

INSULATE
CONNECT
PROTECT





DSG Schrumpfschlauch GmbH has been a competent partner for more than 20 years in developing and producing heat-shrinkable products.

New developments continuously require new solutions to meet the demands of industry, trade and crafts.

All these factors have been taken into consideration in presenting a wide range of varying qualities of heat-shrinkable tubing. Our products undergo extensive research, development and testing before they are marketed.

Please contact us. Our experienced team of specialists will be happy to assist you. Together we can master the challenge the future holds.

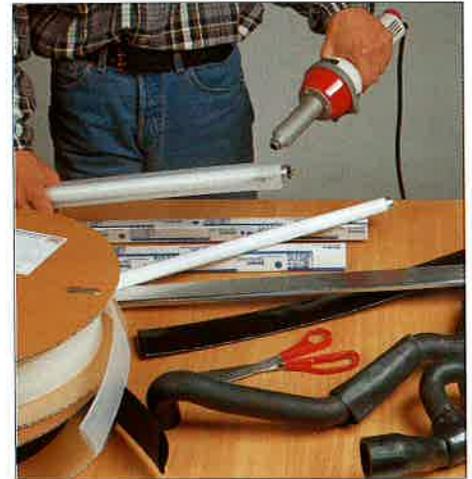


Research and Development

A very modern laboratory where we have developed, for example our VDE approved products, enables us to deal with very different inquiries and to find solutions for special applications.

Application Technology

Our know-how is characterized by adequate and economic solutions. Therefore we develop special products according to the customers' requirements by adapting the material to the corresponding application. We also design shrink appliances for series production.



Production

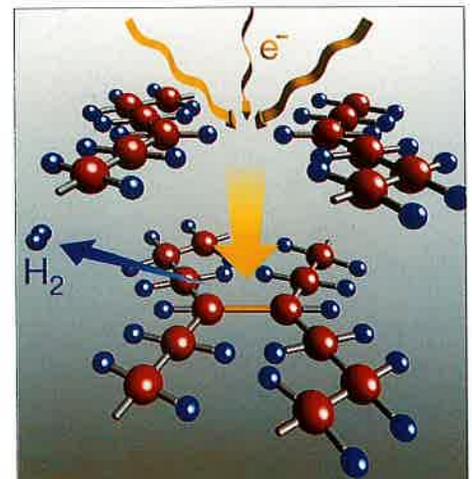
Our ultramodern and reliable extrusion technology guarantees a quality that fulfils all demands of our customers.

Due to very modern and efficient technologies, economy and high quality is achieved in the expansion process.

Radiation crosslinking

The molecular radiation crosslinking of our material intensifies the main properties:

- Optimization of shrinking capacity
- Increase of continuous operating temperature
- Improvement of electrical and mechanical resistance
- Improvement of chemical resistance





Quality Assurance

Our quality assurance system according to DIN ISO 9001 reveals our engagement as far as quality is concerned.

Cutting and printing

We offer adequate solutions in the field of cutting and marking the sleeves:

- Cut lengths according to your request
- Marking of sleeves ordered on spools or in cut lengths according to customers' request
- Non-standard delivery units on special request



Logistics

On the basis of an efficient stockpiling system our well-equipped and computer-assisted central warehouse ensures reliable and punctual supplies.

The transport is carried out by selected partners enjoying a good reputation for their service and speediness.

Sales and distribution

The production site Meckenheim near Bonn (Germany) is assisted by an experienced sales staff and its sales agencies.

A distribution network that has been established all over Europe enables you to discuss the problems with competent partners and to find adapted solutions.



In general

DERAY®*-shrink tubing is available in varying qualities and designs: flexible or semi-rigid, thick or thin-walled, coloured or transparent, with or without an adhesive inner lining, self-extinguishing, with increased shrinking capabilities, high temperature resistance, oil and abrasion resistant and much more.

We have a wide range of tube types, with VG, UL/CSA approval etc., for your particular application at our disposal: insulation, strain relief, casing, bundling, marking or humidity resistant encapsulating, as well as mechanical protection, buckling protection etc.

Simple processing makes shrink tubing an economical, functional solution. Please pay particular attention to the following processing notes, which are valid for the entire catalogue, unless otherwise specified.

Processing

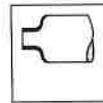
- The inner diameter of the sleeve should always be selected in such a manner that the diameter after full recovery is slightly less than the object to be sealed or covered (approx. 10–15 %).
- Cut the shrink tubing. Be sure to have a smooth cutting edge.
- Now slide the tube over the object to be sealed.
- Shrink the tube onto the objects starting at one end. Use a heating appliance for this process, i.e. Master-Mite or a shrink tunnel.
- Optimal shrink temperature of the materials is vital to assure a short shrink period. You will find the max. and min. shrink temperatures in the corresponding tables. Thin-walled tubes shrink at such a fast rate that the object to be sealed is only heated up slightly during the shrinking process.
- In case of sleeving with an adhesive inner lining the adhesive layer may have a slight discharge at the end.
- Ensure even heat distribution in order to prevent overheating. Overheating the material during the shrink process causes bubbles, discolouration, or ripped open tubes.

Our application engineers will be happy to assist you.

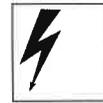
Pictograms and their meaning



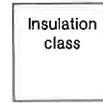
Temperature



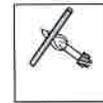
Shrinking Ratio



Dielectric Strength



Insulating Class



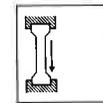
Combustion Behaviour

- ++ does not burn
- + self-extinguishing
- not self-extinguishing

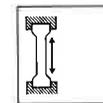


Resistance Against Chemicals

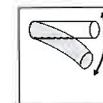
- + satisfactory
- ++ good
- +++ very good



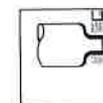
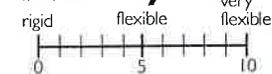
Tensile Strength



Elongation



Flexibility



Shrink Temperature



Approvals:

**Verteidigungsgerätenorm
(Defense equipment standard of
the Federal Office for Military
Technology and Procurement in
Koblenz)
Panavia**



**UL (Underwriters
Laboratories)**



**CSA (Canadian Standards
Association)**

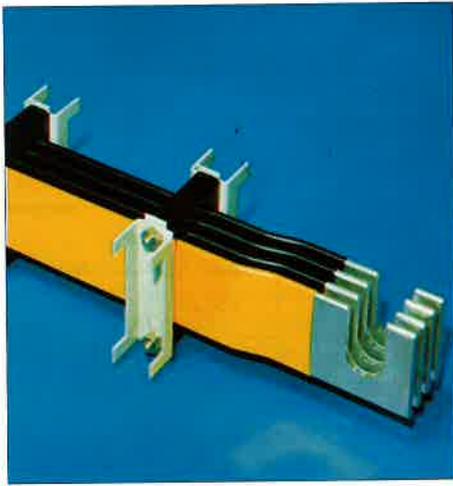


**Verband Deutscher
Elektrotechniker e.V.**

* registered trademark of DSG Schrumpfschlauch GmbH

Summary of standard product range

Type	Material	Operating temperature	Description	Technical data page	Standard programme page
DERAY-F105	Soft Polyvinyl Chloride	-20° C to +105° C	Self-extinguishing heat-shrinkable sleeve with good electrical and mechanical properties	40 - 41	6
DERAY-H85 TS	Rigid Polyvinyl Chloride	-20° C to + 85° C	Thin-walled PVC rigid heat-shrinkable sleeve with excellent shrinking properties	40 - 41	7
DERAY-HB	Modified Polyethylene	-55° C to +105° C	Economical, not self-extinguishing, halogen-free shrink tube	40 - 41	8
DERAY-LSB	Modified Polyolefin	-45° C to +105° C	Economical, not self-extinguishing, halogen-free, and quick-shrinking tube	40 - 41	9
DERAY-HA	Modified Polyethylene	-55° C to +120° C	Self-extinguishing, economical heat-shrinkable sleeve for commercial purposes	40 - 41	10
DERAY-H	Modified Polyethylene	-55° C to +125° C	Self-extinguishing, quick-shrinking sleeve type for universal application	40 - 41	11
DERAY-I	Modified Polyethylene	-55° C to +135° C	Quick-shrinking, general-purpose shrink tube for extreme chemical and physical demands	40 - 41	12
DERAY-ITW	Modified Polyethylene	-55° C to +135° C	Same as DERAY-I, but thin-walled	40 - 41	13
DERAY-I 3000	Modified Polyethylene	-55° C to +135° C	Quick-shrinking with outstanding mechanical and chemical resistance, high shrinking ratio	40 - 41	14
DERAY-IGY	Modified Polyethylene	-55° C to +135° C	Quick-shrinking, all around shrink tube for extreme chemical and physical demands, yellow-green	40 - 41	15
DERAY-LSI	Modified Polyolefin	-55° C to +135° C	Quick-shrinking, all around shrink tube for extreme chemical and physical demands	42 - 43	16
DERAY-VI	Modified Polyolefin	-55° C to +135° C	Highly flexible, quick-shrinking all around shrink tube	42 - 43	17
DERAY-V 25	Modified Elastomer	-75° C to +150° C	Highly flexible, high temperature resistant heat-shrinkable sleeve with very good resistance against oil and fuel.	42 - 43	18
DERAY-V 25 TW	Modified Elastomer	-75° C to +150° C	Same as DERAY-V 25, but thin-walled	42 - 43	19
DERAY-VA 25	Modified Elastomer	-75° C to +150° C	Very flexible, high temperature resistant heat-shrinkable sleeve with good resistance against extreme environmental influences	42 - 43	20
DERAY-VT 220	Vinylidene fluoride hexafluoropropylene	-55° C to +220° C	High temperature resistant and extremely resistant against chemicals	42 - 43	21
DERAY-KY 175	Modified Polyvinylidene Fluoride	-55° C to +175° C	Thin-walled, high temperature resistant heat-shrinkable sleeve with outstanding physical and chemical properties	42 - 43	22
DERAY-KYF 190	Modified Fluoropolymer	-55° C to +190° C	Flexible, thin-walled and quick-shrinking sleeve type for extreme chemical and physical demands	42 - 43	23
DERAY-PTFE	PTFE	-65° C to +260° C	Thin-walled, high temperature resistant and extreme chemical resistant shrink tube	42 - 43	24
DERAY-IAKT	Modified Polyethylene	-55° C to + 85° C	Flexible heat-shrinkable sleeve with an adhesive inner lining	44 - 45	25
DERAY-IHKT	Modified Polyethylene	-55° C to +100° C	Flexible heat-shrinkable sleeve with an adhesive inner lining	44 - 45	26
DERAY-HXKT	Modified Polyethylene	-55° C to +110° C	Semi-rigid heat-shrinkable sleeve with adhesive inner lining, very good bending protection and strain relief	44 - 45	27
DERAY-Crimp-Seal	Modified Polyolefin	-40° C to +110° C	Moisture-resistant connections of conductors, rigid heat-shrinkable sleeve with inner lining and crimp barrel	44 - 45	28
DERAY-MC225 DERAY-MC225 KT	Modified Polyethylene	-40° C to +135° C -40° C to +100° C	Medium-walled, rigid heat-shrinkable sleeve with high shrinking ratio, with or without heat-melting adhesive	44 - 45	29
DERAY-IC300 DERAY-IC300 KT	Modified Polyethylene	-40° C to +135° C -40° C to +100° C	Thick-walled, rigid heat-shrinkable sleeve with or without heat-melting adhesive	44 - 45	30
DERAY-K DERAY-FM 100	Modified Polyethylene	-40° C to +100° C	Heat-shrinkable moulded parts caps, cable breakouts	44 - 45	31
DERAY-KSF	Modified Polyolefin	-40° C to +135° C	Thick-walled, track resistant heat-shrinkable sleeve for the medium voltage sector	44 - 45	32
DERAY-IOK	Soft Polyvinyl Chloride	-35° C to + 85° C	Economical, self-extinguishing, soft PVC caps for good electrical insulation and quick assembly	44 - 45	33
DERAY sealing systems and DERAY shrink appliances				34 pp	



DERAY® - F 105

-20° to +105° C

Flexible

Heat-shrinkable sleeve – soft PVC
Insulation class Y (VDE 05 30)

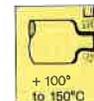
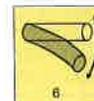
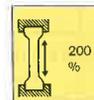
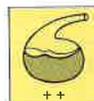
The main characteristic feature of our heat-shrinkable sleeve type DERAY-F 105 is the favourable relation of price and quality. This shrink tube can be delivered in different colours and is recommended in the following applications: insulation of busbars, connectors, terminals, as well as protection against mechanical stress and corrosion and to improve appearance. Sound electrical and mechanical properties make **DERAY-F 105** a truly universal sleeve.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m	spool m	mini spool m
3/32	2,4	1,2	0,25	0,50	-	250	-
1/8	3,2	1,6	0,25	0,50	-	250	-
3/16	4,8	2,4	0,25	0,50	-	150	-
1/4	6,4	3,2	0,30	0,60	-	150	-
3/8	9,5	4,8	0,30	0,60	-	150	-
1/2	12,7	6,4	0,30	0,60	-	100	-
5/8	15,9	7,9	0,35	0,70	-	50	-
3/4	19,0	9,5	0,40	0,80	-	50	-
1	25,4	12,7	0,50	1,00	-	50	-
1 1/4	31,8	15,9	0,50	1,00	-	50	-
1 1/2	38,0	22,0	0,60	1,10	-	25	-
2	51,0	31,0	0,65	1,10	-	25	-
2 1/2	64,0	42,0	0,80	1,30	-	25	-
3	76,0	50,0	0,80	1,30	-	25	-
3 1/2	89,0	60,0	0,90	1,50	-	25	-
4	102,0	65,0	1,00	1,70	-	25	-
4 1/4	108,0	70,0	1,00	1,70	-	25	-

Standard colours					Special colours (on request)				
0 = black					2 = red	4 = yellow	6 = blue	9 = white	99 = transp.
									

Remarks:

- Cut lengths – printed on request – with a surcharge
- Air-filled up to size 3/8"
- Transparent version with reduced temperature and shrink range
- Storing temperature 25°C max.
- Technical data pages 40–41
- Subject to alteration.



