

BIW Isolierstoffe GmbH

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Certified management system by:

- IATF16949
- ISO9001
- ISO13485
- ISO14001
- ISO50001



TECHNICAL DATASHEET

INDUSTRIES AND APPLICATIONS



THERMOFLEX RI MARDER

Typical uses

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

Key properties

- Long-term heat resistance of -40°C to +275°C
- Short-term heat resistance up to +300°C
- Institute-tested against marten bites
- Good resistance to water, water-glycol mixture, salt spray, as well as to fuels and lubricants during temporary exposure
- Abrasion classification A, standard VW 60360-3
- Thick-walled, thermally insulated
- Very high mechanical protection for shielded sheathed cables and single wire lines
- Good crash protection
- High buckling and bending resistance
- High cut resistance
- Colour: nature, schwarz
- Nominal diameter 5.0 mm to 30.0 mm



Tests / References



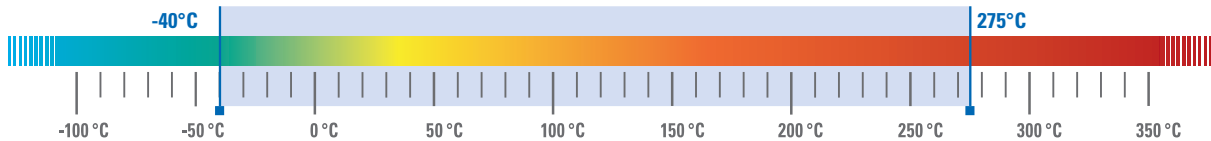
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Application temperature



Product description

THERMOFLEX RI MARDER consists of high thermal load resistant and special braided textile glass fibre (E-glass) and a special silicone resins impregnation. The combination of these materials allows the use of the insulating protection sleeve in automotive sector as cable protection against mar-ten bites and as crash protection. Even on extrem situations the sleeve resists a thermal load up to 450°C. The colour may change (black) at temperatures >300°C. THERMOFLEX RI MARDER is also characterized by good resistance against short-term contact with fuels and lubricants. Water and salt spray does not affect the function of the sleeve. THERMOFLEX RI MARDER is suitable for longer cable sets because of its good buckling resistance. THERMOFLEX RI MARDER is designed as crash protection sleeve without a defined dielectric strength.

Application properties

Property	Standard	Test requirements	Result
Flame resistance	FMVSS 302	Flame height 38 mm Flame exposure 15s	Classification A
Sound damping	VW 60360-3-2019-05	Sample length 190mm ±3,0mm Number measurements 10 Steel bar 8mm Test temperature 23°C ±2°C Stress 0,16N ±0,01N	Classification D / 10,2
Absorbency	LV 312-3_2015-04	DIN EN ISO 9073-6 Immersion depth 30 mm Immersion time 30 min	Requirements achieved
Shrinkage	ISO 6722-1	Temperature 275°C	No shrinkage

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Ageing

Property	Standard	Test requirements	Result
Hydrolysis test	LV 312-3_2015-04	1500h bei 85% relative humidity Winding test at room temperature	Requirements achieved
Short-term ageing 240h / 300°C	VW 60360-3_2019-05	Winding test Breaking force Tear resistance	Requirements achieved
Long-term ageing 3000h / 275°C	in Anlehnung an VW 60360-3_2019-05	Winding test Breaking force Tear resistance	Requirements achieved
Ozone test	DIN 53509-1	Methode B	Requirements achieved
Temperature and humidity cycling	LV 312-3_2015-04	-40°C to + 175°C Humidity: 80-100% Cycles: 40	Requirements achieved

