 | 45 | 40 | 100 | 2.000 |
| KARP 51/57 | 57 | 50 | 100 | 2.000 |
| KARP 62/67 | 67 | 60 | 75 | 1.500 |
| KARP 72/81 | 81 | 70 | 75 | 1.500 |
| KARP 100/100 | 100 | 90 | 50 | 1.000 |

Gabled cable cover



Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------------|-----------------------------------|
| Material | PE-HD |
| Length | 1.000 mm |
| Colour surface | red |
| Thickness | 2 mm |
| Labelling | Achtung Starkstromkabel |
| Longitudinal locking | using the Z.I.S. Easy Lock System |

Possible designs

| | |
|-------------------------|---|
| Cover width | 100 mm to 220 mm |
| Length | 300 mm to 3.000 mm |
| Thickness | 1 mm to 3 mm |
| Material | PE-HD or PVC-U |
| Colour surface | yellow, blue, green, orange, black |
| Längsarretierung | with or without Z.I.S. Easy Lock System |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Unit (Pcs) | Pallet contents (m) |
|------------------|------------------|------------|---------------------|
| KASP 120 | 120 | 50 | 2.000 |
| KASP 160 | 160 | 50 | 2.000 |
| KASP 180 | 180 | 50 | 1.500 |
| KASP 220 | 220 | 50 | 1.500 |

Gabled cable cover on roll



Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------------|-----------------------------------|
| Material | PE-HD |
| Roll Length | 25 or 50 m |
| Thickness | 2 mm |
| Colour surface | red |
| Labelling | Achtung Starkstromkabel |
| Longitudinal locking | using the Z.I.S. Easy Lock System |

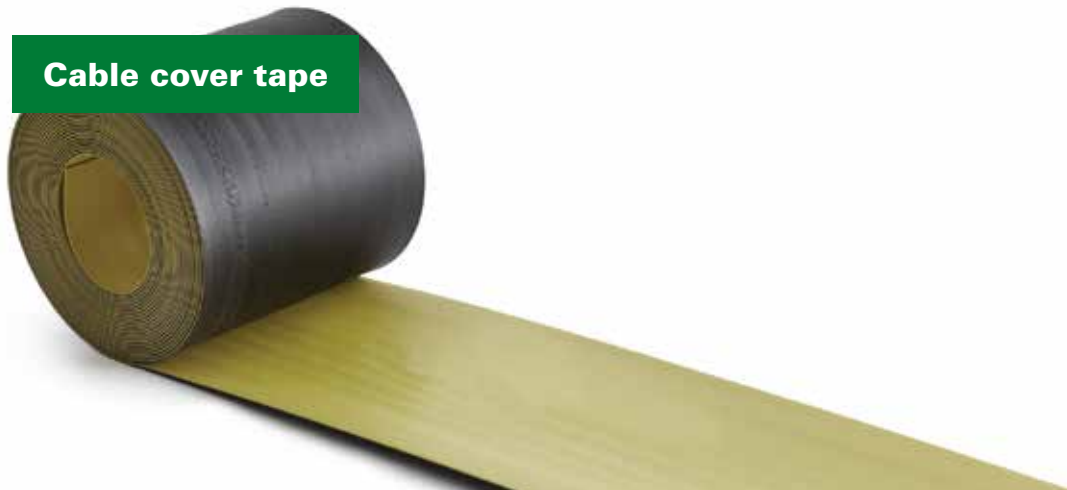
Possible designs

| | |
|-----------------------------|---|
| Cover width | 100 mm to 220 mm |
| Length | 25 m to 50 m |
| Thickness | 1 mm to 3 mm |
| Colour surface | yellow, blue, green, black |
| Longitudinal locking | with or without Z.I.S. Easy Lock System |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Unit (m) | Pallet contents (m) |
|-------------------|------------------|----------|---------------------|
| R-KASP 110 | 110 | 50 | 2.000 |
| R-KASP 120 | 120 | 50 | 2.000 |
| R-KASP 160 | 160 | 50 | 2.000 |
| R-KASP 180 | 180 | 50 | 1.500 |
| R-KASP 220 | 220 | 25 | 1.000 |

Order related manufacturing, minimum quantities by arrangement

Cable cover tape



Standard design

Manufactured acc. to DIN 54841-5

| | |
|-----------------------|------------------------------|
| Material | PE-HD |
| Roll length | see below |
| Colour surface | see below |
| Thickness | see below |
| Labelling | Caution – High-Voltage Cable |