DERAY® - H 85 TS

-20° to +85° C

Rigid

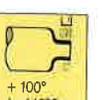
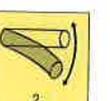
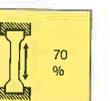
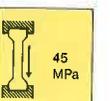
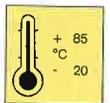
Heat-shrinkable sleeve – rigid PVC
Insulation class Y (VDE 05 30)



DERAY-H 85 TS offers large protection for small power stations. The recommended area of application of this rigid PVC shrinking tube is the covering and insulation of capacitors, resistors, and NC-batteries. As the material is thin-walled and possesses excellent shrinking properties, the contours of the sealed or covered object are clearly recognizable. When using the transparent version, the print is still legible.

Ordering code	Lay flat width min. appr. mm	Diameter as supplied min. mm	Wall thickness as supplied appr. mm
Lay flat width X	6 to 250	4 to 160	0,07 to 0,3
Wall thickness			

Colour selection									
0 = black	2 = red	4 = yellow	6 = blue	9 = white	99 = transp.	1 = brown	3 = orange	5 = green	7 = violet



Conversion form:

Lay flat width x 2 : π (3,14) = diameter
Diameter · π (3,14) : 2 = lay flat width

Remarks:

- Cut lengths – printed on request – with a surcharge
- Technical data pages 40-41
Subject to alteration.





DERAY® - HB

-55° to +105° C

Flexible

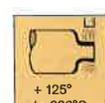
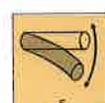
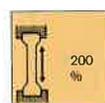
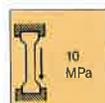
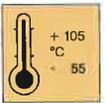
Heat-shrinkable sleeve -
Modified polyethylene
Radiation crosslinked
Insulation class A (VDE 05 30)

DERAY-HB is a reliable help in the field of non-meltable insulation of electrical or mechanical components. This simple, universal sleeve has a wide range of application and offers an economical, halogen-free alternative to PVC tubes.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	-	400	-
1/16	1,6	0,8	0,20	0,40	-	400	-
3/32	2,4	1,2	0,25	0,50	-	400	-
1/8	3,2	1,6	0,25	0,50	-	400	-
3/16	4,8	2,4	0,25	0,50	-	300	-
1/4	6,4	3,2	0,30	0,60	-	300	-
3/8	9,5	4,8	0,30	0,60	-	150	-
1/2	12,7	6,4	0,30	0,60	-	100	-
3/4	19,0	9,5	0,40	0,80	-	50	-
1	25,4	12,7	0,45	0,90	-	50	-

Standard colours				
0 = black	99 = transp.			
●	○			

Remarks:
- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 1/2"
- Technical data pages 40-41
Subject to alteration.





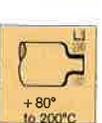
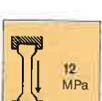
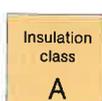
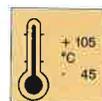
DERAY® - LSB

-45° to +105° C

Very flexible
 Heat-shrinkable sleeve
 Modified polyethylene
 Radiation crosslinked
 Insulation class A (VDE 05 30)

DERAY-LSB is a perfect solution if rationality is required in large-scale production. This product shrinking at low temperatures enables you to handle things quickly and at a favourable price. **DERAY-LSB** is halogen-free.

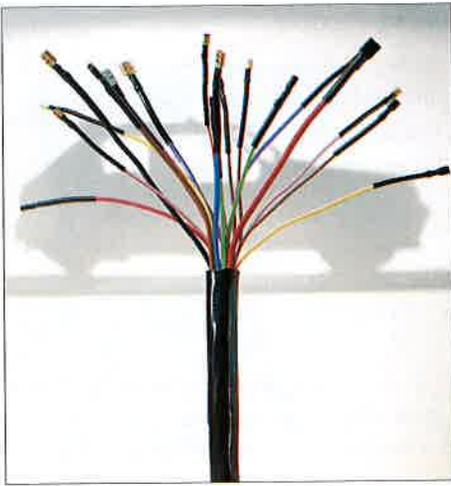
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
1/8	3,2	1,6	0,25	0,50	-	400	-
3/16	4,8	2,4	0,25	0,50	-	300	-
1/4	6,4	3,2	0,30	0,60	-	300	-
3/8	9,5	4,8	0,30	0,60	-	150	-
1/2	12,7	6,4	0,30	0,60	-	100	-
3/4	19,0	9,5	0,40	0,80	-	50	-
1	25,4	12,7	0,45	0,90	-	50	-



Standard colours				
0 = black				

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Technical data pages 40-41
 Subject to alteration.





DERAY® - HA

-55° to +120° C

Flexible

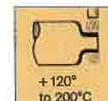
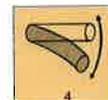
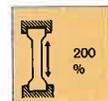
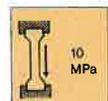
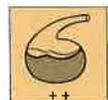
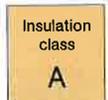
Heat-shrinkable sleeve
 Modified polyethylene
 Radiation crosslinked
 Insulation class A (VDE 05 30)

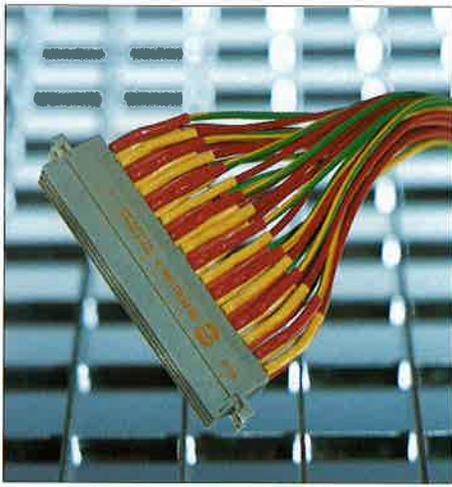
We can safely recommend DERAY-HA if you need an economical, flame retardant, non-meltable shrink sleeve. This self-extinguishing material is suitable for electrical insulation, mechanical protection, marking, bundling, strain relief and corrosion protection.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	-	400	-
1/16	1,6	0,8	0,20	0,40	-	400	-
3/32	2,4	1,2	0,25	0,50	-	400	-
1/8	3,2	1,6	0,25	0,50	-	400	-
3/16	4,8	2,4	0,25	0,50	-	300	-
1/4	6,4	3,2	0,30	0,60	-	300	-
3/8	9,5	4,8	0,30	0,60	-	150	-
1/2	12,7	6,4	0,30	0,60	-	100	-
3/4	19,0	9,5	0,40	0,80	-	50	-
1	25,4	12,7	0,45	0,90	-	50	-
1 1/4	31,8	15,9	0,45	0,90	-	50	-
1 1/2	38,0	19,0	0,50	1,00	-	50	-
2	51,0	25,4	0,55	1,10	-	50	-

Standard colours				
0 = black				
				

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Technical data pages 40-41
 Subject to alteration.





DERAY® - H

-55° to +125° C

Flexible

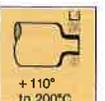
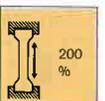
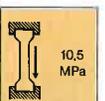
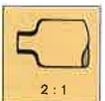
Heat-shrinkable sleeve -
Modified polyethylene
Radiation crosslinked
Insulation class E (VDE 05 30)

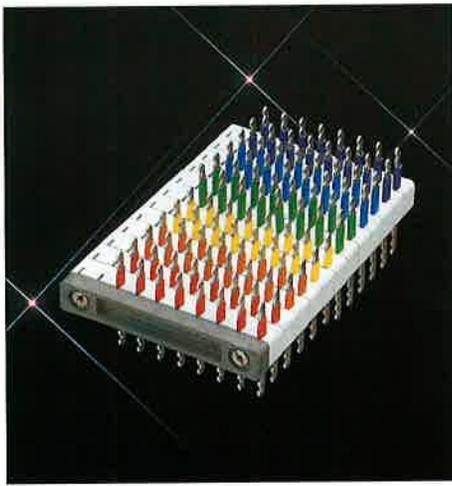
Safety in concept is offered by **DERAY-H** in cable insulating, cable marking and bundling. In addition, the flexible, non-meltable and quick-shrinking material guarantees effective electrical insulation, mechanical protection, as well as excellent corrosion protection, bending protection and strain relief. Recommended areas of application are insulating soldered terminals, cable brackets, cable clamps, bare conductors and busbars.

Ordering size	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	30,5	400	100
1/16	1,6	0,8	0,20	0,40	30,5	400	97
3/32	2,4	1,2	0,25	0,50	30,5	400	92
1/8	3,2	1,6	0,25	0,50	30,5	400	86
3/16	4,8	2,4	0,25	0,50	30,5	300	70
1/4	6,4	3,2	0,30	0,60	12,2	300	56
3/8	9,5	4,8	0,30	0,60	12,2	150	46
1/2	12,7	6,4	0,30	0,60	12,2	100	39
3/4	19,0	9,5	0,40	0,80	12,2	50	29
1	25,4	12,7	0,45	0,90	12,2	50	19
1 1/4	31,8	15,9	0,45	0,90	-	50	14
1 1/2	38,0	19,0	0,50	1,00	-	50	11
2	51,0	25,4	0,55	1,10	-	50	-
40 *	4,0	1,6	0,20	0,50	-	400	-
56 *	5,6	2,4	0,20	0,50	-	300	-
81 *	8,1	3,2	0,20	0,60	-	200	-
110 *	11,0	4,8	0,25	0,60	-	150	-
150 *	15,0	6,4	0,25	0,60	-	100	-

Standard colours					
0 = black	2 = red	4 = yellow	6 = blue	9 = white	99 = transp.

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Certifications available with a surcharge
 - Certifications possible only for sizes measured in inches
 - Sizes marked with * only available in black
 - Technical data pages 40-41
 Subject to alteration.





DERAY® - I

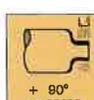
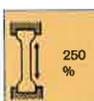
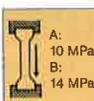
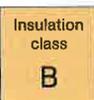
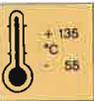
-55° to +135° C

Flexible

Heat-shrinkable sleeve –
Modified polyethylene
Radiation crosslinked
Insulation class B (VDE 05 30)

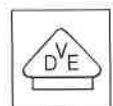
A brilliant variety of function and colour. DERAY-I is a universal heat-shrinkable sleeve type with excellent physical and chemical properties: flexible, non-meltable, quick shrinking and continuous temperature resistant up to 135° C. Applications: insulation, corrosion and mechanical protection, bundling, marking, bending protection, strain relief etc.

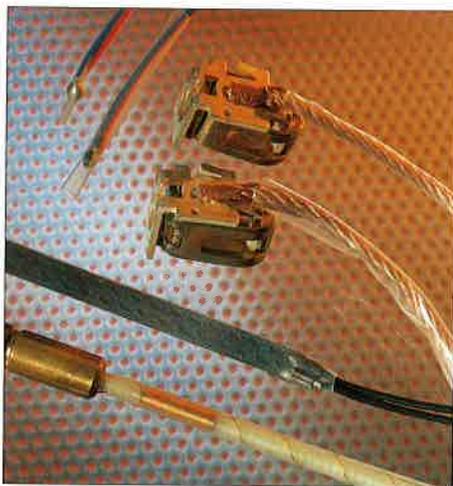
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Weight colour type A max. g/m	Weight transparent type B max. g/m	Delivery units		
							lengths of 1,22 m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	2,2	1,6	30,5	400	100
1/16	1,6	0,8	0,20	0,40	2,7	2,0	30,5	400	97
3/32	2,4	1,2	0,25	0,50	3,8	2,9	30,5	400	92
1/8	3,2	1,6	0,25	0,50	4,8	3,6	30,5	400	86
3/16	4,8	2,4	0,25	0,50	6,6	5,0	30,5	300	70
1/4	6,4	3,2	0,30	0,60	10,5	7,8	12,2	300	56
3/8	9,5	4,8	0,30	0,60	14,6	11,0	12,2	150	46
1/2	12,7	6,4	0,30	0,60	19,0	14,5	12,2	100	39
3/4	19,0	9,5	0,40	0,80	38,0	25,1	12,2	50	29
1	25,4	12,7	0,45	0,90	51,4	38,9	12,2	50	19
1 1/4	31,8	15,9	0,45	0,90	68,2	50,4	-	50	14
1 1/2	38,0	19,0	0,50	1,00	87,0	65,8	-	50	11
2	51,0	25,4	0,55	1,10	129,0	97,3	-	50	-
3	76,0	38,0	0,65	1,30	211,0	160,0	-	25	-
4	102,0	51,0	0,70	1,40	311,0	235,0	-	25	-
25 *	2,5	0,8	0,15	0,40	-	-	-	400	-
40 *	4,0	1,6	0,20	0,50	-	-	-	400	-
56 *	5,6	2,4	0,20	0,50	-	-	-	300	-
81 *	8,1	3,2	0,20	0,50	-	-	-	200	-
110 *	11,0	4,8	0,25	0,60	-	-	-	150	-
150 *	15,0	6,4	0,25	0,60	-	-	-	100	-



Standard colours						Special colours (on request)				
0=black	2=red	4=yellow	6=blue	9=white	99=transp.	1=brown	3=orange	5=green	7=violet	54=green-yellow

Remarks:
 - Cut lengths – printed on request – with a surcharge
 - Air-filled up to size 1/2"
 - Certifications available with a surcharge
 - Certifications possible only for sizes measured in inches (apart from 1 1/4" for VG)
 - Sizes marked with * only available in black
 - Technical data pages 40-41
 Subject to alteration.





DERAY® - ITW

-55° to +135° C

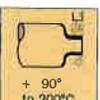
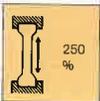
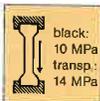
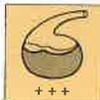
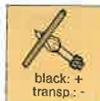
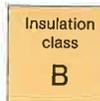
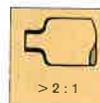
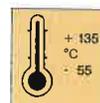
Very flexible
 Heat-shrinkable sleeve -
 Modified polyethylene
 Radiation crosslinked
 Insulation class B (VDE 05 30)

DERAY-ITW perfectly adapts to the surface of the object to be sealed due to its thin wall. Its insulating properties are especially important in applications with limited space. Many electrical appliances require this compactness.

Ordering size in mm	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
1,2*	1,2	0,5	0,10	0,25	-	400	-
2,5	2,5	0,8	0,10	0,30	-	400	-
4,0	4,0	1,6	0,12	0,30	-	400	-
5,6	5,6	2,4	0,12	0,30	-	300	-
8,1	8,1	3,2	0,15	0,35	-	200	-
11,0*	11,0	4,8	0,15	0,35	-	150	-
15,0*	15,0	6,4	0,15	0,35	-	100	-
20,0*	20,0	9,5	0,20	0,45	-	50	-
26,0*	26,0	12,7	0,25	0,50	-	50	-

Standard colours				
0 = black	99 = transp.			
●	○			

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 8,1 mm
 - Sizes marked with * non-standard material
 - Technical data pages 40-41
 Subject to alteration.





