



Rail Solutions

Meeting Your Needs

- A range of products providing:
 - Exceptional abrasion resistance
 - EMI shielding
 - Electrical insulation
 - Fire protection
- Solutions with operating temperatures ranging from -65°C to +260°C (-85°F to +500°F)
- Easy installation
- Comprehensive range of sizes
- Fluid resistant
- Branches accommodated without the need for specific parts

For more information on these products, contact

A.E. Petsche Co.

Unit 37 Suttons Business Park Reading, UK

(+441 189693230)

Email: rail@aepetsche.com



ROHS COMPLIANT Our manufacturing sites are certified ISO 9001, ISO/TS 16949, or AS/EN 9100, and ISO 14001

Flammability/Smoke/Toxicity testing performed on our solutions:

- EN 45545
- NF16101-16102
- DIN 5510 (DB)
- UNI CEI 11170
- PN-K-02511
- UL94 V0
- Zero Halogen content
- REACH/RoHS Compliance
- SMP800C
- BSS7239
- NFPA 130
- ASTM E162-662
- ASTM E1354
- BS6853

Abrasion Protection

Expando® TCP V0	<ul style="list-style-type: none"> • -50°C to +150°C (-58°F to +302°F) • Expansion ratio 1:2 • High flexibility • Low wall thickness
ROUNDIT® 2000 FR	<ul style="list-style-type: none"> • -50°C to +150°C (-58°F to +302°F) • Self-wrapping design • High flexibility • Ideal for fast & easy initial installation as well as rework & retrofit
ROUNDIT® 2000 V0	<ul style="list-style-type: none"> • -50°C to +150°C (-58°F to +302°F) • Self-wrapping design • High abrasion resistance • Ideal for fast & easy initial installation as well as rework & retrofit
ROUNDIT® 2000 NX	<ul style="list-style-type: none"> • -55°C to +200°C (-67°F to +392°F) • Self-wrapping design • BSS 7239 NFPA 130 flammability compliance • Also available in a +260°C (+500°F) version
Silicone Tapes (Supported or unsupported)	<ul style="list-style-type: none"> • -55°C to +260°C (-67°F to +500°F) • Local protection & fitting on sleeve • Open solution compatible with Roundits • Ideal for retrofit & maintenance

Electromagnetic Shielding

ROUNDIT® 2000 V0 EMI	<ul style="list-style-type: none"> • -58°C to +200°C (-67°F to +392°F) • Maximum RO 6 milliohms • Shielding efficiency 55dB at 100 MHz • Also available in a tin plated copper version
ROUNDIT® EMI FMJ	<ul style="list-style-type: none"> • -65°C to +200°C (-85°F to +392°F) • 95% Optical coverage • Maximum RO 5 milliohms • Shielding efficiency 60dB at 100 MHz

Electrical Insulation

GES 40/100	<ul style="list-style-type: none"> • -60°C to +220°C (-76°F to +428°F) • 4 kV to 10 kV dielectric strength • Sizes 0,5 mm to 32 mm • Low wall thickness
Silicone Tapes (Supported or unsupported)	<ul style="list-style-type: none"> • -55°C to +260°C (-67°F to +500°F) • Local protection & fitting on sleeve • Can be installed for local repairs • Available in different colors (Red/brown & black)

Thermal Management

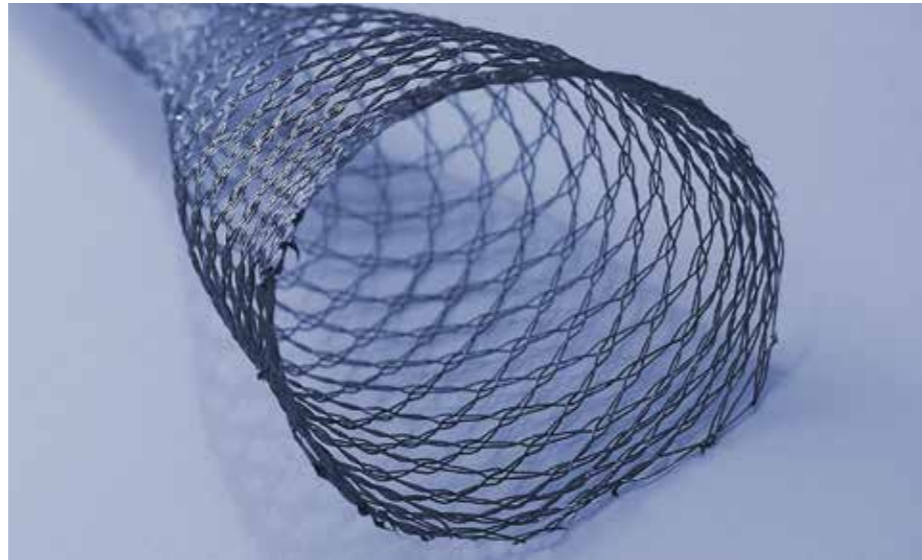
Thermotubix®	<ul style="list-style-type: none"> • -54°C to +260°C (-65°F to +500°F) • Fire protection 15 mins. up to +1100°C & 30 mins. up to +800°C • Protects components in extreme temperatures from molten splashes
Thermojacket® S	<ul style="list-style-type: none"> • Continuous long-term heat protection to +540°C (+1000°F) • BS 6853: Category 1a • Provides excellent long term heat protection for hoses, wire harnesses, and cables