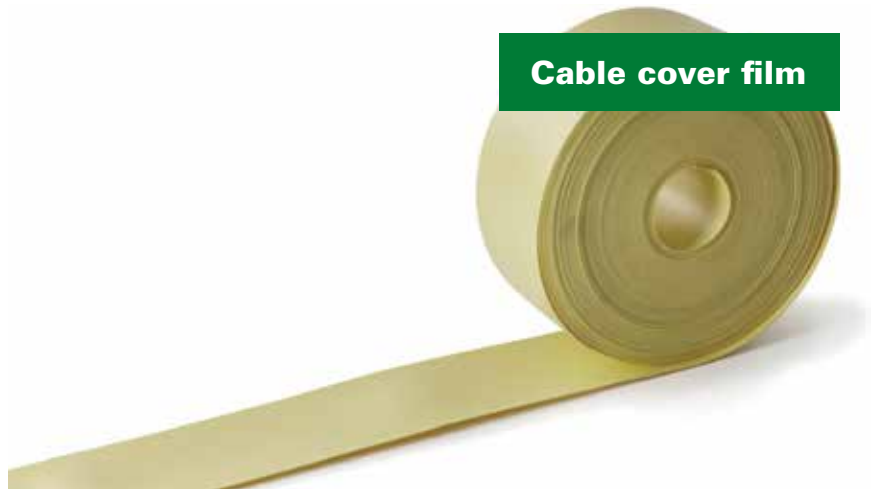
Possible designs

| | |
|-----------------------------|------------------------------------|
| Cover width | 50 mm to 300 mm |
| Length | 25 m to 100 m |
| Thickness | 1 mm to 7,5 mm |
| Colour surface | red, blue, green, black |
| Longitudinal locking | with or without (>3 mm without) |
| Labelling | acc. to customer specifications |

| Item designation | Cover width (mm) | Thickness (mm) | Colour surface rot | Unit (m) | Pallet contents (m) |
|------------------|---------------------|-------------------|-----------------------|-------------|------------------------|
| KAB 150 | 150 | 2,0 | rot | 50 | 1.500 |
| KAB 200* | 200 | 1,0 | gelb | 50 | 1.000 |
| KAB 200 | 200 | 2,0 | rot/gelb | 30 | 1.000 |
| KAB 220 | 220 | 2,0 | rot | 50 | 2.400 |
| KAB 300* | 300 | 1,0 | gelb | 50 | 1.000 |
| KAB 300 | 300 | 2,0 | rot/gelb | 50 | 1.000 |