DERAY® - I 3000

-55° to +135° C

Flexible

Heat-shrinkable sleeve –

Modified polyethylene

Radiation crosslinked

Insulation class B (VDE 05 30)

Take a step in the right direction with DERAY-I 3000.

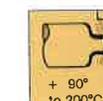
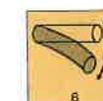
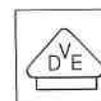
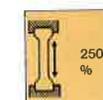
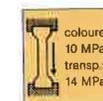
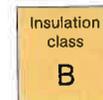
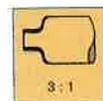
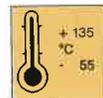
Its excellent shrinking abilities make it indispensable for complete enclosure of objects with large diameter variations. For example: cable brackets, resistors, capacitors etc. **DERAY-I 3000** is also very suitable for mechanical relief, marking connectors and wires, as well as repairing already connected cables.

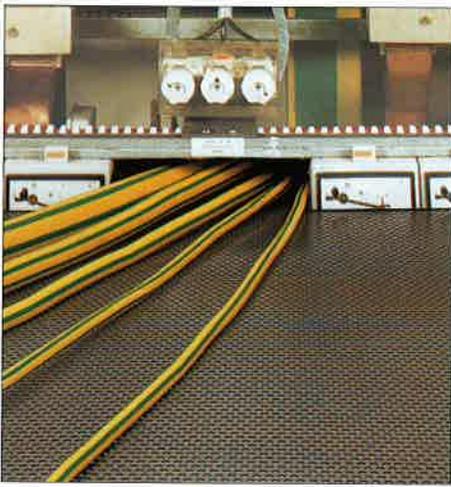
Ordering size in mm	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m	spool m	mini spool m
1,5/0,5	1,5	0,5	0,15	0,45	30,5	400	100
3/1	3,0	1,0	0,18	0,55	30,5	400	88
4,5/1,5*	4,5	1,5	0,20	0,60	30,5	300	70
6/2	6,0	2,0	0,22	0,65	12,2	300	59
9/3	9,0	3,0	0,25	0,75	12,2	150	52
12/4	12,0	4,0	0,25	0,75	12,2	100	46
18/6	18,0	6,0	0,27	0,85	12,2	50	34
24/8	24,0	8,0	0,33	1,00	12,2	50	23
39/13	39,0	13,0	0,38	1,15	-	50	13

Standard colours						Special colours (on request)			
0 = black	2 = red	4 = yellow	6 = blue	9 = white	99 = transp.	1 = brown	3 = orange	5 = green	7 = violet

Remarks:

- Cut lengths – printed on request – with a surcharge
- Air-filled up to size 12/4
- Certifications available with a surcharge
- Sizes marked with * not VG approved
- Technical data pages 40-41
- Subject to alteration.





DERAY® - IGY

-55° to +135° C

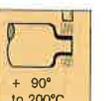
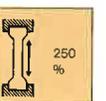
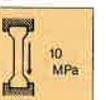
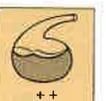
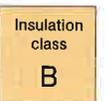
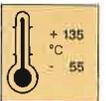
Flexible

Heat-shrinkable sleeve –
Modified polyethylene
Radiation crosslinked
Insulation class B (VDE 05 30)

DERAY-IGY is firmly based. This sleeve is extruded in dual colours and is flexible, non-meltable and quick shrinking. It was developed specifically for insulating and marking earthing conductors according to VDE.

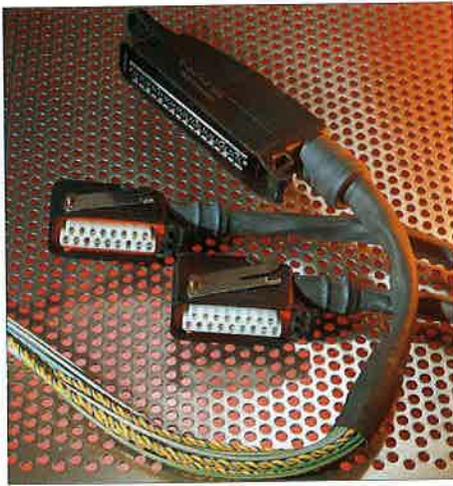
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/16	4,8	1,5	0,20	0,60	30,5	300	-
1/4	6,4	2,0	0,22	0,65	12,2	300	-
3/8	9,5	3,0	0,25	0,75	12,2	150	-
1/2	12,7	4,0	0,25	0,75	12,2	100	-
3/4	19,0	6,0	0,27	0,80	12,2	50	-
1	25,4	8,0	0,34	1,00	12,2	50	-
1 1/2	38,0	13,0	0,39	1,15	12,2	50	-

Standard colours				
54 = green-yellow				
				



Remarks:
- Cut lengths – printed on request – with a surcharge
- Air-filled up to size 1/2"
- Technical data pages 40-41
Subject to alteration.





DERAY® - LSI

-55° to +135° C

Very flexible
 Heat-shrinkable sleeve
 Modified polyethylene
 Radiation crosslinked
 Insulation class B (VDE 05 30)

DERAY-LSI offers its outstanding flexibility to the most rigid structures. This highly flexible, UL approved sleeve, shrinking at low temperatures provides for the future as regards processing of sensitive components.

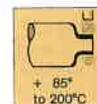
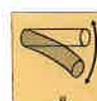
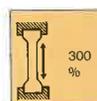
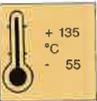
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	-	400	-
1/16	1,6	0,8	0,20	0,40	-	400	-
3/32	2,4	1,2	0,25	0,50	-	400	-
1/8	3,2	1,6	0,25	0,50	-	400	-
3/16	4,8	2,4	0,25	0,50	-	300	-
1/4	6,4	3,2	0,30	0,60	-	300	-
3/8	9,5	4,8	0,30	0,60	-	150	-
1/2	12,7	6,4	0,30	0,60	-	100	-
3/4	19,0	9,5	0,40	0,80	-	50	-
1	25,4	12,7	0,45	0,90	-	50	-
1 1/4	31,8	15,9	0,45	0,90	-	50	-
1 1/2	38,0	19,0	0,50	1,00	-	50	-
2	51,0	25,4	0,55	1,10	-	50	-

Standard colours

0 = black				
				

Remarks:

- Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Certifications available with a surcharge
 - Technical data pages 42-43
- Subject to alteration.





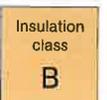
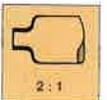
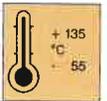
DERAY® - VI

-55° to +135° C

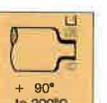
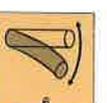
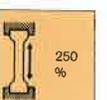
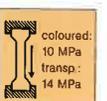
Flexible
Heat-shrinkable sleeve –
Modified polyolefin
Radiation crosslinked
Insulation class B (VDE 05 30)

DERAY-VI: a flexible mover. The main characteristic of this universal non-meltable shrink tube is the high elasticity of the material. Reliable insulation, sound mechanical protection and corrosion resistance make **DERAY-VI** an all around shrink sleeve for protective enclosure of flexible assembly components.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,20	0,40	–	400	–
1/16	1,6	0,8	0,20	0,40	–	400	–
3/32	2,4	1,2	0,25	0,50	–	400	–
1/8	3,2	1,6	0,25	0,50	–	400	–
3/16	4,8	2,4	0,25	0,50	–	300	–
1/4	6,4	3,2	0,30	0,60	–	300	–
3/8	9,5	4,8	0,30	0,60	–	150	–
1/2	12,7	6,4	0,30	0,60	–	100	–
3/4	19,0	9,5	0,40	0,80	–	50	–
1	25,4	12,7	0,45	0,90	–	50	–
1 1/2	38,0	19,0	0,50	1,00	–	50	–
2	51,0	25,4	0,55	1,10	–	50	–



Standard colours			Special colours (on request)						
0 = black			1 = brown*	2 = red*	4 = yellow*	5 = green*	6 = blue*	9 = white*	99 = transparent
									



Remarks:
– Cut lengths – printed on request – with a surcharge
– Air-filled up to size 1/2"
– Certifications available with a surcharge
– Colours marked with * PAN approved
– Technical data pages 42-43
Subject to alteration.





DERAY® - V 25

-75° to +150° C

Very flexible
 Heat-shrinkable sleeve -
 Modified elastomer
 Radiation crosslinked
 Insulation class B (VDE 05 30)

A safe start secured with DERAY-V 25, because this VG approved heat-shrinkable sleeve was especially developed for the rugged demands that characterize air and space travel, as well as military applications. The elastomer material is extremely flexible, non-meltable, high abrasion resistant, and self-extinguishing. All these properties guarantee chemical, oil and fuel resistant, dielectric insulation and covering of cables.

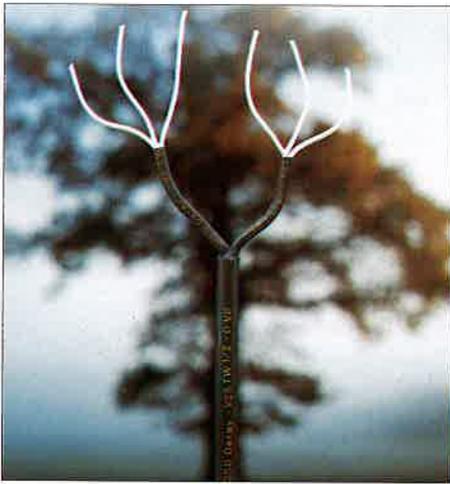
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Weight max. g/m	Delivery units		
						lengths of 1,22 m m	spool m	mini spool m
1/8	3,2	1,6	0,40	0,80	9,2	-	400	50
3/16	4,8	2,4	0,45	0,90	14,8	-	300	50
1/4	6,4	3,2	0,50	1,00	19,3	-	300	50
3/8	9,5	4,8	0,55	1,10	31,6	-	150	50
1/2	12,7	6,4	0,65	1,30	47,7	-	100	30
3/4	19,0	9,5	0,75	1,50	86,3	-	50	30
1	25,4	12,7	0,95	1,90	135,0	-	50	30
1 1/2	38,0	19,0	1,25	2,50	270,0	-	30	15
2	51,0	25,4	1,55	3,10	408,0	-	20	-
3	76,0	38,0	1,65	3,30	657,0	-	15	-

Standard colours

0 = black				
				

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Certifications available with a surcharge
 - PAN approved as DERAY-N 25
 - Technical data pages 42-43
 Subject to alteration.





DERAY® - V 25 TW

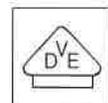
-75° to +150° C

Very flexible
Thin-walled
Heat-shrinkable sleeve -
Modified elastomer
Radiation crosslinked
Insulation class B (VDE 05 30)

Safeguard with DERAY-V 25 TW. This VG approved heat-shrinkable sleeve is extremely flexible due to its thin wall. This non-meltable, high/low temperature resistant sleeve type is especially suited for mechanical, thermal and chemical protection of sensitive components.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Weight max. g/m	Delivery units		
						lengths of 1,22 m m	spool m	mini spool m
3/32	2,4	1,2	0,25	0,55	4,5	-	400	-
1/8	3,2	1,6	0,25	0,55	6,2	-	400	-
3/16	4,8	2,4	0,25	0,55	7,5	-	300	-
1/4	6,4	3,2	0,30	0,65	12,1	-	300	-
3/8	9,5	4,8	0,30	0,65	17,0	-	150	-
1/2	12,7	6,4	0,30	0,65	21,9	-	100	-
3/4	19,0	9,5	0,40	0,85	37,9	-	50	-
1	25,4	12,7	0,45	0,95	60,9	-	50	-
1 1/4	31,8	15,9	0,50	1,05	82,0	-	30	-
1 1/2	38,0	19,0	0,50	1,05	103,0	-	30	-

Standard colours				
0 = black				
				



Remarks:
- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 1/2"
- Certifications available with a surcharge
- Technical data pages 42-43
Subject to alteration.





DERAY® - VA 25

-75° to +150° C

Very flexible

Heat-shrinkable sleeve -

Modified elastomer

Radiation crosslinked

Insulation class B (VDE 05 30)

DERAY-VA 25 the right choice for harsh environments.

Due to extraordinary material properties, this self-extinguishing, highly flexible elastomer sleeve is suited for applications under extreme environmental conditions. The recommended applications for this sleeve are high temperature and chemical resistant protection of electric wires or special cable protection coverings.

Ordering size in Inches	Diameter as supplied min. mm	Diameter fully recovered mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
1/8	3,2	1,6	0,40	0,80	-	400	-
3/16	4,8	2,4	0,45	0,90	-	300	-
1/4	6,4	3,2	0,50	1,00	-	300	-
3/8	9,5	4,8	0,55	1,10	-	150	-
1/2	12,7	6,4	0,65	1,30	-	100	-
3/4	19,0	9,5	0,75	1,50	-	50	-
1	25,4	12,7	0,95	1,90	-	50	-
1 1/2	38,0	19,0	1,25	2,50	-	30	-
2	51,0	25,4	1,55	3,10	-	20	-
3	76,0	38,0	1,65	3,30	-	15	-



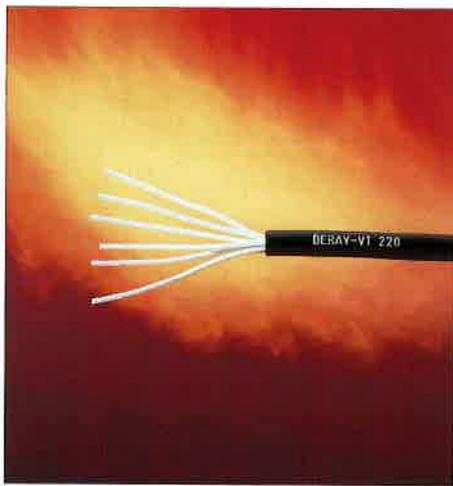
Standard colours

0 = black				
				

Remarks:

- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 1/2"
- Technical data pages 42-43
- Subject to alteration.