* For more information regarding which Federal-Mogul products were tested to each test method, please contact us.

Expando® B150

Product Highlights

- Operating temperature from -55°C to +150°C (-67°F to +302°F)
- Low toxicity and smoke generation
- Highly expandable design for bundling of wire harnesses over short and long lengths
- Stable construction once expanded
- Time reduction over standard tying methods
- Low profile solution
- EN 45545-2
- Allows visualization of color coding of cables underneath
- Does not trap heat or humidity
- Rot-free



Expando® B150 is a highly expandable sleeve designed for bundling of wire harnesses. Rated to +150°C (+302°F), Expando® B150 meets the standard of the railway industry in terms of flammability.

The design of Expando B150 allows the product to remain stable once expanded and its outstanding expansion range allows it to cover wire harness definitions from 5 to 55 mm with only 3 sizes. A special tool has been designed in 2 choices of lengths to speed-up installation over small and long lengths.

The inherent properties of the raw materials used give Expando B150 low levels of flammability, toxicity and smoke generation.

Expando B150 is used in the railway industry for its outstanding properties in extreme environments and its quick installation compared to standard tying methods. Expando B150 should be considered for railway applications.

Performance Data – Expando® B150

Property	Test Method	Result
PHYSICAL		
Operating temperature range		-55°C to +150°C (-67°F to +302°F)
Flammability/Smoke Density/Toxicity	EN 45545	Pending
MECHANICAL		
Vibration	ASTM D4728	No damage to cables
CHEMICAL		
Fluid Resistance - Hydraulic fluids: NATO.0.156	EN 6059-303 Immersion for 24hrs at +70°C (+158°F)	No visible degradation or alteration after being exposed
Mould Growth	EN6059-306	Pass

Product Specifications

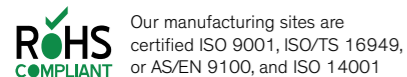
Longitudinal shrinkage should be taken into account when utilizing expansion properties of the sleeve

Commercial Part Number	Recommended Application Range mm (in)		Maximum Opening Diameter (mm)	Maximum Weight g/m (lb/ft)	Standard Packaging (ft)
	Min Ø	Max Ø			
Expando B150 10-X	5 (3/16")	18 (45/64")	25 (1")	2,2 (0,0015)	1200 (3937')
Expando B150 20-X	15 (19/32")	28 (1-3/32")	38 (1-1/2")	3,5 (0,0023)	900 (2953')
Expando B150 40-X	25 (1")	55 (2-5/32")	60 (2-3/8")	5,1 (0,0034)	700 (2297')

Note: X = 0 (black)

Part Numbering System

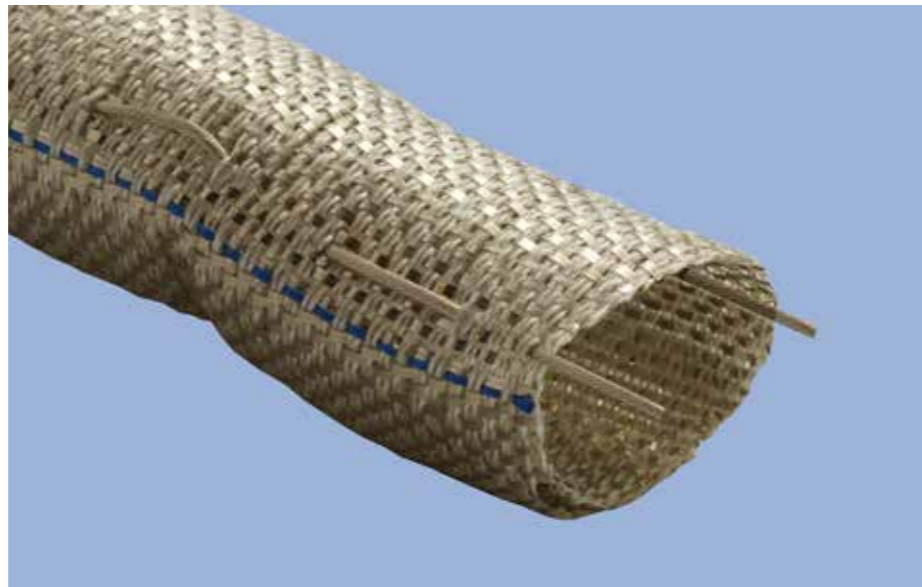
Example	Product Name	Size	Color	Quantity
	Expando B150	10	0 (black)	1200 m (3937 ft)