* Based on DIN 54841-5

Cable cover film

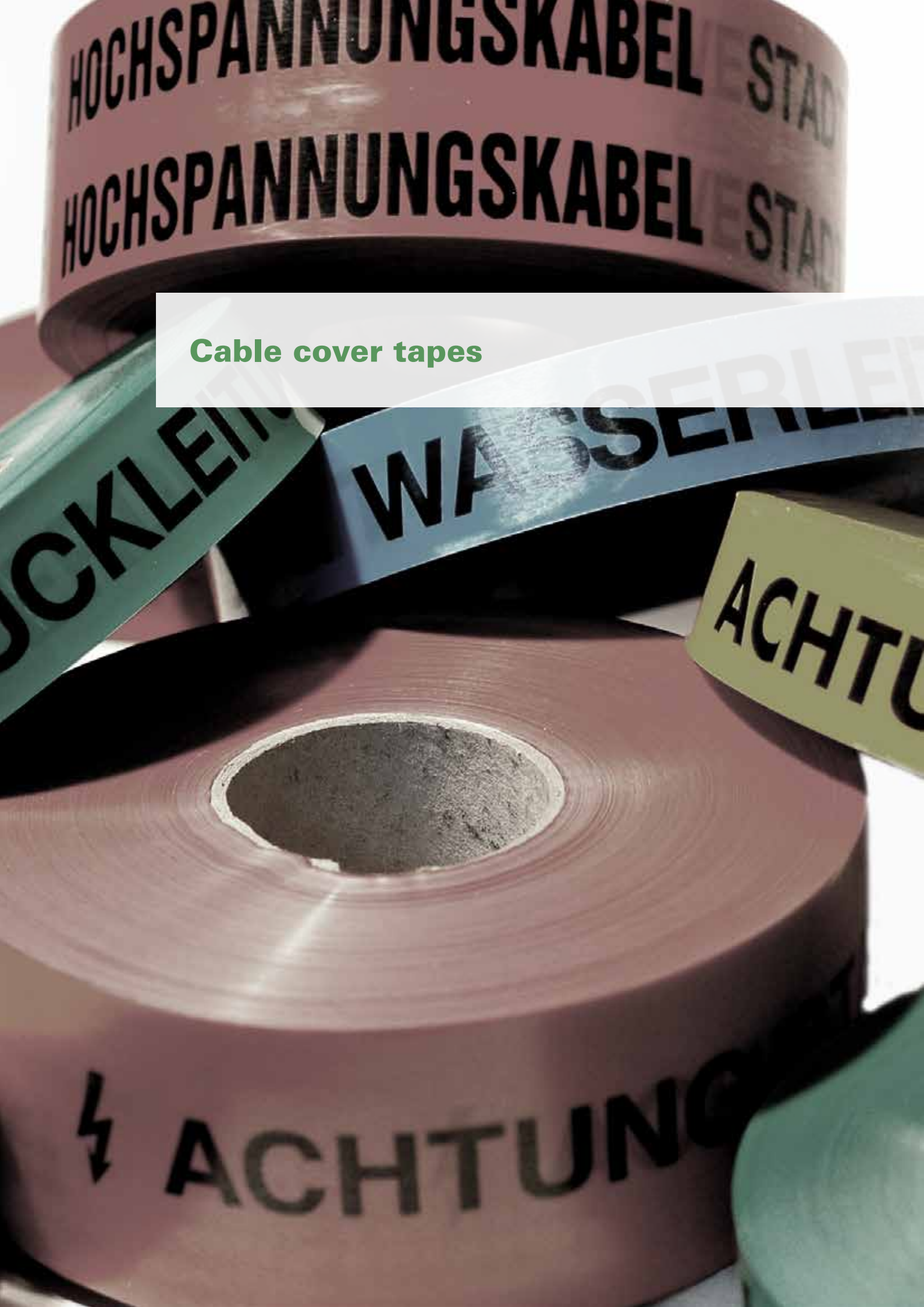


Standard design

| | |
|------------------|--|
| Material | Polyethylene film (PE-LD) laminated (permanently legible print due to crystal clear film coating; resistant against aging and frost) |
| Colour | yellow |
| Labelling | Caution – High-Voltage Cable Caution Cable |

| Item designation | Width (mm) | Thickness (mm) | Roll length (m) |
|------------------|------------|----------------|-----------------|
| KAF 100 | 100 | 0,5 | 100 |
| KAF 150 | 150 | 0,5 | 100 |
| KAF 200 | 200 | 0,5 | 100 |
| KAF 250 | 250 | 0,5 | 100 |
| KAF 300 | 300 | 0,5 | 100 |

Other colours available on request



Cable cover tapes

Standard design

| | |
|------------------|--|
| Material | Polyethylene film (PE-LD) laminated (permanently legible print due to crystal clear film coating; resistant against aging and frost) |
| Colour | yellow, red, blue, green |
| Labelling | Achtung Fernmeldekabel, Achtung Gasleitung, Achtung Kabel, Achtung LWL Kabel, Achtung Hochspannungskabel, Achtung Niederspannungskabel, Achtung Starkstromkabel, Achtung Wasserleitung |

Warning tape



| Item designation | Width (mm) | Thickness (mm) | Roll length (m) |
|------------------|------------|----------------|-----------------|
| TWB 40 | 40 | 0,15 | 250 |
| TWB 80 | 80 | 0,15 | 250 |
| TWB 100 | 100 | 0,15 | 250 |
| TWB 156 | 156 | 0,15 | 250 |
| TWB 200 | 200 | 0,15 | 250 |
| TWB 250 | 250 | 0,15 | 250 |
| TWB 300 | 300 | 0,15 | 250 |

With 2 sinusoidal special steel wires or a single special steel tape for locating non-metal or jacketed wires, pipes and plastic pipes. The tracer tape is also available with a copper wire inlay.

Standard design

| | |
|------------------|--|
| Material | Polyethylene film (PE-LD) laminated (permanently print due to crystal clear film coating; resistant against aging and frost) |
| Colour | yellow, red, blue, green |
| Labelling | Achtung Gasleitung (Stadtwerke) Achtung Wasserleitung (Stadtwerke) Achtung Abwasserleitung (Stadtwerke) |

Other imprints and dimensions on request

Tracer tape



| Item designation | | Width (mm) | Thickness (mm) | Roll length (m) |
|-------------------------------------|------------------------------|------------|----------------|-----------------|
| Tracer tape with special steel wire | Tracer tape with copper wire | | | |
| OTB-D-VA 40 | OTB-D-CU 40 | 40 | 0,15 | 250 |
| OTB-D-VA 80 | OTB-D-CU 80 | 80 | 0,15 | 250 |
| OTB-D-VA 100 | OTB-D-CU 100 | 100 | 0,15 | 250 |
| OTB-D-VA 150 | OTB-D-CU 150 | 150 | 0,15 | 250 |
| OTB-D-VA 200 | OTB-D-CU 200 | 200 | 0,15 | 250 |

Tracer tape with special steel wire on request



Additional products

Pole and wall channels



Z.I.S. Kunststoff cable channels for wooden poles made of PVC-U offer reliable protection for your cables and wires against external influences. They are highly resistant against impact, sunlight and weather.

Standard design

| | |
|-----------------|----------------------------|
| Material | PVC-U |
| Colour | grey |
| Length | 3 m |
| Mounting | bores with a 7 mm diameter |

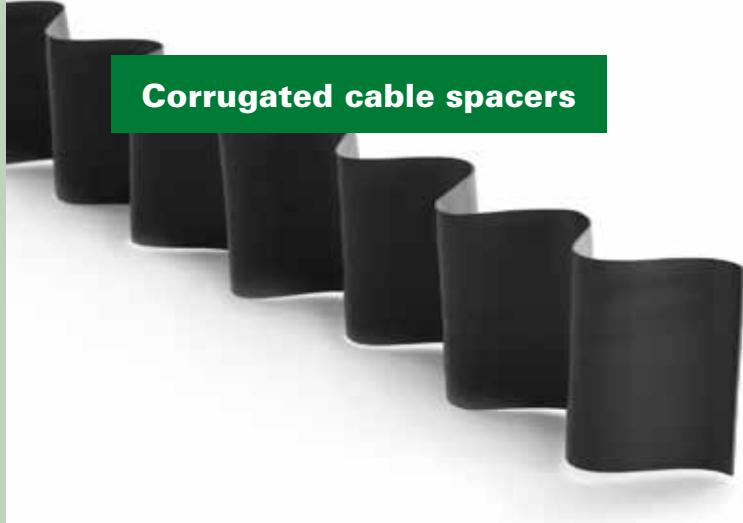
Possible designs

| | |
|------------------|---------------------------------|
| Colour | on request |
| Length | on request |
| Labelling | acc. to customer specifications |

| Item designation | Inner diameter (mm) | Unit (Pcs) | Pallet contents (Pcs) |
|------------------|---------------------|------------|-----------------------|
| MA 50 | 50 | 5 | 105 |
| MA 60 | 60 | 5 | 105 |
| MA 70 | 70 | 5 | 105 |
| WA 50 | 50 | 5 | 105 |