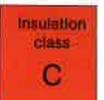
DERAY® - VT 220

-55° to +220° C

* (Viton®) Flexible
 Heat-shrinkable sleeve -
 Vinylidene fluoride - hexafluoropropylene
 Radiation crosslinked
 Insulation class C (VDE 05 30)

DERAY-VT 220 can take the heat. This non-meltable, self-extinguishing, extremely chemical and mechanical resistant heat-shrinkable sleeve is continuously temperature resistant up to 220° C. The recommended range of application for this high quality shrinking sleeve is the insulation or covering of harnesses in high temperature systems.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m	spool m	mini spool m
1/8	3,2	1,6	0,40	0,80	-	50	-
3/16	4,8	2,4	0,45	0,90	-	50	-
1/4	6,4	3,2	0,45	0,90	-	50	-
3/8	9,5	4,8	0,45	1,00	-	25	-
1/2	12,7	6,4	0,45	1,20	-	25	-
3/4	19,0	9,5	0,55	1,40	-	25	-
1	25,4	12,7	0,70	1,80	-	25	-
1 1/2	38,0	19,0	0,80	2,40	-	15	-
2	51,0	25,4	0,80	2,80	-	15	-



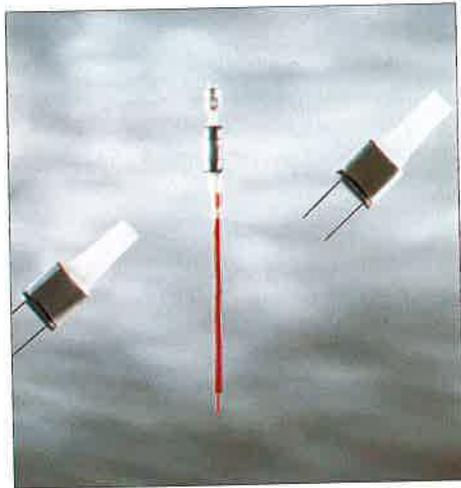
Standard colours				
0 = black				
				



* ® = registered trademark of Du Pont for the raw material

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Air-filled up to size 1/2"
 - Certifications available with a surcharge
 - PAN approved as DERAY-Viton
 - Technical data pages 42-43
 Subject to alteration.





DERAY® - KY 175

-55° to +175° C

* (Kynar®) Semi-rigid

Heat-shrinkable sleeve -

Modified PVDF radiation crosslinked

Insulation class F (VDE 05 30)

Invisible protection with visible results, is guaranteed by **DERAY-KY 175.** This non-meltable and self-extinguishing heat-shrinkable sleeve is highly abrasion resistant and extremely chemical resistant. These excellent material properties open up a broad range of applications for this transparent heat-shrinkable sleeve.

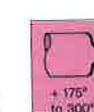
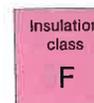
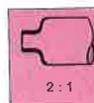
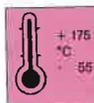
Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Weight max. g/m	Delivery units		
						lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,12	0,24	1,3	30,5	400	-
1/16	1,6	0,8	0,12	0,24	1,6	30,5	400	-
3/32	2,4	1,2	0,12	0,24	2,2	30,5	400	-
1/8	3,2	1,6	0,12	0,24	3,2	30,5	400	-
3/16	4,8	2,4	0,12	0,24	4,1	30,5	300	-
1/4	6,4	3,2	0,15	0,30	6,3	12,2	300	-
3/8	9,5	4,8	0,15	0,30	9,0	12,2	150	-
1/2	12,7	6,4	0,15	0,30	11,9	12,2	100	-
3/4	19,0	9,5	0,20	0,40	26,3	12,2	50	-
1	25,4	12,7	0,25	0,50	37,8	12,2	50	-

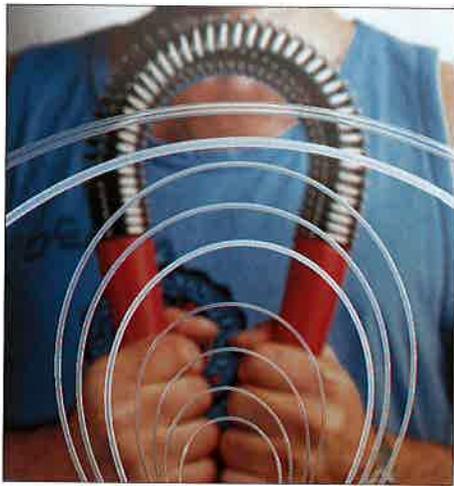
Standard colours			Special colours (on request)		
99 = transparent			0 = black		
○			●		

* ® = registered trademark of ELFAtochem for the raw material

Remarks:

- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 1/4"
- Certifications available with a surcharge
- PAN approved as DERAY-Kynar
- Technical data pages 42-43
- Subject to alteration.





DERAY® - KYF 190

-55° to +190° C

Flexible

Heat-shrinkable sleeve -

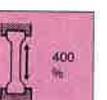
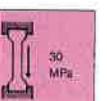
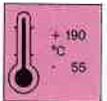
Modified fluoropolymer

Radiation crosslinked

Insulation class C (VDE 05 30)

DERAY-KYF 190 is a remarkable solution. This non-meltable, self-extinguishing, thin-walled heat-shrinkable sleeve type complements the advantages of DERAY-KY 175 with a high degree of flexibility. Excellent insulation values, electrical and mechanical values in a high temperature range, continuous temperature resistance up to 190°C, as well as extreme chemical resistance, open up a wide range of applications for this material for protecting components in constricted areas.

Ordering size in inches	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
					lengths of 1,22 m m	spool m	mini spool m
3/64	1,2	0,6	0,12	0,24	30,5	400	-
1/16	1,6	0,8	0,12	0,24	30,5	400	-
3/32	2,4	1,2	0,12	0,24	30,5	400	-
1/8	3,2	1,6	0,12	0,24	30,5	400	-
3/16	4,8	2,4	0,12	0,24	30,5	300	-
1/4	6,4	3,2	0,15	0,30	12,2	300	-
3/8	9,5	4,8	0,15	0,30	12,2	150	-
1/2	12,7	6,4	0,15	0,30	12,2	100	-



Standard colours

0 = black	99 = transparent			
●	○			

Remarks:

- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 1/4"
- Certifications available with a surcharge
- Technical data pages 42-43
- Subject to alteration.





DERAY® - PTFE

-65° to +260° C

* (Teflon®) Semi-rigid
Heat-shrinkable sleeve - PTFE
Insulation class C (VDE 0530)

When the going gets tough, DERAY-PTFE gets going.

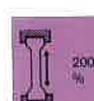
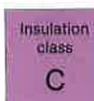
This non-combustible, thin-walled, semi-rigid heat-shrinkable sleeve is extremely resistant to high temperatures and chemicals. This transparent sleeve type is well suited for insulating and protecting components subject to extreme chemical and thermal loads.

Ordering size		Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness as supplied appr. mm	Wall thickness fully recovered appr. mm	Delivery units		
2:1 AWG	4:1 inches					lengths of 1,22 m m	spool m	mini spool m
30		0,86	0,38	0,12	0,23	30,5	-	-
28		0,97	0,46	0,12	0,23	30,5	-	-
26		1,17	0,56	0,12	0,23	30,5	-	-
24		1,27	0,64	0,13	0,25	30,5	-	-
22		1,40	0,80	0,13	0,25	30,5	-	-
20		1,52	0,97	0,15	0,30	30,5	-	-
18		1,93	1,17	0,15	0,30	30,5	-	-
16		2,36	1,45	0,15	0,30	30,5	-	-
14		3,05	1,82	0,15	0,30	30,5	-	-
12		3,81	2,26	0,15	0,30	30,5	-	-
10		4,85	2,80	0,15	0,30	30,5	-	-
8		6,10	3,55	0,19	0,38	12,2	-	-
6		7,67	4,40	0,19	0,38	12,2	-	-
4		9,40	5,45	0,19	0,38	12,2	-	-
2		10,92	6,90	0,19	0,38	12,2	-	-
0		11,94	8,56	0,19	0,38	12,2	-	-
	5/64	1,98	0,64	0,06	0,23	30,5	-	-
	1/8	3,18	0,94	0,06	0,25	30,5	-	-
	1/4	6,35	1,60	0,08	0,30	12,2	-	-
	3/8	9,52	2,44	0,08	0,30	12,2	-	-
	1/2	12,70	3,66	0,10	0,38	12,2	-	-
	5/8	15,88	4,52	0,10	0,38	12,2	-	-
	3/4	19,05	5,70	0,10	0,38	12,2	-	-
	1	25,40	7,06	0,10	0,38	12,2	-	-
	1 1/4	31,75	8,82	0,10	0,38	12,2	-	-

Standard colours				Special colours (on request)			
99=transparent				0 = black			

* ® = registered trademark of Du Pont for the raw material

Remarks:
- Cut lengths - printed on request - with a surcharge
- Technical data pages 42-43
Subject to alteration.





DERAY® - IAKT

-55° to +85° C

Flexible

Heat-shrinkable sleeve -

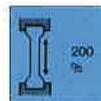
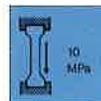
Modified polyethylene

Radiation crosslinked

With thermoplastic adhesive

DERAY-IAKT suits moist environments. This flexible heat-shrinkable sleeve is ideal for effective waterproof insulation of electrical connections, connectors, harnesses, splices and components. Its extreme shrinking abilities make it possible for this tube to shrink down on objects with a large diameter variation.

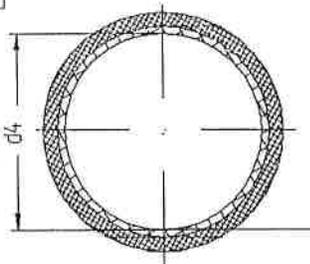
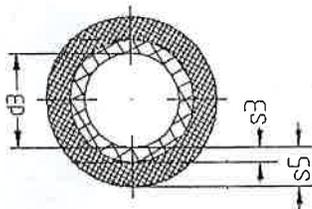
Ordering size		Diameter as supplied		Diameter fully recovered d3 max. mm	Wall thickness of adhesive fully recovered S3 appr. mm	Wall thickness overall fully recovered S5 appr. mm	Delivery units		
in mm		d4 min. mm					lengths of 1,22 m	spool m	mini spool m
3:1	4:1	mm	mm	mm	mm	mm	m	m	m
3/1		3,0		1,0	0,40	1,00	30,5	400	-
4,5/1,5		4,5		1,5	0,50	1,10	30,5	300	-
6/2		6,0		2,0	0,50	1,20	12,2	300	-
9/3		9,0		3,0	0,50	1,40	12,2	150	-
12/4		12,0		4,0	0,60	1,70	12,2	100	-
19/6		19,0		6,0	0,60	2,10	12,2	-	-
24/8		24,0		8,0	0,70	2,40	12,2	-	-
40/13		40,0		13,0	0,70	2,40	6,1	-	-
	4/1		4,0	1,0	0,40	1,00	30,5	400	-
	8/2		8,0	2,0	0,50	1,20	12,2	150	-
	12/3		12,0	3,0	0,50	1,40	12,2	100	-
	16/4		16,0	4,0	0,60	1,70	12,2	75	-
	24/6		24,0	6,0	0,60	2,10	12,2	-	-
	32/8		32,0	8,0	0,70	2,40	12,2	-	-
	52/13		52,0	13,0	0,70	2,40	6,1	-	-



Standard colours

0 = black

99 = transparent



Remarks:

- Cut lengths - printed on request - with a surcharge

- Air-filled up to size 12/4 and 12/3

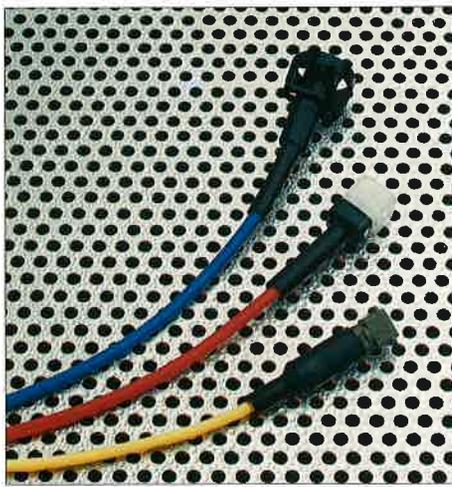
- Technical data pages 44-45

Subject to alteration.

Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and waterproofing electrical components should only be carried out by qualified electricians.





DERAY® - IHKT

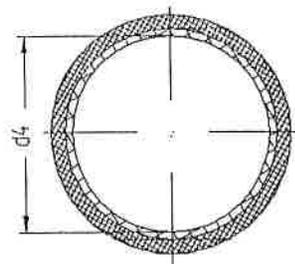
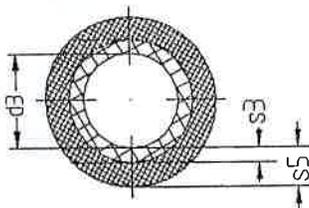
-55° to +100° C

Flexible
Heat-shrinkable sleeve -
Modified polyethylene
Radiation crosslinked
With temperature resistant,
thermoplastic adhesive

One piece is all it takes, for short-circuits or malfunctions in electrical assembly components and connections. Due to its extreme shrinking abilities, **DERAY-IHKT** offers reliable protection. This flexible heat-shrinkable sleeve has a chemically resistant adhesive inner lining with excellent adhesive properties.

Ordering size in mm	Diameter as supplied d4 min. mm	Diameter fully recovered d3 max. mm	Wall thickness of adhesive fully recovered S 3 mm	Wall thickness overall fully recovered S 5 mm	Weight max. g/m	Delivery units		
						lengths of 1,22 m m	spool m	mini spool m
4/1	4,0	1,0	0,40	1,00	8,2	30,5	400	-
8/2	8,0	2,0	0,40	1,20	12,2	12,2	150	-
12/3	12,0	3,0	0,40	1,40	24,8	12,2	100	-
16/4	16,0	4,0	0,60	1,70	41,8	12,2	75	-
24/6	24,0	6,0	0,60	2,10	70,7	12,2	-	-
32/8	32,0	8,0	0,70	2,40	106,0	12,2	-	-
52/13	52,0	13,0	0,70	2,40	156,0	6,1	-	-

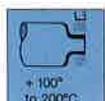
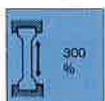
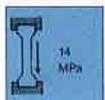
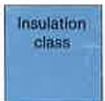
Standard colours				Special colours			
0 = black				99 = transparent without approval			



Remarks:
- Cut lengths - printed on request - with a surcharge
- Air-filled up to size 12/3
- Certifications available with a surcharge
- Technical data pages 44-45
Subject to alteration.

Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and waterproofing electrical components should only be carried out by qualified electricians.





DERAY® - HXKT

-55° to +110° C

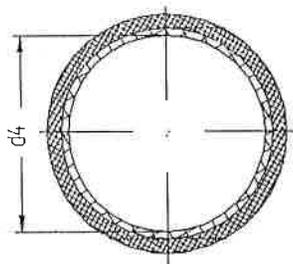
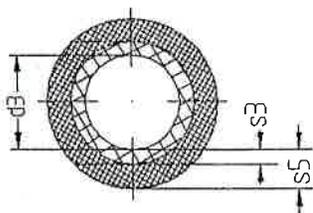
Semi-rigid

Heat-shrinkable sleeve -
Modified polyethylene
Radiation crosslinked
With polyolefin based
meltable adhesive

Don't worry, avoid creeping damp. DERAY-HXKT is a semi-rigid, non-meltable heat-shrinkable sleeve with an adhesive inner lining and high shrinking abilities which guarantee high temperature resistance, waterproof sealing, bending protection and strain relief. Sensitive components and connectors are encapsulated by this sleeve, ensuring faultless function and protection with regard to environmental influences.

Ordering size in inches	Diameter as supplied d4 min. mm	Diameter fully recovered d3 max. mm	Wall thickness of adhesive fully recovered S 3 mm	Wall thickness overall fully recovered S 5 mm	Weight max. g/m	Delivery units		
						lengths of 1,22 m m	spool m	mini spool m
1/8	3,2	0,6	0,40	0,90	5,4	30,5	400	-
3/16	4,8	1,5	0,80	1,40	10,1	30,5	300	-
1/4	6,4	2,0	0,75	1,40	13,1	12,2	300	-
3/8	9,5	3,4	1,00	1,65	20,8	12,2	150	-
1/2	12,7	5,0	1,00	1,70	30,6	12,2	100	-
3/4	19,0	8,0	1,20	1,95	53,8	12,2	-	-
1	25,4	10,2	1,20	2,00	78,5	12,2	-	-

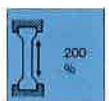
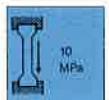
Standard colours				
0 = black				
				



Remarks:
- Cut lengths - printed on request - with a surcharge
- Atr-filled up to size 1/2"
- Certifications available with a surcharge
- Technical data pages 44-45
Subject to alteration.

Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and waterproofing electrical components should only be carried out by qualified electricians.





DERAY-CRIMP-SEAL

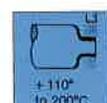
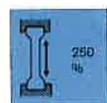
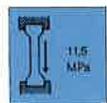
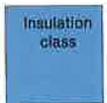
-40° to +110° C

Crimp connector
 Crimp barrel positioned
 in a radiation crosslinked
 heat-shrinkable sleeve
 with adhesive liner
 Polyolefin

DERAY-CRIMP-SEAL guarantees tension resistant and moisture proof connections. The bared cable ends are positioned in the suitable crimp connector type and processed with a tool used for pre-insulated splices. Apply heat with a shrink appliance until the adhesive flows from the splice end. The connection is perfect.

Ordering size Type	Diameter as supplied min. mm	Diameter fully recovered max. mm	Wall thickness fully recovered mm	Delivery units			For cable sections	
				Length of barrel	Total length	Number of pieces in a bag	from	to
1	4,2	1,4	1,1	15,5	37	100	0,5-1,5 mm ²	
2	4,9	1,8	1,2	15,5	37	100	1,5-2,5 mm ²	
3	6,4	2,2	1,3	15,5	42	100	3,0-6,0 mm ²	

Standard colours				
Type 1 2 = red	Type 2 6 = blue	Type 3 4 = yellow		
●	●	●		

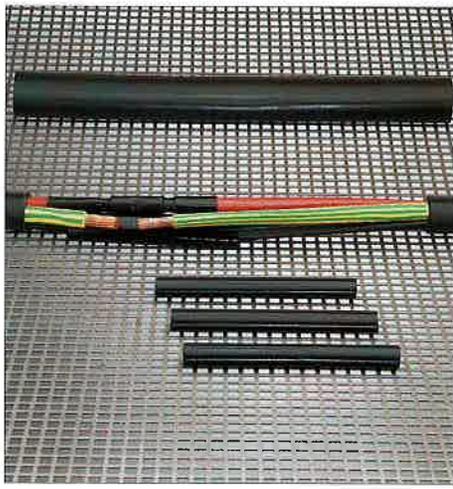


Remarks:
 - Technical data pages 44-45
 Subject to alteration.



Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and water-proofing electrical components should only be carried out by qualified electricians.



DERAY® - MC225

DERAY® - MC225 KT

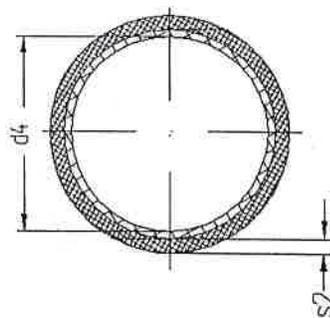
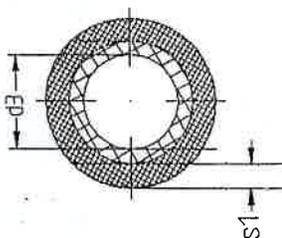
-40° to +135°C
-40° to +100°C KT

Medium-walled
Heat-shrinkable sleeve
Modified polyethylene
Radiation crosslinked
Without/with adhesive (KT)

Only a secure protection can guarantee contact. DERAY-MC 225 is always in demand when outstanding mechanical, electrical and thermal properties are called for. The version with an adhesive gives very good protection against humidity and environmental influences, e.g. when cables are installed.

Ordering size		Diameter as supplied d4 min. mm	Diameter fully recovered d3 max. mm	Wall thickness as supplied S2 appr. mm without adhesive	Wall thickness fully recovered S1 appr. mm without adhesive	Weight max. g/m	Delivery units in lengths of 1,22 m with/without adhesive m
without adhesive	with adhesive						
12/3	12/3 KT	12	3	0,50	1,00	18	1,22
19/5	19/5 KT	19	5	0,80	1,50	44	1,22
28/8	28/8 KT	28	8	0,80	2,50	90	1,22
38/12	38/12 KT	38	12	0,80	2,50	126	1,22
50/16	50/16 KT	50	16	0,80	2,50	162	1,22
63/19	63/19 KT	63	19	0,80	2,50	243	1,22
75/22	75/22 KT	75	22	0,80	3,00	339	1,22

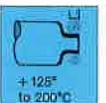
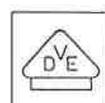
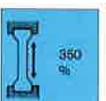
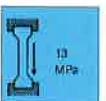
Standard colours				
0 = black				

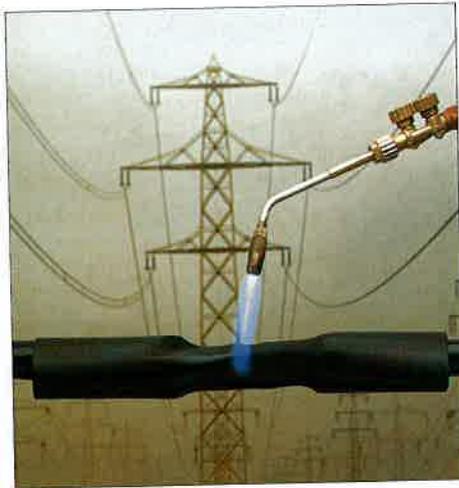


- Remarks:
- Cut lengths - printed on request - with a surcharge
 - Available with adhesive (please indicate KT when ordering)
 - VG approval for the version without adhesive
 - Certifications available with a surcharge
 - Technical data pages 44-45
 - Subject to alteration.

Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and waterproofing electrical components should only be carried out by qualified electricians.





DERAY® - IC 300 DERAY® - IC 300 KT

-40° to +135°C

-40° to +100°C KT

- Rigid
- Thick-walled
- Heat-shrinkable sleeve
- Modified polyethylene
- Radiation crosslinked
- Without/with adhesive (KT)

Won't leave you standing in the wet this we can guarantee.

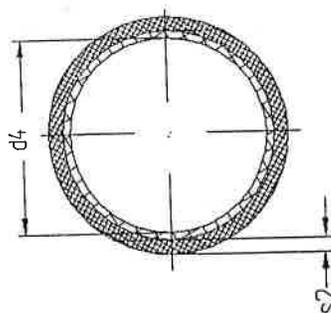
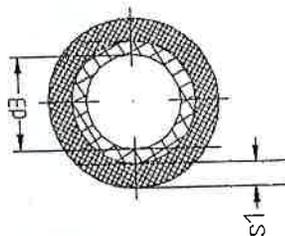
This thick-walled, non-meltable, extremely weather resistant shrink tube has an outstanding shrinking ratio. The sleeve is characterized by extraordinary resistance to mechanical, thermal and electrical loads. The version with adhesive is especially suitable for moisture resistant insulation of cable connections both on the surface and below ground.

Ordering size		Diameter as supplied d4 min. mm	Diameter fully recovered d3 max. mm	Wall thickness as supplied S2 appr. mm without adhesive	Wall thickness fully recovered S1 appr. mm without adhesive	Weight max. g/m	Delivery units in lengths of 1,22 m with/without adhesive m
without adhesive	with adhesive						
9/3	9/3 KT	9	3	0,60	2,00	44	1,22
13/4	13/4 KT	13	4	0,60	2,20	67	1,22
19/6	19/6 KT	19	6	0,80	2,60	94	1,22
30/8	30/8 KT	30	8	0,80	3,20	168	1,22
38/12	38/12 KT	38	12	1,20	3,90	263	1,22
51/15	51/15 KT	51	15	1,25	4,10	403	1,22
68/22	68/22 KT	68	22	1,30	4,30	498	1,22

Standard colours

0 = black

●				
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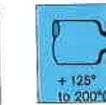
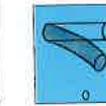
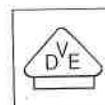
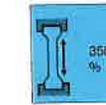
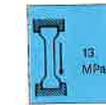
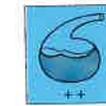
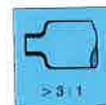
Remarks:

- Cut lengths - printed on request - with a surcharge
 - Available with adhesive (please indicate KT when ordering)
 - Certifications available with a surcharge
 - Technical data pages 44-45
- Subject to alteration.



Safety warning:

For work involving electric tensions of more than 48 V, insulating, connecting, repairing, and waterproofing electrical components should only be carried out by qualified electricians.





DERAY® - K

DERAY® - FM 100

-40° to +100° C

Heat-shrinkable cap –
Crosslinked polyolefin with adhesive

Heat-shrinkable cable breakout
Crosslinked polyolefin with adhesive

The delivery programme of medium and thick-walled heat-shrinkable sleeving is completed by heat-shrinkable caps and cable breakouts which also consist of high-quality material. These products enable you to seal easily and quickly plastic insulated and lead covered cables to make them pressure sealed and moisture proof. The sizes indicated correspond to all cable types.

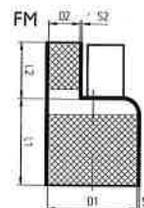
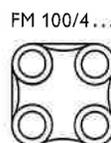
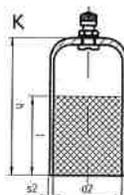
DERAY-K

Ordering size	Diameter as supplied (min) mm d ₂	Diameter fully recovered mm d ₁ ± 10 %	Wall thickness as supplied mm S ₂	Wall thickness fully recovered mm ± 10 % S ₁	Adhesive thickness ± 0,1 mm S ₃
K 12-4	12,0	4,0	0,7	2,0	0,4
K 16-6	16,0	6,0	0,8	2,0	0,4
K 20-7,5	20,0	7,5	1,0	2,5	0,4
K 26-11 V	26,0	11,0	1,1	2,5	0,4
K 40-17 V	40,0	17,0	1,3	3,0	0,4
K 57-22	57,0	22,0	1,2	3,0	0,4
K 75-32 V	75,0	32,0	1,7	4,0	0,4
K 105-45 V	105,0	45,0	1,7	4,0	0,4
K 120-60	120,0	60,0	2,0	4,0	0,4

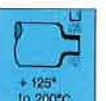
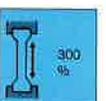
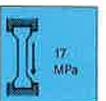
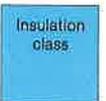
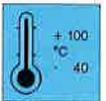
DERAY-FM 100

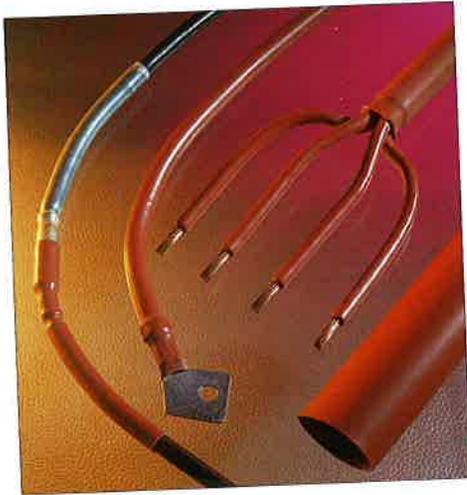
Ordering size	Size D ₁ Shrinkage		L ₁ ± 10 % mm	Size D ₂ Shrinkage		L ₂ ± 10 % mm	W ₁ ± 10 % mm	W ₂ ± 10 % mm	For cable sections mm ²
	from	to		from	to				
FM 100 / 2.1	30,0	9,0	90,0	15,0	4,0	25,0	2,0	2,0	6 – 35
FM 100 / 3.1	56,0	22,5	180,0	30,0	9,0	44,0	3,0	2,0	70 – 150
FM 100 / 3.2	80,0	35,0	178,0	45,0	17,5	44,0	4,0	3,0	185 – 300
FM 100 / 4.1	35,0	14,0	100,0	16,0	4,0	25,0	2,5	2,0	6 – 35
FM 100 / 4.2	42,0	14,0	100,0	16,0	4,0	25,0	2,5	2,0	6 – 50
FM 100 / 4.3	55,0	25,0	200,0	25,0	9,5	35,0	3,5	2,5	50 – 150
FM 100 / 4.4	68,0	25,0	200,0	34,0	9,5	35,0	3,5	2,5	70 – 185
FM 100 / 4.5	78,0	35,0	205,0	38,0	13,5	38,0	4,0	3,5	185 – 300
FM 100 / 4.6	95,0	36,0	205,0	45,0	14,0	38,0	4,0	3,5	300 – 500

Standard colours	
0 = black	



Remarks:
- DERAY-K caps marked with "V" are available with valve with a surcharge
- Technical data pages 44-45
Subject to alteration.





