

- IATF16949
- ISO9001
- ISO13485
- ISO14001
- ISO50001

INDUSTRIES AND APPLICATIONS



CRASH PROTECT R

Typical uses

- Automotive industry
- Crash protection
- E-mobility / hybrid
- Electrical motors construction
- Cable manufacture
- Line protection
- Commercial vehicles

Key properties

- Long-term heat resistance of -40°C to $+150^{\circ}\text{C}$
- Short-term heat resistance up to $+175^{\circ}\text{C}$
- Horizontal self-extinguishing acc. VW 60360-3 (DIN 75200, FMVSS 302, SAE J2192)
- Extremely high abrasion resistance according to VW 60360
- Institute-tested against marten bite
- Very high mechanical protection for shielded sheathed cables and single wire lines in case of heavy impact stress (very good short circuit protection)
- Easy installation thanks to extreme roundness of the tube
- High buckling strength
- Very low shrinkage
- Good cut resistance
- Very flexible, which makes it very easy to lay in tight bending radii
- Good resistance to water, salt spray, cleaning agents, impregnating resins as well as to fuels and lubricants during temporary exposure
- Halogen-free
- Resistant to UV-radiation
- Wide colour spectrum
- Nominal diameter 6,0 mm to 20,0 mm



Tests / References



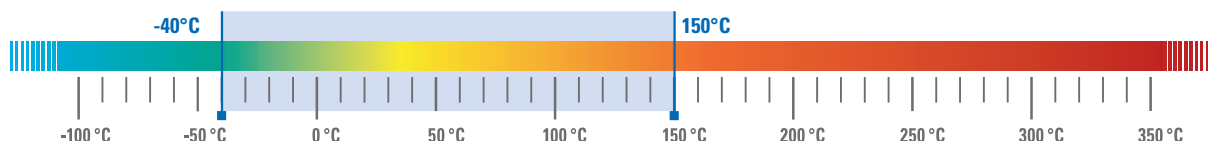
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CRASH PROTECT R

Application temperature



Product description

CRASH PROTECT R was specially designed and developed for applications in the automotive sector. With its mechanically high-quality design, CRASH PROTECT R can be used for e-mobility applications in particular. Very high "CRASH PROTECTION" is provided by the constructively developed and tested textile fibre structure in conjunction with high-quality impregnation that withstands mechanical and thermal stress and meets current environmental requirements. CRASH PROTECT R offers excellent protection for shielded sheathed cables and single wire lines. Good resistance to marten bites is also achieved. The newly developed impregnation binds the textile PES multifilaments well, as a result of which textile fibre dust barely forms during production (cutting, chopping, etc.). The combination of materials, consisting of PES textile fibre braiding and modified impregnation results in particular elasticity, flexibility and extremely high roundness of CRASH PROTECT R. Thanks to its good kinking resistance, stability and particularly pronounced roundness, CRASH PROTECT R is very well suited for processing long harnesses in cable manufacturing. The tube can also be laid in narrow bending radii without any problems thanks to its high flexibility. CRASH PROTECT R is available in black, as well as in the signal colours orange and violet.

Application properties

Property	Standard	Test requirements	Result
Flame resistance	VW 60360-3 DIN 75200 FMVSS 302	Flame height 38 mm Flame exposure 15 s	Self-extinguishing
Shrinkage	VW 60360-3	Storage time 15 min. Temperature 175°C Sample length 200 mm	<3,0%

Ageing

Property	Standard	Test requirements	Result
Short-term ageing 240h / 175°C	VW 60360-3	Winding test	No visible damage
Long-term ageing 3000h / 150°C	VW 60360-3	Winding test	No visible damage

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**CRASH PROTECT R****Mechanical / physical properties**

Property	Standard	Test requirements	Result
Abrasion resistance	VW 60360-3	Temperature 23°C Frequency 8 Hz 7 N	Classification G Extremely high abrasion protection
Increased mech. requirements (Falling tool F1 / Single-core cable)	VW 60360-3	Drop tool 1 T-profile steel	Drop test class E2 50 J ±10%
Increased mech. requirements (Falling tool F1 / Shielded cable)	VW 60360-3	Drop tool 1 T-profile steel	Drop test class B 10 J ±10%
Increased mech. requirements (Falling tool F2 / Single-core cable)	VW 60360-3	Drop tool 2 Outside torx screw M6	Drop test class E 40 J ±10%
Increased mech. requirements (Falling tool F2 / Shielded cable)	VW 60360-3	Drop tool 2 Outside torx screw M6	Drop test class C 20 J ±10%

Compatibilities

Medium	Standard	Test requirements	Result
Ad Blue	Based on VW 60360-3	Storage at 85°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Automatic transmission oil	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Biodiesel	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Break fluid	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Diesel	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Intensive cleaner	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Cold cleaning agent	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Fuel FAM-B	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Penetrating oil	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage

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CRASH PROTECT R
Compatibilities

Medium	Standard	Test requirements	Result
Radiator antifreeze	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Steering gear fluid	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Multigrade engine oil	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Engine compartment sealing	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Grease	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Road saltsolution	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage
Water-Glycol-mixture	Based on VW 60360-3	Storage at 150°C Rewetting or removal after 240h, 480h, 720h and 1000h	Requirements achieved No visible damage

Ecology, Environment & Safety

Ingredients compliant with VDA requirements

IMDS listed

RoHS, GADSL compliant

Non-hazardous to the environment, non-hazardous to water

Non-asbestos, glass fibres non-carcinogenic

When using and disposing the CRASH PROTECT there are no environmentally relevant by-products expected.

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**CRASH PROTECT R****BIW-Standard dimensions****CRASH PROTECT R (Code: CPR)**

On demand individual dimensions available at any time

ID [mm]	Tol. ID [mm]	Wd [mm]	Tol. Wd [mm]	Ring [m]
6.0	+1.50	1.70	±0.20	100 m
7.0	+1.50	1.70	±0.20	100 m
8.0	+1.50	1.70	±0.20	100 m
9.0	+1.50	1.70	±0.20	100 m
10.0	+1.50	1.70	±0.20	50 m
11.0	+1.50	1.70	±0.20	50 m
12.0	+1.50	1.70	±0.20	50 m
12.0	+1.50	1.70	±0.20	50 m
13.0	+1.50	1.70	±0.20	50 m
14.0	+1.50	1.70	±0.20	50 m
15.0	+1.50	1.70	±0.20	50 m
16.0	+1.50	1.70	±0.20	50 m
17.0	+1.50	1.70	±0.20	50 m
18.0	+1.50	1.70	±0.20	50 m
19.0	+1.50	1.70	±0.20	50 m
20.0	+1.50	1.70	±0.20	25 m