Order related manufacturing, minimum quantities by arrangement

Corrugated cable spacers



We recommend the use of our Z.I.S. Kunststoff corrugated cable spacers for laying cables, wires and pipes next to each other while ensuring the required distance between them (e.g. separation of high-voltage and low-voltage cables).

Standard design

| | |
|-----------------|--------------|
| Material | PVC-U |
| Colour | black or red |
| Length | 1 m |

Possible designs

| | |
|---------------|------------------|
| Colour | on request |
| Length | 0,25 m and 1,5 m |

| Item designation | Distance (mm) | Height (mm) | Thickness (mm) | Unit (pcs) | Pallet contents (Pcs) |
|------------------|---------------|-------------|----------------|------------|-----------------------|
| KDW | ca. 60 | 120 | 2 | 25 | 2.000 |

Z.I.S. Kunststoff pole foundation pipes made of PE-HD can be used for lighting masts, fencing poles and flag posts. Due to the small weight of the plastic pipes, the installation – as opposed to traditional casings made of concrete pipes, metal or wood – is significantly faster and easier. The corrugated pipe profile ensures a firm grip inside the concrete coating.

Standard design

| | |
|-----------------|-------------------|
| Material | PE-HD |
| Colour | black |
| Length | 0,8 m / 1 m / 6 m |

Possible designs

| | |
|-----------------------------|---|
| Cable insertion bore | available for a surcharge |
| Length | on request |
| Protective lid | prevents any ingress of dirt and construction debris into the foundation pipe (please contact us for details) |

| Item designation | Outer diameter (mm) | Inner diameter (mm) | Length (m) | Pallet contents (Pcs) |
|-------------------|---------------------|---------------------|-------------|-----------------------|
| MFR DN 250 | 289 | 250 | 0,8 / 1 / 6 | 32 / 32 / 16 |
| MFR DN 300 | 345 | 300 | 0,8 / 1 / 6 | 18 / 18 / 9 |
| MFR DN 350 | 398 | 350 | 0,8 / 1 / 6 | 18 / 18 / 9 |





If you have any questions or requests or would like additional information, please write an email to our address below or call us.

Our competent staff will be happy to assist you.

Z.I.S. Kunststoff GmbH

Industriestr. 15
33184 Altenbeken-Buke
Germany

Fon: +49 (0)52 55 / 9850-0

Fax: +49 (0)52 55 / 9850-99

info@zis-kunststoff.de

www.zis-kunststoff.de

Sales Manager**Mr. Stefan Wiesner**

Fon: +49 (0)5255 / 9850 – 10

Fax: +49 (0)5255 / 9850 – 96

Mail: stefan.wiesner@zis-kunststoff.de

Sales**Mr. André Thiemann**

Fon: +49 (0)5255 / 9850 – 15

Fax: +49 (0)5255 / 9850 – 96

Mail: andre.thiemann@zis-kunststoff.de

General terms and conditions for the sale of products

Z.I.S. Kunststoff GmbH, Industriestraße 15, D-33184 Altenbeken-Buke
Valid from 1 August 2017

This document is a translation of the original German text and is not legally binding. Only the text of the original document in German is legally binding.

1. Scope of application of the general terms and conditions for the sale of products

1.1 The following terms and conditions for the sale of products (hereinafter: „Conditions“) shall apply exclusively to all contractually agreed sales Z.I.S. Kunststoff GmbH (hereinafter „Z.I.S.“) to the customers apply the following Conditions. „Products“ include any sort of merchandise which is especially produced for the Customer by Z.I.S. On conclusion of the contract the Customer agrees to the following Conditions. These Conditions shall also apply to all future sales between Z.I.S. and the Customer, even if they have not been separately agreed upon.

1.2 Any terms and conditions which differ from those contained in these Conditions shall not apply unless Z.I.S. has given its prior written consent beforehand. These Conditions shall apply even if Z.I.S. accepts the Customer's offers or delivers Products to the Customer without reserve knowing that the conditions of the Customer differ from or conflict with its own. Z.I.S. may withdraw from the contract if the Customer protests against these Conditions. If this occurs the Customer is not entitled to any claims against Z.I.S.

1.3 Amendments and additional agreements must be made in writing in terms of § 126b German Civil Code „text form“ (e.g. fax, e-mail). This shall also apply to any waiver of this requirement.