DERAY® - KSF

-40° to +135° C

Flexible

Heat-shrinkable sleeve -

Modified polyolefin

Radiation crosslinked

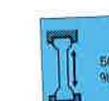
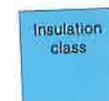
DERAY-KSF offers most effective protection in the medium voltage range. It is ideal for the insulation of busbars and the use in current distribution installations.

Ordering size	Diameter as supplied	Diameter fully recovered	Wall thickness as supplied	Wall thickness fully recovered	Delivery unit
mm	mm	mm	appr. mm	mm	m
15/6	15	6	0,50	1,20	1,0
19/10	19	10	0,80	1,50	1,0
32/12	32	12	1,00	2,80	1,0
43/19	43	19	1,50	3,50	1,0
60/25	60	25	1,50	3,50	1,0
76/32	76	32	1,50	3,50	1,0
100/50	100	50	2,00	4,00	1,0
25/10	25	10	1,50	4,10	-
40/16	40	16	1,50	4,10	-
60/25	60	25	1,70	4,10	-
76/32	76	32	2,00	4,50	-
100/50	100	50	2,50	5,00	-
19/6	19	6	0,60	2,00	1,0
26/10	26	10	1,00	2,60	1,0
38/12	38	12	0,80	2,80	1,0
58/19	58	19	1,00	3,50	1,0
68/25	68	25	1,20	3,50	1,0
90/32	90	32	1,20	3,50	1,0
120/50	120	50	1,50	4,00	1,0
30/10	30	10	1,20	4,10	-
48/16	48	16	1,20	4,10	-
68/25	68	25	1,40	4,10	-
90/32	90	32	1,50	4,50	-
120/50	120	50	2,00	5,00	-

Standard colours

red-brown				
				

Remarks:
 - Cut lengths - printed on request - with a surcharge
 - Technical data pages 44-45
 Subject to alteration.





DERAY® - IOK

-35° to +85° C

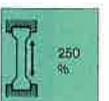
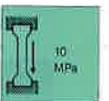
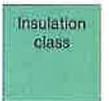
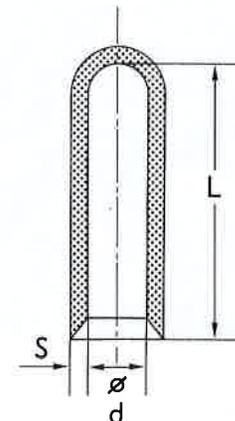
Flexible
Insulating cap – soft PVC

Variety as far as the eye can see. This characterizes **DERAY-IOK** insulating caps. These caps can be delivered in varying sizes and colours and are intended for long-lasting insulation of splices and cable ends. These highly elastic, soft PVC caps are a quick and economical solution for permanent insulation of soldered terminals in harnesses.

Ordering size d x L/S	Internal diameter d min. mm	Wall thickness s appr. mm	Recommended lengths						Minimum ordering quantity per dimension and colour
			L mm	L mm	L mm	L mm	L mm	L mm	
2,0 x../..	2,0	0,75	15	-	-	-	-	-	10.000
2,5 x../..	2,5	0,75	15	20	25	-	-	-	10.000
3,0 x../..	3,0	0,75	15	20	25	-	-	-	10.000
3,5 x../..	3,5	1,00	-	20	25	30	-	-	5.000
4,0 x../..	4,0	1,00	-	20	25	30	-	-	5.000
4,5 x../..	4,5	1,00	-	20	25	30	-	-	5.000
5,0 x../..	5,0	1,00	-	20	25	30	-	-	5.000
5,5 x../..	5,5	1,00	-	20	25	30	-	-	5.000
6,0 x../..	6,0	1,00	-	-	25	30	35	-	4.000
6,5 x../..	6,5	1,00	-	-	25	30	35	-	4.000
7,0 x../..	7,0	1,25	-	-	25	30	35	-	2.000
7,5 x../..	7,5	1,25	-	-	25	30	35	-	2.000
8,0 x../..	8,0	1,25	-	-	-	30	35	40	2.000
8,5 x../..	8,5	1,25	-	-	-	30	35	40	2.000
9,0 x../..	9,0	1,25	-	-	-	30	35	40	2.000
9,5 x../..	9,5	1,25	-	-	-	30	35	40	2.000
10,0 x../..	10,0	1,25	-	-	-	30	35	40	2.000

Standard colours							
0 = black	2 = red	4 = yellow	8 = grey	9 = white	99 = transparent	6 = blue	5 = green

Remarks:
- Other sizes on request
(internal diameter from 0,9 to 250 mm)
- Technical data pages 44-45
Subject to alteration.



DERAY® SEALING SYSTEMS

DERAY-PRESSMELT

DERAY-DUOMELT

DERAY-SPLICEMELT



THE FORERUNNER - DERAY-PRESSMELT

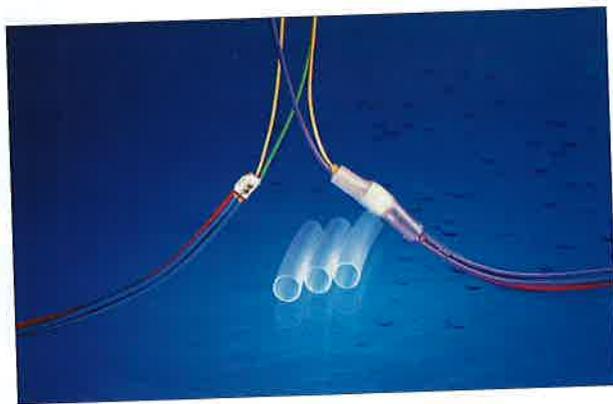
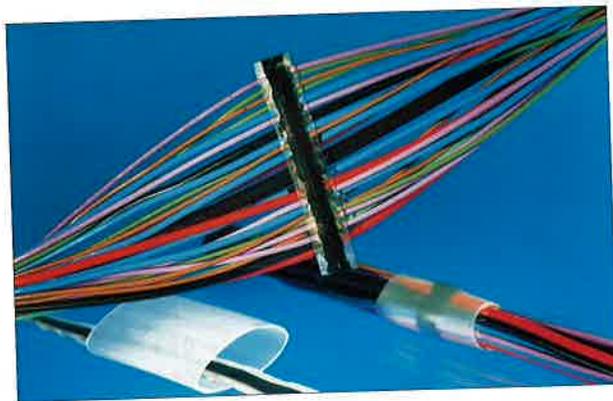
DERAY-PRESSMELT has a leading position among our sealing systems. The combination of an adhesive element and a coated heat-shrinkable sleeve realizes a longitudinal waterproof sealing of harnesses. During the shrink process the heat-shrinkable sleeve presses the melting adhesive in the cavities and thus ensures a perfect distribution in the bunch of conductors or connectors.

Easy handling and availability in temperature ranges of 85° C and 105° C have made it a very popular system.

THE VERSATILE - DERAY-DUOMELT

Our **DERAY-DUOMELT** system stands out due to its variety. It has been developed as a result of additional applications in the longitudinal waterproof sealing sector. Two components characterize the use of DERAY-DUOMELT. A coated adhesive tape and a thin-walled heat-shrinkable sleeve with inner adhesive lining. Due to the use of a pressure sensitive adhesive tape the application of this material is possible in the prefabrication. The shrink process can be carried out in the line or at a separate working place.

The strength of the heat-shrinkable sleeve guarantees perfect distribution of the adhesive in the object to be sealed. Even the most complicated geometries can be sealed longitudinally waterproof with this system.



THE TWO-IN-ONE - DERAY-SPLICEMELT

The innovation **DERAY-SPLICEMELT** is a two-in-one heat-shrinkable sleeve which as a single-component product guarantees the processing without a separate adhesive element. The special formulation of the inner liner ensures the creation of longitudinal waterproof sealings in the temperature ranges of 85° C and 125° C. The high shrinking ratio enables the adhesive to penetrate all cavities in the object to be sealed. This system is ideal for the processing of crimped and ultrasonic welded end and parallel connectors as well as for other applications.

Please demand our documentation.



DERAY® - Master-Mite-Professional

Hot air gun

MASTER-MITE-PROFESSIONAL

Master-Mite is the ideal hot air gun for shrinking, drying, plastic bending and various other applications. The "Master-Mite" is light and easy to operate. Its versatility is further enhanced by three interchangeable heating nozzles and a deflector. The Master-Mite comes with a solid heating cartridge, "silver" 450 watt (340° C), a deflector adaptor 40060 and a practical stand as standard.

Solid · light · versatile

The brushless motor is designed for continuous and silent operation. A thrust bearing guarantees a long motor life. The double wall heating cartridge is externally air-cooled.

Technical data:

Dimensions:	22,2 cm x 17,5 cm
Weight:	0,790 kg (total weight 1,35 kg)
Motor:	220 V, 2,2 amps., 50/60 hertz
Nozzle length:	9,68 cm
Nozzle opening:	Ø 2,5 cm
Cable length:	2,10 m (without plug)
Air volume:	0,1 m ³ /minute
Air speed:	210 m/minute

Interchangeable nozzles:

colour blue	260° C, 220 V, 400 watt – part no. 20033
colour silver	340° C, 220 V, 450 watt – part no. 20034
colour black	420° C, 220 V, 500 watt – part no. 20035

Accessories:

deflector adaptor	part no. 40060
pin point adaptor	part no. 40061



DERAY® - HST 35 100

DERAY® - HST 40 170

Shrink tunnel

The shrink tunnels **DERAY-HST 35 100** and **DERAY-HST 40 170** have been designed for economical series production and have all the features of an industrial tunnel: high performance fan, Ni-Cr-heating elements for continuous operation, heating elements hermetically bedded in stainless steel tubes, rod chain conveyor with teflonized glass-fibre fabric tape, economical power requirements. The recirculated hot air process allows a very economic input of energy, based on the principal of a standing air cushion and high quality heat insulation.

Application:

For volume production of (with regard to heat absorption) medium sized and large objects. The shrink tunnels **DERAY-HST 35 100** and **DERAY-HST 40 170** are generally intended for easy processing of all shrink tubing shown in this catalogue with the exception of DERAY-PTFE.

Type	DERAY-HST 35 100
Power requirement:	6,57 kW, 380 volt, 50 hertz
Drive:	DC motor
Belt speed:	0,1-4,0 m/min., electronically and continuously adjustable digital
Speed indication:	10m ³ /min.
Air circulation:	appr. 40-250° C, electronically and continuously adjustable
Temperature control:	rod chain belt with a silicone rubber coating
Transport:	500 mm, drawn forward
Tunnel inlet: (standard version)	
Tunnel outlet: (standard version)	500 mm, drawn forward
Weight:	appr. 270 kg
Dimensions:	L = 2000 mm, W = 650 mm, H = 1320 + 180 mm
Colour:	green according to RAL 6011

Type	DERAY-HST 40 170
Power requirement:	15,8 kW, 380 volt, 50 hertz
Motor:	DC motor
Belt speed:	0,1-2,0 m/min., electronically and continuously adjustable digital
Speed indication:	14m ³ /min.
Air circulation:	appr. 40-250° C, electronically and continuously adjustable
Temperature control:	rod chain belt with a silicone rubber coating
Transport:	500 mm, drawn forward
Tunnel inlet: (standard version)	
Tunnel outlet: (standard version)	500 mm, drawn forward
Weight:	appr. 470 kg
Dimensions:	L = 2700 mm, W = 700 mm, H = 1570 + 180 mm
Shroud length:	1700 mm
Colour:	green according to RAL 6011



Special versions available on request



Subject to alteration.

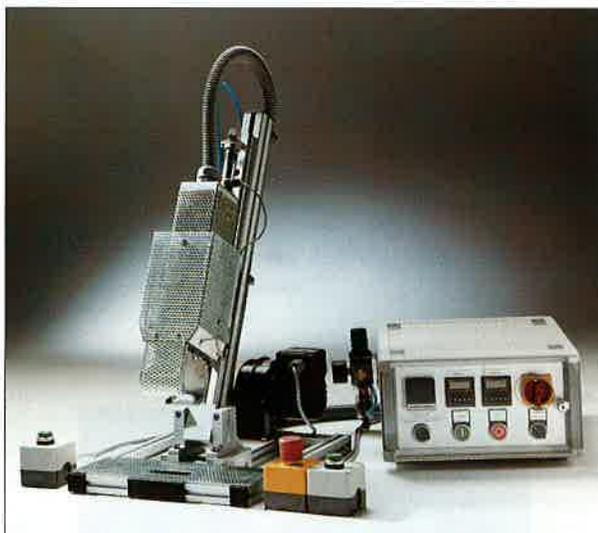


DERAY® SHRINK APPLIANCES

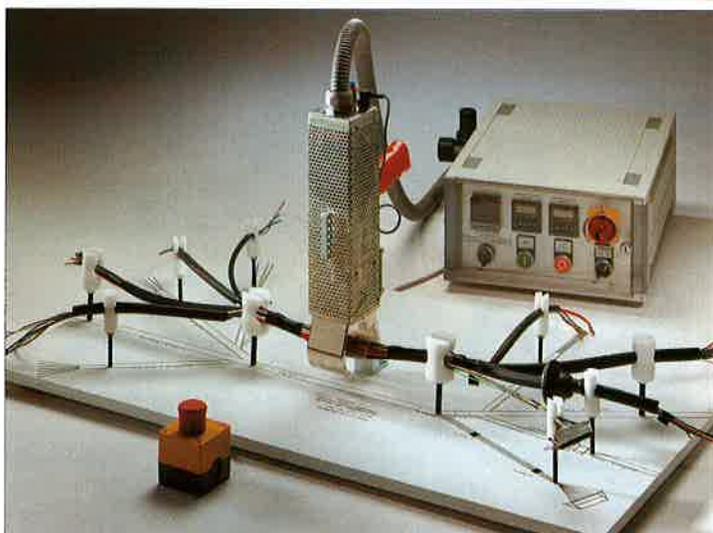
DERAY-WORKMAN

DERAY-DOCKMAN

DERAY-SPLICEMAN



DERAY-WorkMan



DERAY-DockMan

These are hot air shrink appliances for reproducing the processing of heat-shrinkable components in simple and complex applications.