Roundit® EMI DW

Product Highlights

- Operating temperature -50°C to +200°C (-58°F to +392°F)
- Self-wrapping design
- Fast and easy installation for local EMI protection
- Stable construction
- Integrated drain wires for easy grounding without accessories
- Ideal for reworking components without disconnecting them
- Zero Halogen
- UL 94 V0 Raw material
- Cu/Ni Metal (ASTM B-355 nickel plated copper)
- Good level of EMI shielding
 $RO_{max} = 6 \text{ m}\Omega$
 $Lt = 1.2 \text{ nH/m}$



ROUNDIT® EMI DW is a wrap-around sleeving designed for high performance EMI shielding of wire and cable bundles. ROUNDIT EMI DW is manufactured from UL 94 V0 rated PPS monofilaments and nickel plated copper wires according to ASTM B-355.

The self-wrapping feature of ROUNDIT EMI DW allows for quick and easy installation and removal of the product for assembly and maintenance.

The textile pattern incorporates drain wires which once pulled out of the construction by a simple manual operation can be crimped to a nearby grounding point.

The design offers innovative solutions to the protection of breakout areas and also provides ease of removal when inspection or maintenance of cables is necessary.

The stable construction guarantees the same level of EMI shielding regardless of the diameter on which it is installed within the recommended application range.

As an additional benefit, ROUNDIT EMI DW enables users to stock a limited range of sizes to cover a wide range of cable and wire diameters.

ROUNDIT EMI DW has many applications in the railway, marine and electronics industries.

Performance Data – Roundit® EMI DW

Property	Test Method	Result
PHYSICAL		
Operating temperature range		-50°C (-58°F) to +200°C (392°F)
Heat Aging	EN6059-302 (168 hours)	+200°C (392°F)
Fire / Smoke / Toxicity	UL 94	Raw material classified V0
Nickel plated copper	EN 45545	R22: HL3 R23: HL3
	ASTM B-355	Nickel plated copper
CHEMICAL		
Fluid Resistance - Hydraulic fluids: NATO.0.156	EN 6059-303 Immersion for 24hrs at +70°C D47 1924	No visible degradation or alteration after being exposed
Salt spray resistance	EN2591-307- 96 hours	Pass
EMI PERFORMANCE		
Resistance Measurement EN 3475-301 RO_{max} all sizes = 6 mΩ		
Transfer Impedance IEC 62153-4-3 Triaxial method on straight installation $Lt = 1.2 \text{ nH}$		

Product Specifications

Commercial Part Number	Nominal Size (mm)	Recommended Application Range mm (in)		Maximum Opening Diameter (mm)	Maximum Weight g/m (lb/ft)	Standard Packaging (ft)
		Min Ø	Max Ø			
Roundit EMI DW 32-8	32	23 (15/16")	32 (1-1/4")	7.7	2.5	50 (164')
Roundit EMI DW 45-8	45	33 (1-5/16")	45 (1-3/4")	10.4	3.7	35 (114')