1.4 These Conditions shall apply exclusively vis-à-vis businessmen/companies, legal persons under public law and separate public property within the meaning of Sec. 310 (1) German Civil Code.

2. Offer, Conclusion of Contract

2.1 All offers of Z.I.S. are subject to change and are nonbinding, as far as they are not specifically labelled binding or do not include a certain term of acceptance.

2.2 In absence of the submission of an express statement, the Customer shall bind himself to his contractual offer for a period of two weeks.

2.3 A purchase agreement is considered to have been concluded if Z.I.S. has entered into a written contract with the Customer or if Z.I.S. confirms the acceptance of the order within the period in accordance to 2.2. of these Conditions or executes the delivery (decisive: date of dispatch of the Products). If Z.I.S. executes the delivery after expiry of this period, the agreement shall also be deemed to have been concluded in as far as the Customer does not return the delivered Products without undue delay.

2.4 The contractual relationship between the Customer and Z.I.S. is solely governed by the written purchase contract, including these conditions. It fully expresses all agreements between the contracting parties on the subject-matter. Oral agreements by Z.I.S. prior to the conclusion of this contract are legally nonbinding and oral agreements by the contracting parties shall be replaced by the written contract, unless they specifically imply that they will continue in force bindingly. Additions or amendments to the agreed conditions, including these terms and conditions, need to be issued in writing to be valid. With the exception of the Managing Directors or the Authorised Officers, employees of Z.I.S. are not entitled to meet diverging oral agreements. Transmission by telecommunication, in particular by telefax or email, shall be sufficient to meet the requirement of submission in writing.

2.5 All information in the delivery programme of Z.I.S. catalogues, brochures, and other advertising documents, specifications and other technical supply conditions, in certificates and in other forms represent quality descriptions and are not guarantees within the meaning of Sec. 276 (1) German Civil Code.

2.6 Information according to cipher 2.5 of these Conditions on the produced and/or distributed Products (e.g. information on weight, measures, practical value, capacity, tolerances and technical data) as well as on the presentations of these Products (e.g. illustrations and drawings) are only roughly decisive, as far as the usability for the contractually intended purpose does not presuppose an exact accordance. Customary deviations and variations which occur upon legal regulations or constitute technical improvements as well as the replacement of component parts with equivalent parts are permissible, as far as the usability for the contractually intended purpose is not affected.

2.7 Z.I.S. reserves its ownership and copyright for all its quotations and estimates of costs as well as for all drawings, illustrations, calculations, brochures, catalogues, models, tools and other documents and auxiliary material placed at the Customer's disposal. Without explicit consent from Z.I.S., the Customer must not, either as such or with regard to the contents, make these objects available to third parties, disclose them, use them or reproduce them themselves or via third parties. At the request of Z.I.S., the Customer has to return these objects completely to Z.I.S. or destroy potentially manufactured copies if they are no longer needed in the proper course of business, or if negotiations do not lead to the closing of a contract. The storage for backup purposes of electronic data placed at the Customer's disposal is exempted from this regulation.

3. Date of Delivery and force majeure

3.1 The beginning of the agreed delivery period requires the clarification of all technical questions. The declarations of both parties in writing in terms of § 126 b German Civil Code are definitive for the scope of the supply, in as far as they comply. If an order has been given without such concurring declarations from both parties, the written order confirmation of Z.I.S. shall be definitive for the scope of the deliveries, unless the Customer contradicts this without undue delay.

3.2 Part deliveries are permissible to the extent that they are reasonable for the Customer.

3.3 Unless a definite time limit or a fixed date is accepted or agreed upon, the time limits or dates for the delivery announced by Z.I.S. only constitute an approximate specification – its actual abidance depends on the availability of the vendor parts, production conditions and transport conditions. As far as dispatch has been agreed, the delivery deadlines and the dates of delivery refer to the time of the handing over to the forwarder, freight carrier or others assigned with the transport.

3.4 The observance of agreed delivery deadlines is dependent on the timely receipt of all advance performances to be provided by the Customer (in particular: documents to be supplied) as well as the observance of the agreed payment conditions and other contractual and/or legal obligations by the Customer. If these preconditions are not fulfilled in time the delivery deadlines shall be extended by

the length of the delay which has occurred. This shall not apply if Z.I.S. is responsible for the delay.

3.5 Z.I.S. is not liable for the impossibility of the delivery or for delivery delays as far as they are based on force majeure or other unforeseen occurrences at the time of the conclusion of the contract, for which Z.I.S. is not responsible. If these occurrences essentially complicate or even make the delivery or the performance impossible and this interference is not only temporary, Z.I.S. may rescind (zurücktreten) the contract. Temporary obstacles extend the delivery and performance deadlines or postpone the delivery and performance dates by the time period of the interference plus by an adequate startup term. If the delay makes the acceptance of the delivery or performance unreasonable for the Customer, he is entitled to rescind the agreement with an immediate declaration in writing in terms of § 126 b German Civil Code towards Z.I.S.