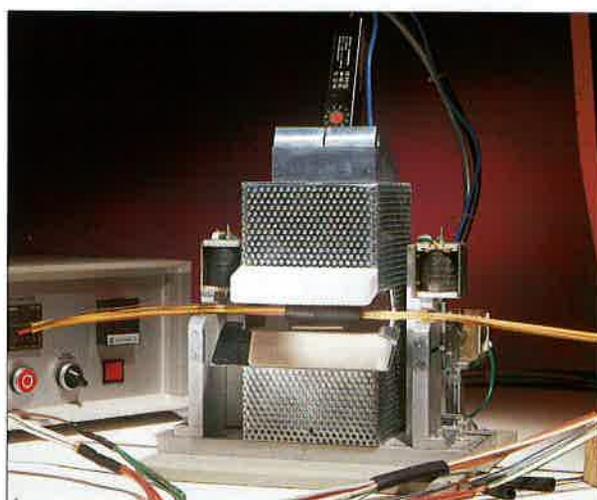
The special construction ensures universal use in the prefabrication (**DERAY-WorkMan**) and at a moving board or transfer line (**DERAY-DockMan**). The process is perfectly adaptable due to the use of a heavy-duty air heater as well as a temperature and time control.

DERAY-SpliceMan

Process-controlled shrink appliance with heavy-duty infrared heating for reproducing the processing of heat-shrinkable components in the fabrication.

Components with diameters of up to 15 mm max. can be processed in high quality and economically even at the smallest working place due to individual temperature and shrink time adjustment.

The thought-out construction guarantees the use also in series production.



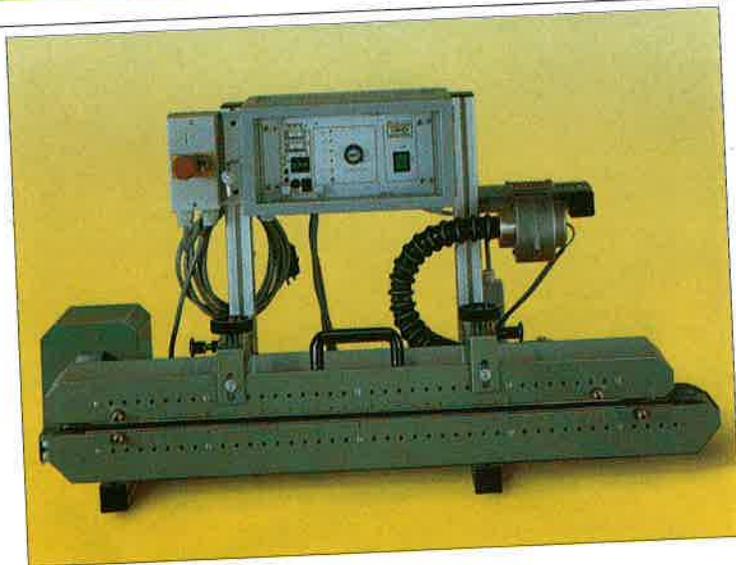
Please demand our documentation.



DERAY® SHRINK APPLIANCES

DERAY-KST 100/1000

DERAY-RST 200



DERAY-KST 100/1000

DERAY-KST 100/1000 is a small process-controlled shrink tunnel for reproducing the processing of heat-shrinkable components in prefabrication and series production. The use of heavy-duty infrared heaters and continuously adjustable speed control ensures a reproducible adjustment to the object to be sealed. An additional transport belt serves for the handling of long and heavy objects.

DERAY-RST 200

This small shrink tunnel has been designed for the processing of splices and other connections. The shrink process is optimized due to the continuously adjustable belt speed and temperature control.





DERAY-SORTIMENT

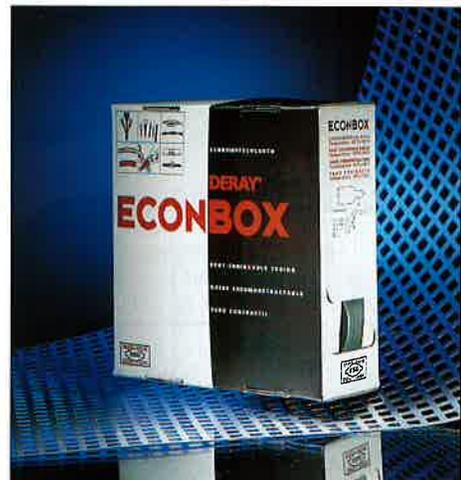
DERAY-HANDYBOX

DERAY-ECONBOX

DERAY-HAGYBOX

DERAY-SORTIMENT

A wide application range is guaranteed by our heat-shrinkable sleeve type **DERAY-SORTIMENT**, which is available in different delivery units, colours and sizes. In that way we can offer also smaller quantities and special packing units.



DERAY-HANDYBOX, DERAY-ECONBOX, DERAY-HAGYBOX

The stackable, ecological boxes enable you to realize well arranged stocks because the high-quality material is usable universally and available in seven colours and up to ten dimensions. Due to the small quantities per box a varied stock is possible, eliminating the need of raising too much capital.



DERAY® Summary/Technical data (Minimum values*)

Type	Page	Specific gravity	Longitudinal shrinkage	Tensile strength	Elongation	Secant modulus	Abrasion resistance	Thermal aging		Thermal shock		Cold bend test	Combustion behaviour	Colour fastness to high temperatures	Shrink temperature	Storage temperature
								Tensile strength	Elongation	Tensile strength	Elongation					
Test methods		ASTM-D 792		IEC 811-1-1		ASTM-D 882	VG 95343 T.2	IEC 811-1-1		IEC 811-1-2		ASTM-D 2671 Meth. C	ASTM-D 876	MIL-STD 104		
Deray F-105	6	1,35 g/cm ³ max.	20% max.	20 MPa min.	200% min.	n.a.)	*)	No considerable change of tensile strength or elongation 240 h/120° C *)		4 h/150° C *)		-20° C	self-extinguishing	good	+100° C to +150° C	+25° max.
Deray H 85 TS	7	1,45 g/cm ³ max.	20% max.	45 MPa min.	70 - 120% min.	n.a.)	*)	*)	*)	*)	*)	*)	self-extinguishing	good	+100° C to +140° C	+25° max.
Deray HB	8	0,95 g/cm ³ max.	10% max.	10 MPa min.	200% min.	*)	*)	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	FMVSS 302 passed	n.a.)	+125° C to +200° C	+50° max.
Deray LSB	9	1,2 g/cm ³ max.	10% max.	12 MPa min.	250% min.	40 MPa max.	*)	10 MPa min. 168 h/158° C	150% min. 168 h/158° C	10 MPa min. 4h/200° C	200% min. 4 h/200° C	-45° C	FMVSS 302 passed	n.a.)	80° C to +200° C	+40° max.
Deray HA	10	1,25 g/cm ³ max.	10% max.	10 MPa min.	200% min.	175 MPa max.	*)	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing	n.a.)	+120° C to +200° C	+50° max.
Deray H	11	1,25 g/cm ³ max.	10% max.	10,5 MPa min.	200% min.	175 MPa max.	*)	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing 1)	good	+110° C to +200° C	+50° max.
Deray I coloured	12	1,30 g/cm ³ max.	10% max.	10 MPa min.	250% min.	175 MPa max.	standard passed	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing	very good	+90° C to +200° C	+50° max.
Deray I transp.		0,93 g/cm ³ max.		14 MPa min.									250% min.			
Deray ITW black	13	1,30 g/cm ³ max.	10% max.	10 MPa min.	250% min.	175 MPa max.	*)	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing 1)	n.a.)	+90° C to +200° C	+50° max.
Deray ITW transp.		0,93 g/cm ³ max.		14 MPa min.									250% min.			
Deray I-3000 coloured	14	1,30 g/cm ³ max.	15% max.	10 MPa min.	250% min.	175 MPa max.	standard passed	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing 1)	very good	+90° C to +200° C	+50° max.
Deray I-3000 transp.		0,93 g/cm ³ max.		14 MPa min.									250% min.			
Deray IGY	15	1,30 g/cm ³ max.	10% max.	10 MPa min.	250% min.	175 MPa max.	*)	10 MPa min. 168 h/150° C	150% min. 168 h/150° C	10 MPa min. 4 h/200° C	200% min. 4 h/200° C	-55° C	self-extinguishing	very good	+90° C to +200° C	+50° max.

*) Typical values and other information available on request

n.a.): not applicable

1): Transparent version according to FMVSS 302

Continuous operating temperature	Corrosive action Compatibility with copper	Resistance against chemicals	Water absorption	Resistance to fungus	Specific volume resistance	Dielectric constant	Specific volume resistance	Printability	Specifications
according to IEC 216	ASTM-D 2671 Meth. A+B		VDE 0472	ISO 846	VDE 0303 Part. 2	DIN 53483 p. 2+3	VDE 0303 Part. 3		
-20° C to +105° C	non-corrosive	good	0,2 % max.	good	25 KV/mm min.	5,3 max.	10 ¹² Ohm x cm min.	good	Available in a non-standard version with fluted surface
+85° C	non-corrosive	good	0,2 % max.	good	20 KV/mm min.	3,35 max.	10 ¹⁵ Ohm x cm min.	good	
-55° C to +105° C	non-corrosive	good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	
-45° C to +105° C	non-corrosive	good	0,4 % max.	very good	25 KV/mm	2,7 max.	10 ¹⁴ Ohm x cm min.	very good	
-55° C to +120° C	non-corrosive	good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	
-55° C to +125° C	non-corrosive	good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	UL 224 / E 107857 CSA C 22.2 / LR 66150 MIL-I-23053/5 class 1 Certifications available with a surcharge
-55° C to +135° C	non-corrosive	very good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min. 10 ¹⁵ Ohm x cm min.	very good	VG 95343 part. 05. type A + B UL 224 (all colours apart from transp.) E 107857 CSA 22.2 (all colours apart from transp.) LR 66150 MIL-I-23053/5 class 1 + class 2 AMS 3636, AMS 3637 SNCF approval VDE Certifications available with a surcharge
-55° C to +135° C	non-corrosive	very good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	
-55° C to +135° C	non-corrosive	very good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	VG 95343 part. 05. type A + B MIL-I-23053/5 class 1 + class 2 UL 224 (all colours apart from transparent) E 107857 SNCF approval VDE Certifications available with a surcharge
-55° C to +135° C	non-corrosive	good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	good	MIL-I-23053/5 class 1 AMS 3636

DERAY® Summary/Technical data (Minimum values*)

Type	Page	Specific gravity	Longitudinal shrinkage	Tensile strength	Elongation	Secant modulus	Abrasion resistance	Thermal aging		Thermal shock		Cold bend test	Combustion behaviour	Colour fastness to high temperatures	Shrink temperature	St
								Tensile strength	Elongation	Tensile strength	Elongation					
Test methods		ASTM-D 792		IEC 811-1-1		ASTM-D 882	VG 95343 T.2	IEC 811-1-1		IEC 811-1-2		ASTM-D 2671 Meth. C	ASTM-D 876	MIL-STD 104		
Deray LSI	16	1,40 g/cm ³ max.	10 % max.	15 MPa min.	300 % min.	40 MPa max.	*)	13 MPa min. 168 h/ 158° C	300 % min. 168 h/ 158° C	15 MPa min. 4 h/ 200° C	300 % min. 4 h/ 200° C	- 55° C	self-extinguishing	n.a.)	+ 85° C to + 200° C	+ ma
Deray VI	17	1,30 g/cm ³ max.	10 % max.	10 MPa min.	250 % min.	175 MPa max.	*)	10 MPa min. 168 h/ 158° C	150 % min. 168 h/ 158° C	10 MPa min. 4 h/ 200° C	200 % min. 4 h/ 200° C	- 55° C	self-extinguishing 1)	very good	+ 90° C to + 200° C	+ ma
Deray V 25	18	1,5 g/cm ³ max.	10 % max.	12 MPa min.	350 % min.	35 MPa max.	standard passed	10 MPa min. 168 h/ 160° C	200 % min. 168 h/ 160° C	8 MPa min. 4 h/ 215° C	200 % min. 4 h/ 215° C	- 75° C	self-extinguishing	n.a.)	+ 130° C to + 250° C	+ ma
Deray V 25 TW	19	1,50 g/cm ³ max.	10 % max.	12 MPa min.	350 % min.	35 MPa max.	standard passed	10 MPa min. 168 h/ 160° C	200 % min. 168 h/ 160° C	8 MPa min. 4 h/ 215° C	200 % min. 4 h/ 215° C	- 75° C	self-extinguishing	n.a.)	+ 130° C to + 250° C	+ ma
Deray VA 25	20	1,50 g/cm ³ max.	15 % max.	12 MPa min.	350 % min.	35 MPa max.	*)	10 MPa min. 168 h/ 160° C	200 % min. 168 h/ 160° C	8 MPa min. 4 h/ 215° C	200 % min. 4 h/ 215° C	- 75° C	self-extinguishing	n.a.)	+ 130° C to + 250° C	+ ma
Deray VT 220	21	1,90 g/cm ³ max.	10 % max.	10,5 MPa min.	250 % min.	85 MPa max.	standard passed	10 MPa min. 168 h/ 250° C	150 % min. 168 h/ 250° C	8 MPa min. 4 h/ 300° C	150 % min. 4 h/ 300° C	- 55° C	self-extinguishing	n.a.)	+ 175° C to + 300° C	+ 5 ma
Deray KY 175	22	1,80 g/cm ³ max.	10 % max.	35 MPa min.	150 % min.	750 MPa max.	standard passed	15 MPa min. 168 h/ 200° C	75 % min. 168 h/ 200° C	15 MPa min. 4 h/ 250° C	75 % min. 4 h/ 250° C	- 55° C	self-extinguishing	browning without important change of mechanical data	+ 175° C to + 300° C	+ 5 ma
Deray KYF 190	23	1,80 g/cm ³ max.	10 % max.	30 MPa min.	400 % min.	300 MPa max.	*)	20 MPa min. 168 h/ 215° C	300 % min. 168 h/ 215° C	20 MPa min. 4 h/ 275° C	250 % min. 4 h/ 275° C	- 55° C	self-extinguishing	browning without important change of mechanical data	+ 175° C to + 300° C	+ 5 ma
Deray PTFE	24	2,20 g/cm ³ max.	15 % max.	17,5 MPa min.	200 % min.	*)	*)	no dropping, flowing or cracking 168 h/ 300° C		4 h/ 400° C		- 65° C	non-combustible	n.a.)	+ 350° C to + 500° C	+ 5 ma

