

Product Highlights

- Temperature range
-70°C to +125°C
- 1:3 expansion ratio
- Flame resistant
 - VW-1
 - F.A.R Part 25
(Expando FR Plus)
- UL-recognized
- CSA-recognized
(File #LR52852)
- Abrasion resistant
- Self-fitting over many shapes and sizes
- "Plus" version can be cold cut



Expando® FR Expando® FR Plus

Bentley-Harris® Expando FR and FR Plus products are tough, lightweight oversleeves used to protect cable assemblies, hoses and wire harnesses from chafing, cutting and abrading. The open-weave construction of Expando products enables each size to expand to fit several application shapes and sizes. This open-weave construction also makes them highly flexible and resistant to trapping water, heat and humidity.

Expando FR and FR Plus are braided flame retardant polyester (PET) sleeveings designed for applications up to 125°C. Expando FR is UL recognized as a VW-1 component for the sizes from 6 mm to 45 mm. Expando FR Plus is UL recognized as a VW-1 component for all sizes. Expando FR and FR plus are CSA recognized. Expando FR Plus also has F.A.R. Part 25 approval.

A general purpose industrial/commercial product, Expando FR and FR Plus balance the properties of mechanical and thermal stability with economy.

Because of the fray-resistant properties of Expando FR Plus, it can be cut with ordinary scissors.

Expando FR and FR Plus protective oversleeves have many applications in the aeronautical, marine, electronic and general manufacturing industries. The ability of Expando FR and FR Plus to retain flexibility at low temperatures makes it ideal for exposed applications in weather stations, navigation beacons, radar antennas, and airborne and space systems.

Performance Data

Properties	Test method	Result	
Working temperature		-70°C to +125°C	
Melt Temperature	ASTM D-2117	+239°C	
Low Temperature Flexibility	MIL-DTL-23053E	-70°C	
Copper Corrosivity	MIL-I-23053	No effect	
		Expando FR	Expando FR Plus
Flammability	F.A.R. Part 25 UL 1441	VW-1	Pass VW-1
Smoke Density	ASTM E-1354	D _{mc} =5.63	D _{mc} =5.72
Hard Vacuum	ASTM E-595	0.22%	Expando sleeving products made with the patented "Plus" treatment should not be used in hard vacuum environments nor immersed in solvents or liquids where Plus particulates could contaminate the system environment. Consult us for information on protection products for these applications.
● TML		0.03%	
● CVCM		0.11%	
● WVR			
Fluid Resistance	MIL-I-23053	Résistance à la traction	
● JP4 Jet Fuel (MIL-T-5624)		100%	
● Hydraulic Fluid (MIL-H-5606)		100%	
● Lube Oil (MIL-I-7808)		100%	
● De-Icing Fluid (MIL-A-8243)		100%	
● Reference Oil #2 (ASTM D-471)		100%	
● Salt Water (O-S-1926)		99%	

Product Specifications - Expando FR

Description	Recommended application range (mm)		Part number	Weight (g/100m)	Standard packaging (m)
	Min. Ø	Max.Ø			
Expando FR 3	2	6	50210003xx	238	600
Expando FR 6	3	11	50210006xx	357	300
Expando FR 10	5	13	50210010xx	774	150
Expando FR 13	6	19	50210013xx	1146	150
Expando FR 19	12	32	50210019xx	1786	150
Expando FR 32	19	45	50210032xx	2381	75
Expando FR 45	32	70	50210045xx	4018	75
Expando FR 51	38	90	50210051xx	4911	75
Expando FR 64	49	115	50210064xx	6845	75

Product Specifications - Expando FR Plus

Description	Recommended application range (mm)		Part number	Weight (g/100m)	Standard packaging (m)
	Min. Ø	Max.Ø			
Expando FR+ 3	2	6	50210003xx	238	600
Expando FR+ 6	3	11	50210006xx	357	300
Expando FR+ 10	5	13	50210010xx	774	150
Expando FR+ 13	6	19	50210013xx	1146	150
Expando FR+ 19	12	32	50210019xx	1786	150
Expando FR+ 32	19	45	50210032xx	2381	75
Expando FR+ 45	32	70	50210045xx	4018	75
Expando FR+ 51	38	90	50210051xx	4911	75
Expando FR+ 64	49	11	50210064xx	6845	75

xx=color code: 32 = black with two white tracer strands
23 = white with two black tracer strands

Availability

Bentley-Harris® Expando FR and FR Plus is available in sizes from 3 mm to 64 mm. Standard colours are black with two white tracer strands and white with two black tracer strands.

Expando FR and FR Plus is supplied on cardboard spools or cut to length according to your specifications.

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

All numeric data shows average or typical values.



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