3.6 Force majeure in terms of cipher 3.5 includes all unforeseen occurrences or such occurrences that come under the influence of the contractual partner and which effects on the execution of the contract can not be avoided by reasonable efforts of the contractual parties. This especially but not exclusively includes war (declared or not), warlike situation, commotion, affray, riot, blockade, embargo, government arrangement, sabotage, strikes, go slow strike, lock out, collective action, epidemic, fire, flood, storm tide, typhoon, hurricane or other thunderstorm in the degree of a catastrophe, earthquake, land slip, flash of lightning, general deprivation of material (Werkstoffmangel), severe transportation accidents, shortages of raw material, interruptions to business of any sort and remanufacture of important system parts for reasons on which Z.I.S. has no influence, as far as this leads to an extension of delivery deadlines.

3.7 The Customer is aware that Z.I.S. purchases materials from sub-suppliers for the production and/or sale of the Products. If the subcontracted supply of these Products by sub-suppliers is delayed based on reasons for which Z.I.S. is not responsible, the time for delivery is delayed for the same period towards the Customer. The Customer will be immediately notified orally or in writing (§ 126 b German Civil Code) after the acknowledgement of such delays.

3.8 In the event of a delay in delivery or performance, the liability of Z.I.S. for compensation is limited according to ciphers 11 and 12 of these Conditions.

3.9 Reminders from the Customer must at all times be issued in writing.

4. Purchase Price

4.1 Prices shall apply to the performance and delivery amount listed by Z.I.S. in the confirmation of order or offer letter. Additional or special services will be charged separately.

4.2 Prices are, if not agreed differently, in EURO ex works in Altenbeken-Buke excluding packaging, postage costs, insurance and value added tax. The value added tax shall be itemised separately in the invoice with the tax rate prevailing at the time of delivery.

4.3 Packaging requested by the Customer or considered necessary by Z.I.S. as well as delivery costs shall be calculated at the cost prices prevailing at the time of delivery.

4.4 Z.I.S. reserves the right to adjust the prices accordingly if, after closing the contract, the costs should decrease or increase, particularly when caused by collective wage agreements or by changes of commodity or raw material prices.

5. Terms of Payment

5.1 In as far as no other agreement has been reached, the invoiced amount shall be due for payment within 10 days after receipt of the invoice without discount.

5.2 The Customer shall make payments at the domicile of Z.I.S. at the cost and risk of the Customer. The Customer is only entitled to pay by cheque or bill of exchange if this has been agreed expressly with Z.I.S. The Customer is then obliged to reimburse Z.I.S. for the incurred exchange and discount charges.

5.3 In as far as the Customer pays the purchase price by cheque, bill of exchange or otherwise, the purchase price debt shall only expire when the counter value has been credited definitely and without reserve to the account of Z.I.S. The retention of title of Z.I.S. under cipher 9. shall not expire before this moment.

5.4 Diverging from Sec. 286 (3) German Civil Code the Customer shall also be in default if he does not make the payment owed within the payment period stipulated under cipher 5.1. (Sec. 286 (2) no. 2 German Civil Code).

5.5 If partial payments have been agreed on, the total remaining price shall become due for payment if the Customer is in default with an instalment in whole or in part for longer than 14 days. Z.I.S. is also entitled to demand payment of the entire purchase price, if after conclusion of the agreement deterioration in the financial position of the Customer occurs or is in evidence for the first time, the consideration appears jeopardised and Z.I.S. has previously demanded and set a deadline in vain that the Customer pay a reasonable security for the deterioration in the financial position which has occurred.

5.6 The Customer may only set off with undisputed, recognised or final and absolute counter-claims.

5.7 The Customer may only appeal to retention rights vis-à-vis claims of Z.I.S. in as far as the counter-claims are undisputed, recognised or final and absolute.

5.8 Reminders of the Customer must be made in writing in terms of § 126 b German Civil Code.

6. Redemption of Products

Should Z.I.S. deliver the goods together with transport and/or packing material, especially with transport rollers which are not owned by Z.I.S. and therefore need to be returned to the owner by Z.I.S., the Customer has to return such transport material to Z.I.S. in time. In addition, the Customer has to exempt Z.I.S. from claims by the owner and refund Z.I.S. for any additional costs and damages resulting from a delayed return. The Customer shall indemnify Z.I.S. from any legal take back requirements and connected third party claims.

7. Place of Performance, Transfer of Risk

7.1 Unless otherwise agreed by the parties the place of performance and fulfilment shall be the domicile of Z.I.S.

7.2 The risk of accidental loss passes to the Customer when the ordered Products are handed to the forwarder or freight carrier. At the wish and cost of the Customer the consignment may be insured by Z.I.S. against risks named by the Customer.

7.3 If the dispatch or service of Products is delayed for reasons for which Z.I.S. is responsible, the risk shall be transferred to the Customer with effect from the day on which the Products are ready for dispatch.

8. Default in Acceptance

8.1 If dispatch or service is delayed by more than one month after the Product is ready for dispatch at the request of the Customer or by reasons for which he is responsible, Z.I.S. may charge the Customer for storage costs for each month commenced in the amount of 5 % of the price of the Product to be delivered and a maximum of 0.5 %. Both parties to the agreement are at liberty to prove that higher or lower storage costs have been incurred.

8.2 If the Customer delays in accepting the Product or if he negligently breaches other duties of cooperation Z.I.S. shall also be entitled to demand the reimbursement of all other extra costs incurred hereby.