Mechanical / physical properties

Property	Standard	Test requirements	Result
Abrasion resistance	VW 60360-3_2019-05	Test temperature 23±2°C/40±2°C/90±2°C Load 7N Metal mandrel 7mm	Classification A
Increased mech. requirements (Falling tool F1 / Single-core cable)	VW 60360-3_2019-05	Falling tool F1 T-profile steel	Drop test class E-40 / F1 / S-
Increased mech. requirements (Falling tool F1 / Shielded cable)	VW 60360-3_2019-05	Falling tool F1 T-profile steel	Drop test class B-15 / F1 / S+
Increased mech. requirements (Falling tool F2 / Single-core cable)	VW 60360-3_2019-05	Falling tool F2 Torx screw M6	Drop test class C-20 / F2 / S-
Increased mech. requirements (Falling tool F2 / Shielded cable)	VW 60360-3_2019-05	Falling tool F2 Torx screw M6	Drop test classe B-15 / F2 / S+
Notching resistance	LV 312-3_2015-04	LV 112-1 Metal mandrelØ 5mm Speed of testing 10 mm/min.	Classification D high notching resistance
Impact resistance	LV 312-3_2015-04	ISO 6722-1 4h at -40°C	Requirements achieved
Stone chip resistance	LV 312-3_2015-04	DIN EN ISO 20567-1 Method A	Requirements achieved
Tensile strength / elongation at break	VW 60360-3_2019-05	Speed 100 mm/min.	Requirements achieved

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Compatibilities

Medium	Standard	Test requirements	Result
Ad Blue	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Automatic transmission oil	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Biodiesel	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Break fluid	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Diesel	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Intensive cleaner	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Fuel FAM-B	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Penetrating oil	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Radiator antifreeze	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Steering gear fluid	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Multigrade engine oil	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Engine compartment sealing	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Grease	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved
Road saltsolution	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h,1000h Winding test	Requirements achieved

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Compatibilities

Medium	Standard	Test requirements	Result
Water-Glycol-mixture	LV 312-3_2015-04	Storage at 180°C Removal after 240h, 480h, 720h, 1000h Winding test	Requirements achieved

Ecology, Environment & Safety

Ingredients compliant with VDA requirements

IMDS listed

RoHS, GADSL compliant

Non-asbestos, textile glass fibres non-carcinogenic, non-hazardous to the environment, non-hazardous to water.

The textile glass sleeve requires compliance with the industrial hygiene. Workplace ventilation has to be turned away from the worker, sensitive individuals may get slight skin irritation.

When using and disposing the THERMOFLEX RI MARDER protective sleeve there are no environmentally relevant by-products expected.

BIW-Standard dimensions

THERMOFLEX RI MARDER (Code: GHM)

On demand individual dimensions available at any time

ID [mm]	Tol. ID [mm]	Wd [mm]	Tol. Wd [mm]	Ring [m]
5.0	±0.30	1.0	±0.30	100
6.0	±0.30	1.0	±0.30	100
7.0	±0.30	1.0	±0.30	100
8.0	±0.30	1.0	±0.30	100
9.0	±0.50	1.0	±0.30	50
10.0	±0.50	1.0	±0.30	50
11.0	±0.50	1.0	±0.30	50
12.0	±0.50	1.0	±0.30	50
13.0	±0.50	1.0	±0.30	50
14.0	±0.50	1.0	±0.30	50
15.0	±0.50	1.0	±0.30	50
16.0	±0.50	1.0	±0.30	50
17.0	±0.50	1.0	±0.30	50
18.0	±0.50	1.0	±0.30	25

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On demand individual dimensions available at any time

ID [mm]	Tol. ID [mm]	Wd [mm]	Tol. Wd [mm]	Ring [m]
19.0	±0.50	1.0	±0.30	25
20.0	±0.70	1.0	±0.30	25
21.0	±0.70	1.0	±0.30	25
22.0	±0.70	1.0	±0.30	25
23.0	±0.70	1.0	±0.30	25
24.0	±0.70	1.0	±0.30	25
25.0	±0.70	1.0	±0.30	25
26.0	±0.70	1.0	±0.30	25
27.0	±0.70	1.0	±0.30	25
28.0	±0.70	1.0	±0.30	25
29.0	±0.70	1.0	±0.30	25
30.0	±0.70	1.0	±0.30	25