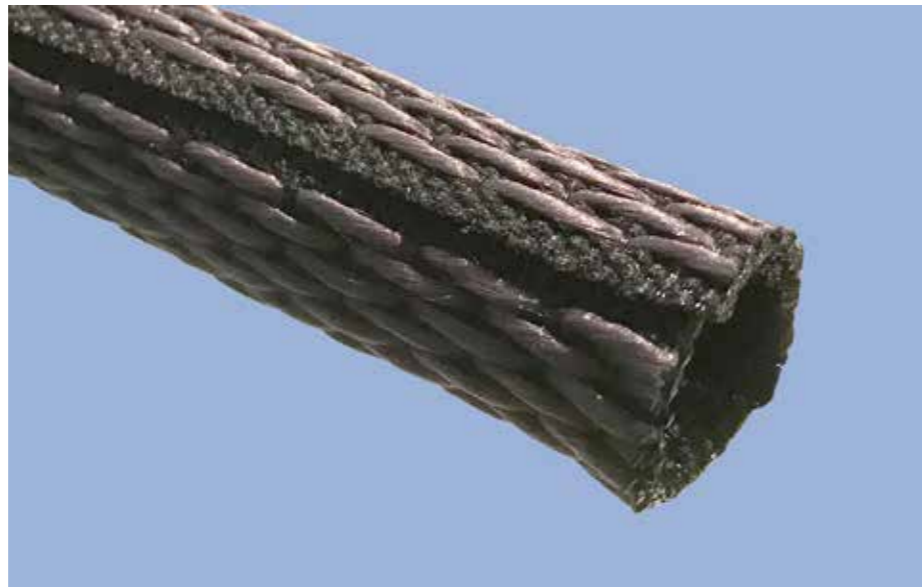
Part Numbering System

Example	Product Name	Size	Color	Quantity
	Roundit EMI DW	45	8 (light grey)	35m

Roundit® 2000 FR GRIP

Product Highlights

- Operating temperature
 -55°C to +85°C
 (-67°F to +185°F)
- Self-wrapping design
- Self-locating above textile hook surface
- Flame resistant
- EN 45545-2
- Zero halogen
- Abrasion resistant
- Easy to apply and remove



ROUNDIT® 2000 FR GRIP is a wrap-around sleeving manufactured from flame-retardant polyester monofilaments and multifilaments, designed for mechanical protection and maintenance of wire and cable bundles. Its construction with 100% covering ratio provides good abrasion resistance.

The self-wrapping feature of ROUNDIT 2000 FR GRIP allows for quick and easy installation and removal of the product for assembly and maintenance. ROUNDIT 2000 FR GRIP may be applied and removed without any manipulation of connectors or fittings and offers an innovative solution in areas where breakouts are necessary.

The unique textile assembly of ROUNDIT 2000 FR GRIP allows self-location of the sleeve when applied on a textile hook surface thus reducing space generated by traditional wire harness fixation systems.

Installation Features

- Ideal for bundling without disconnecting components
- Accommodate break-outs
- Multifilament construction soft to the cables

Performance Data – Roundit® 2000 FR GRIP

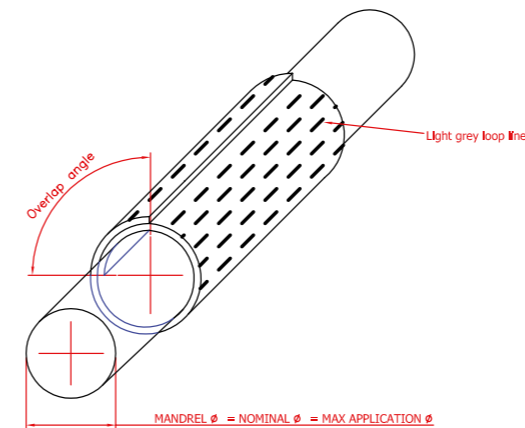
Property	Test Method	Result
Operating temperature		-55°C to +85°C (-67°F to +185°F)
Filament melt temperature		+250°C (+482°F)
Fire / Smoke / Toxicity	EN 45545-2	R22 HL3 R23 HL3
Fluid Resistance – Hydraulic fluids: NATO.0.156	EN 6059-303 Immersion for 24hrs at +70°C (+158°F)	No visible degradation or alteration after being exposed.

All numeric performance data shows average or typical values.

Product Specifications

Commercial Part Number	Nominal Size (mm)	Recommended Application Range mm (in)		Maximum Weight g/m (lb/ft)	Standard Packaging (ft)
		Min Ø	Max Ø		
Roundit 2000FR GRIP	5-0/8 5 (3/16")	1 (1/32")	5 (3/16")	14 (0.00939)	500 (1640')
Roundit 2000FR GRIP	13-0/8 13 (1/2")	8 (5/16")	13 (1/2")	26 (0.01743)	200 (656')

* Nominal size is determined by wrapping the product around a mandrel of a given size to obtain 90 degrees of overlap (average value).



Light grey loop lines for affixing to compatible "hook" surfaces.

Part Numbering System

Example	Product Name	Size	Color	Quantity
	ROUNDIT 2000 FR GRIP	5 0/8	(black w/grey loop lines)	500m (1640 ft)



Arrow Electronics, Inc.
A.E. Petsche

1501 Nolan Ryan Expressway
Arlington, TX 76011, USA

A.E. Petsche Co.

1501 Nolan Ryan Expressway
Arlington, TX 76011
(844-237-7600)

Unit 37 Suttons Business Park
Reading, UK
(+441189693230)

Rubensstraat 104/6
2300 Turnhout, Belgium
(+3214445800)

Pansystem, Via Colleverde 16
00131 Roma
(+39064130978)

Email:
rail@aepetsche.com