9. Retention of Title

9.1 Z.I.S. shall retain full title of the delivered Products until the purchase price and all ancillary claims (e.g. costs incurred by bills of exchange, financing costs, interest) has been paid in full.

9.2 In as far as legally permitted, the retention of title of cipher 9.1. shall also apply to all claims which had already arisen at the time of the conclusion of the contract. The retention of title only expires with the complete payment of all claims of Z.I.S. from the business connection. The approved balance shall be definitive hereof.

9.3 Until performance of the particular pecuniary claim and respectively until performance of all pecuniary claims of the business connection an exploitation or transfer by way of security of the Product is prohibited. If the Customer only purchases the Product for resale, he has the revocable right to resell the Product in line with a proper course of business. The right to resale expires with the stoppage of payments or with the application of the opening of insolvency proceedings.

9.4 The Customer hereby assigns his claims from resale to Z.I.S. in the amount of the product price (including sales tax), but stays irrevocably authorised to the recovery. Z.I.S. can also recover claims and inform the third party debtor about the assignment, if the Customer does not properly fulfil his obligations to pay. The Customer is obliged to offer the information necessary for the recovery.

9.5 Z.I.S. will release the goods subject to retention of title, as well as the objects or receivables superseding them, as far as their value exceeds the amount of the secured receivables by more than 50%. The choice of the objects to be released thereafter is up to Z.I.S.

9.6 As long as Z.I.S. retains title, the Customer is obliged to treat the delivered Products with care.

9.7 If Z.I.S. rescinds the contract in the event of a breach of contract by the Customer, in particular default in payment, Z.I.S. is entitled to demand the return of the delivered Products.

9.8 Should a third party seize the goods which are subject to retention of title, particularly by garnishment, the Customer shall immediately notify the third party that the goods are owned by Z.I.S. and shall likewise notify Z.I.S. in order to facilitate the enforcement of their proprietary rights. Should the third party be unable to refund the judicial and extrajudicial costs incurred to Z.I.S. in this context, the Customer shall be liable towards Z.I.S.

10. Trademark Rights

In the case of an infringement in the preceding sense, Z.I.S. will either, at its own option and expense, substitute or modify the delivered product in a way that ensures the remedy of the infringement and that the delivered product continues to fulfil its function as contractually agreed, or to procure the right of use for the Customer by closing a licensing agreement. Should Z.I.S. not succeed in doing so within an appropriate period of time, the Customer is entitled to withdraw from the contract or to debase the purchase price in an appropriate way. Possible indemnity claims by the Customer are subject to paragraph 12 of these Conditions.

In the case of infringements caused by delivery of products from other manufacturers, Z.I.S. will, at its own option, assert its claims against the manufacturer or pre-supplier for the Customer's account or assign the claims to the Customer. In compliance with paragraph 10, claims against Z.I.S. can only be asserted if the legal enforcement of the aforementioned claims against the manufacturers and pre-suppliers has been unsuccessful or if it would be futile, e.g. due to bankruptcy.

11. Warranty Claims; Liability for Breaches of Contract

11.1 If the delivered Product is defective at the time of the transfer of risk Z.I.S. is entitled to choose, derogating from Sec. 439 (1) German Civil Code, either to deliver Products free of defect or to repair the Products delivered. If the defect is remedied Z.I.S. is obliged to bear all costs for expenses required, in particular, transport, transit, work and material costs in as far as these are not increased because the Products were delivered to a place other than the domicile or the commercial branch of the Customer if this does not correspond to the intended use of the Products. Refunds are only granted by Z.I.S. for the cheapest dispatch route.

11.2 In the event of an insubstantial reduction in the value or the suitability of the delivered Product Z.I.S. is entitled – in addition to Sec. 439 (3) German Civil Code – to refuse subsequent performance pursuant to Sec. 437 (1) German Civil Code and instead of subsequent performance to refer the Customer to the rights pursuant to Sec. 437 (2) German Civil Code (reduction or rescission). This shall not apply if the Customer can prove that he has justified interest in a subsequent performance, despite the lack of importance of the defect, and the reduction or the rescission therefore does not represent any equivalent form of legal recourse; however, in this event the Customer may only demand subsequent improvement if the costs of the subsequent improvement are in reasonable proportion to the value of the delivered Product.

11.3 If the improvement or the replacement delivery is not successful (Sec. 440 p. 2 German Civil Code), the Customer may demand either reduction in the purchase price or rescind the agreement as he chooses. Further statutory claims to compensation shall remain unaffected hereby.

11.4 Liability for defects is excluded for damages which occur after the transfer of risk as a result of faulty or negligent treatment, inordinate use, unsuitable operational means and external influences which go beyond the use in compliance with the contract. Z.I.S. shall also not be held liable for the consequences of a change to the delivered Products improperly carried out by the Customer or third parties. Unless otherwise agreed, Z.I.S. shall not provide any guarantee for circumstances which lie outside the delivered Products; this shall apply in particular to the ability to use the delivered Products with other components of the Customer or third persons.