*) Typical values and other information available on request

n.a.): not applicable

1): Transparent version according to FMVSS 302

Continuous operating temperature	Corrosive action Compatibility with copper	Resistance against chemicals	Water absorption	Resistance to fungus	Specific volume resistance	Dielectric constant	Specific volume resistance	Printability	Specifications
according to IEC 216	ASTM-D 2671 Meth. A+B		VDE 0472	ISO 846	VDE 0303 Part. 2	DIN 53483 p. 2+3	VDE 0303 Part. 3		
- 55° C to + 135° C	non-corrosive	good	0,4 % max.	very good	20 KV/mm min.	2,5 max	10 ¹⁴ Ohm x cm min.	very good	UL 224 approved colour: black Certifications available with a surcharge
- 55° C to + 135° C	non-corrosive	very good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	PAN 6493, No. MP 424 (approved colours: all colours apart from black and transparent) MIL-I-23053/5, class 3 MIL-R-46846 type V, class 1 AMS 3587 B, AMS 3588 B UL 224 (approved colour: black E 107 857 Certifications available with a surcharge
- 75° C to + 150° C	non-corrosive	good	2,0 % max.	very good	8 KV/mm min.	9,0 max.	10 ¹¹ Ohm x cm min.	good	VG 95 343, part. 05, type D PAN 6480 No. MP 425 MIL-I-23053/16, MIL-R-46846/1 AMS 3623 A SNFC approval VDE Certifications available with a surcharge
- 75° C to + 150° C	non-corrosive	very good	3,5 % max.	very good	8 KV/mm min.	9,0 max.	10 ¹¹ Ohm x cm min.	good	VG 95 343, part. 05, type D Certifications available with a surcharge
- 75° C to + 150° C	non-corrosive	very good	2,0 % max.	very good	8 KV/mm min.	9,0 max.	10 ¹¹ Ohm x cm min.	good	MIL-I-23053/16, MIL-I-23053/1
- 55° C to + 220° C	non-corrosive	very good	1% max.	very good	6 KV/mm min.	9,0 max.	10 ¹² Ohm x cm min.	good	PAN 6480 No. MP 421 MIL-R-46846, type 3, class 1 MIL-I-23053/13 VDE VG 95343 part. 05, type E Certifications available with a surcharge
- 55° C to + 175° C	non-corrosive	good	0,5 % max.	very good	25 KV/mm min.	5,5 max.	10 ¹³ Ohm x cm min.	very good	VG 95 343 part. 05, type F PAN 6491 No. MP 422 UL 224, VW-1 / E 107 857 CSA C 22.2 OFT / LR 66150 MIL-I-23053/8 A AMS 3623 C VDE Certifications available with a surcharge
- 55° C to + 190° C	non-corrosive	good	0,3 % max.	very good	40 KV/mm min.	*)	10 ¹² Ohm x cm min.	very good	UL 224, VW-1 E 132 910 Certifications available with a surcharge
- 65° C to + 260° C	non-corrosive	very good	< 0,01 %	very good	24 KV/mm min.	2,2 max.	10 ¹⁸ Ohm x cm min.	not printable	MIL-I-23053/12 A class 3 + 5 AMS 3655, AMS 3584 B

DERAY® Summary/Technical data (Minimum values*)

Type	Page	Specific gravity	Longitudinal shrinkage	Tensile strength	Elongation	Secant modulus	Abrasion resistance	Thermal aging		Thermal shock		Cold bend test	Combustion behaviour	Colour fastness to high temperatures	Shrink temperature	Storage temperature
								Tensile strength	Elongation	Tensile strength	Elongation					
Test methods		ASTM-D 792		IEC 811-1-1		ASTM-D 882	VG 95343 T.2	IEC 811-1-1		IEC 811-1-2		ASTM-D 2671 Meth. C	ASTM-D 876	MIL-STD 104		
Deray IAKT	25	1,25 g/cm ³ max.	15 % max.	10 MPa min.	200 % min.	*)	*)	10 MPa min. 168 h/ 150° C	200 % min. 168 h/ 150° C	10 MPa min. 4 h/ 200° C	200 % min. 4 h/ 200° C	- 55° C	black sleeve self-extinguishing 1)	n.a.)	+ 95° C to + 200° C	+ 50° max.
Deray IHKT	26	1,25 g/cm ³ max.	20 % max.	14 MPa min.	300 % min.	*)	standard passed	10 MPa min. 168 h/ 160° C	200 % min. 168 h/ 160° C	10 MPa min. 4 h/ 210° C	200 % min. 4 h/ 210° C	- 55° C	sleeve self-extinguishing 1)	n.a.)	+ 100° C to + 200° C	+ 50° max.
Deray HXKT	27	1,3 g/cm ³ max.	10 % max.	10 MPa min.	200 % min.	*)	standard passed	10 MPa min. 168 h/ 150° C	200 % min. 168 h/ 150° C	10 MPa min. 4 h/ 200° C	200 % min. 4 h/ 200° C	- 55° C	FMVSS 302 passed	n.a.)	+ 110° C to + 200° C	+ 50° max.
Deray-Crimpseal	28	0,95 g/cm ³ max.	15 % max.	11,5 MPa min.	250 % min.	250 MPa min.	*)	14 MPa min. 168 h/ 150° C	100 % min. 168 h/ 150° C	16 MPa min. 4 h/ 200° C	150 % min. 4 h/ 200° C	- 40° C	FMVSS 302 passed	*)	+ 110° C to + 200° C	+ 50° max.
Deray MC 225 Deray MC 225 KT	29	1,30 g/cm ³ max.	15 % max.	13 MPa min.	350 % min.	250 MPa max.	standard passed	13 MPa min. 168 h/ 150° C	350 % min. 168 h/ 150° C	13 MPa min. 4 h/ 200° C	350 % min. 4 h/ 200° C	- 40° C	FMVSS 302 passed	n.a.)	+ 125° C to + 200° C	+ 50° max.
Deray IC 300	30	1,30 g/cm ³ max.	15 % max.	13 MPa min.	350 % min.	180 MPa max.	standard passed	13 MPa min. 168 h/ 150° C	300 % min. 168 h/ 150° C	13 MPa min. 4 h/ 200° C	350 % min. 4 h/ 200° C	- 40° C	FMVSS 302 passed	n.a.)	+ 125° C to + 200° C	+ 50° max.
Deray-K DERAY FM 100	31	1,13 g/cm ³ max. *)	n.a.)	17 MPa min. 9 MPa min.	300 % min. 250 % min.	*)	*)	17 MPa min. 21 days 120° C 9 MPa min. 168 h/ 150° C	300 % min. 21 days 120° C 250 % min. 168 h/ 150° C	*)	*)	- 55° C - 55° C	*) self-extinguishing	n.a.)	125° to + 200° C	+ 50° max.
Deray KSF KSF 3 : 1	32	1,2 g/cm ³ max.	10 % max.	14 MPa min.	500 % min.	30 MPa max.	*)	*)	*)	10 MPa min. 4 h/ 200° C	300 % min. 4 h/ 200° C	- 40° C	self-extinguishing	*)	+ 125° C to + 200° C	+ 50° max.
Deray IOK	33	1,20 g/cm ³ max.	n.a.)	10 MPa min.	250 % min.	n.a.)	*)	no dropping, flowing or cracking *)		4 h/ 150° C 4 h/ 150° C		- 35° C	self-extinguishing	good	n.a.)	n.a.)

**DERAY SEALING SYSTEMS
DERAY-MASTER-MITE-PROFESSIONAL
SHRINK TUNNELS DERAY-HST 35100, DERAY-HST 40170
DERAY SHRINK APPLIANCES, DERAY-WorkMan, DERAY-DockMan, DERAY-SpliceMan
DERAY SHRINK APPLIANCES, DERAY-KST 100/1000, DERAY-RST 200
DERAY-SORTIMENT**

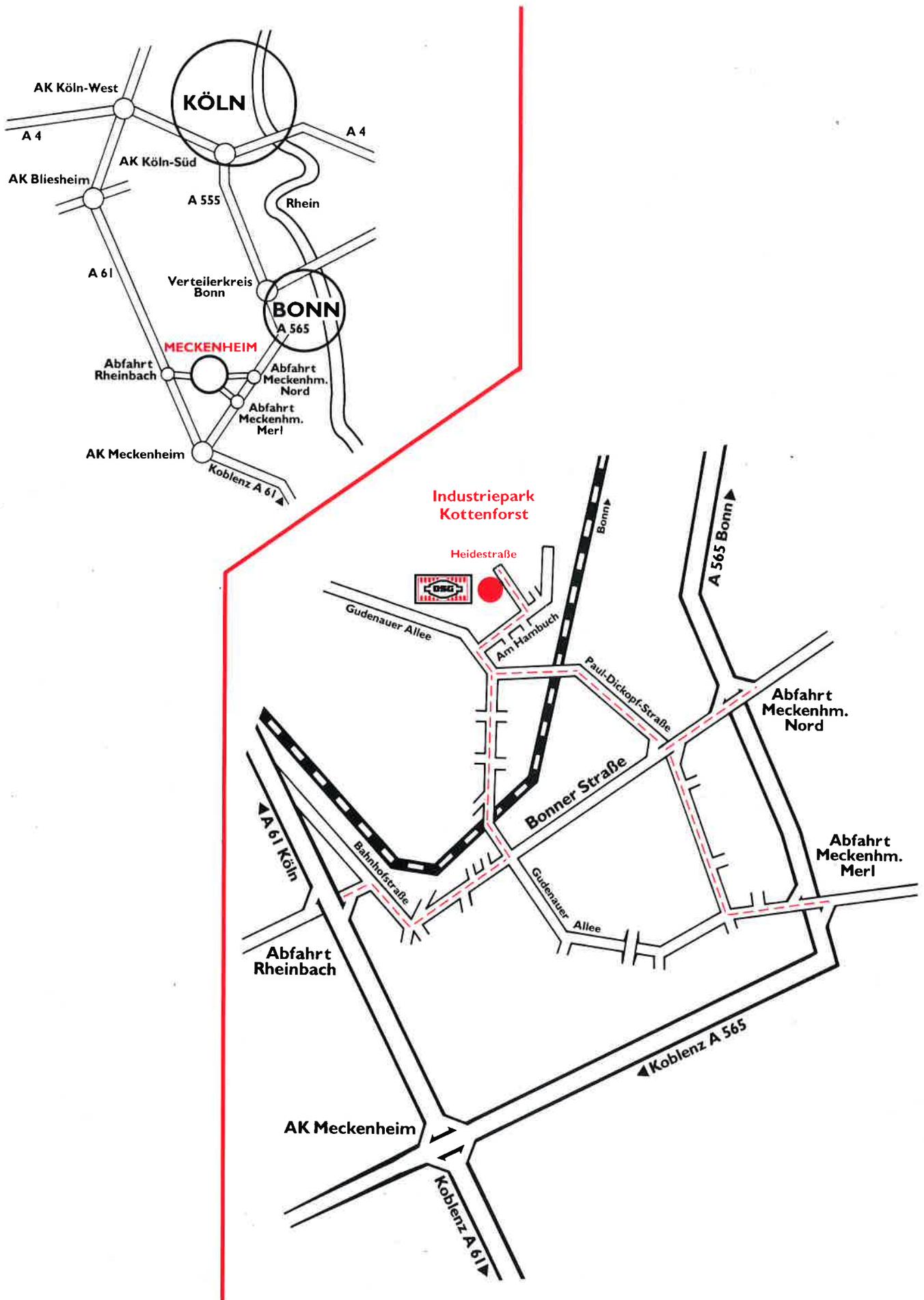
*) Typical values and other information available on request

n.a.): not applicable

1): Transparent version and adhesive not self-extinguishing. Transparent version according to FMVSS 302

Continuous operating temperature	Corrosive action Compatibility with copper	Resistance against chemicals	Water absorption	Resistance to fungus	Specific volume resistance	Dielectric constant	Specific volume resistance	Printability	Specifications
according to IEC 216	ASTM-D 2671 Meth. A+B		VDE 0472	ISO 846	VDE 0303 Part. 2	DIN 53483 p. 2+3	VDE 0303 Part. 3		
-55° C to +85° C	non-corrosive	good	0,5 %	very good	20 KV/mm min.	2,5 max.	10 ¹³ Ohm x cm min.	very good	MIL-I-23053/4 black AMS 3694
-55° C to +100° C	non-corrosive	very good	0,5 %	very good	10 KV/mm min.	2,5 max.	10 ¹⁴ Ohm x cm min.	very good	VG 95 343 part. 12, type D MIL-I-23053/4 AMS 3694 VDE Certifications available with a surcharge
-55° C to +110° C	non-corrosive	good	0,5 % max.	very good	20 KV/mm min.	2,5 max.	10 ¹³ Ohm x cm min.	very good	MIL-I-23053/4 AMS 3694
-40° C to +110° C	non-corrosive	good	0,5 % max.	good	13,5 KV/mm min.	2,5 max.	10 ¹³ Ohm x cm min.	good	
-40° to +135° C -40° to +100° C with adhesive	non-corrosive	good	0,2 % max.	very good	10 KV/mm min.	2,7 max.	10 ¹² Ohm x cm min.	sehr gut	Deutsche Bundesbahn (Federal Railways) VG 95 343 part. 05, type G VDE Certifications available with a surcharge
-40° to +135° C -40° to +100° C with adhesive	non-corrosive	good	0,2 % max.	very good	10 KV/mm min.	2,7 max.	10 ¹⁵ Ohm x cm min.	sehr gut	Deutsche Bundesbahn (Federal Railways) SNCF approval VG 95 343 part. 05, type H VDE Certifications available with a surcharge
-40° C to +130° C	non-corrosive	good	0,5 % max.	very good	12 KV/mm min. 15 KV/mm min.	2,7 max.	10 ¹⁴ Ohm x cm min.)	gut	
-40° C to +135° C	non-corrosive	good	0,2 % max.	good	20 KV/mm	*)	10 ¹⁴ Ohm x cm min.	very good	KEMA report available on request
-35° C to +85° C	non-corrosive	good	0,2 % max.	good	18 KV/mm min.	50 Hz: 8 max. 800 Hz: 6,4 max.	10 ⁹ Ohm x cm min.	good	

The fast connection:





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