11.5 In the case of defective component parts from other manufacturers, Z.I.S. will, at its own option, assert its claims against the manufacturers and sup-

pliers for the Customer's account or assign the claims to the customer. In the case of such defects, claims against Z.I.S. can only be asserted under the other preconditions and in accordance with these Conditions if the legal enforcement of the aforementioned claims against the manufacturers and suppliers has been unsuccessful or if it would be futile, e.g. due to bankruptcy. For the duration of the lawsuit, the limitation period of the Customer's warranty claims in question against Z.I.S. shall be constrained.

11.6 With regard to the purchased Products Z.I.S. shall be held liable for the negligent breach of essential contractual duties and for damage caused by the purchased merchandise and arising from negligent injury to life, body or health pursuant to the statutory provisions. In the same way Z.I.S. shall be liable for damage which is based on intentional or grossly negligent conduct or corresponding conduct of its representatives or agents and under the mandatory provisions of the Product Liability Act (Produkthaftungsgesetz). In as far as the preconditions of sentences 1 and 2 are not satisfied, the liability to pay compensation in the event of contractual breach is excluded; Z.I.S. is not held liable – notwithstanding sentences 1 to 3 – in particular for damage which has been sustained by items or legal merchandise other than the Products delivered.

11.7 In the event of defects or other divergences of the purchased Products the Customer may only demand compensation in lieu of performance pursuant to Sec. 281 German Civil Code, if, when setting the deadline, he clearly stated that if the deadline expired without success he would also claim compensation instead of performance or subsequent performance.

11.8 The period of warranty is one year as of delivery or, if an approval is required, as of approval. This term does not apply for indemnity claims from the Customer for injury of life, body or health or for wilful or grossly negligent breach of duty of the vendor or of his auxiliary persons, which become time-barred according to the legal prescriptions.

12. Other Liability

12.1 Liability for compensation claims other than those provided for under cipher 11. shall excluded, unless Z.I.S., his representatives or his agents can be charged with intent or gross negligence.

12.2 Compensation claims based on mandatory provisions of the Product Liability Act (Produkthaftungsgesetz) and claims owing to bodily harm caused by negligence shall remain unaffected. The same shall apply to statutory compensation claims owing to negligent impossibility or initial inability to perform.

12.3 In as far as compensation claims against Z.I.S. are excluded this shall also apply with respect to the personal liability of Z.I.S.' employees, workers, staff, representatives and agents to pay compensation.

12.4 If Z.I.S. is unable to carry out the above performance for reasons for which it is responsible the Customer is entitled to demand compensation. Compensation shall, however, be restricted to 10 % of the value of such portion of the delivery which cannot be used for its designated purpose owing to such impossibility. This shall not apply in as far as Z.I.S. is charged with intent or gross negligence.

12.5 If Z.I.S. is in default, the Customer may demand compensation for each complete week of the delay of 0.5 % of the price of the part of the delivery which could not be used expediently by the Customer owing to the default – in as far as the Customer provides prima facie evidence that it has suffered damage. Compensation shall however be restricted to a maximum 5 % of the price of such portion of the delivery which cannot be used for its designated purpose owing to such impossibility. Any further compensation claims of the Customer are excluded. Sentences 1 - 3 shall not apply in the event of intent or gross negligence.

12.6 In the event of liability for simple negligence, the liability of Z.I.S. for property damage and for financial loss resulting from it is limited to the amount of 100,000.00 EUR per case of damage and to 1 million EUR in all, according to the current limit of indemnity of its product liability insurance, even in the case of violation of essential contractual obligations.

12.7 Limitations of this paragraph do not apply to the liability of Z.I.S. for wilful action, for guaranteed structural characteristics, for injury of life, body or health or according to the law on product liability.

13. Final provisions

13.1 Unless otherwise agreed, these General Terms and Conditions for the Sale of Products shall apply as a framework agreement in the version valid at the time of the Customer's purchase order, or at least in the version which was last communicated to him in writing. These also apply for similar future contracts without the necessity for Z.I.S. to refer again to the Conditions in each particular case.

13.2 As far as permitted by law, the place of jurisdiction shall be the domicile of Z.I.S. Z.I.S. may sue the Supplier at the court which has jurisdiction for the Supplier's domicile.

13.3 Unless otherwise agreed in a specific case the place of performance shall be the domicile of Z.I.S.

13.4 This contract and any claims arising therefrom shall be subject to the law of the Federal Republic of Germany excluding United Nations Conventions on Contracts for the International Sale of Goods (CISG).

13.5 Should individual provisions of these Conditions be or become invalid in whole or in part, or should these Conditions contain a lacuna, this shall have no effect on the validity of the remaining provisions. In place of the invalid provision a valid provision shall be agreed upon which reflects the meaning and purpose of the invalid provision and, in particular, its economic intention. If there is a lacuna, the parties shall agree on the provision which they would have agreed on with regard to the meaning and purpose of the contract if this point had been considered from the start.



Z.I.S. Kunststoff GmbH

Industriestr. 15

33184 Altenbeken-Buke

Germany

Tel.: +49 (0)52 55 / 9850-0

Fax: +49 (0)52 55 / 9850-99

info@zis-kunststoff.de

www.zis-kunststoff.de

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