



## Product Highlights

- Operating temperature from -70°C to +150°C (-94°F to +302°F)
- VW-1 according to UL 1441
- FAR 25 § 853
- UL Recognized Component
- Does not trap heat or humidity
- Rot-free
- Expandable design accommodates a variety of sizes

**Expando<sup>®</sup> HR Plus** is an expandable sleeve constructed of Halar<sup>®</sup> (E-CT-FE) fluoropolymer that is designed for applications up to +150°C (+302°F). Inherently flame-retardant, it is a UL Recognized Component which meets VW-1 requirements, and will not melt and drip on direct exposure to flame. Expando HR Plus is a special purpose, highly reliable solution for military and aerospace applications. It offers good mechanical properties, performs well in both high and low temperature environments, and has outstanding chemical resistance.

The patented Bentley-Harris Plus treatment makes end termination neater and easier. The Plus treatment creates a webbing between the filaments of the sleeving to reduce end fray during installation, allowing Expando HR Plus to be cut with ordinary scissors. This reduces assembly time and eliminates the need for proper ventilation equipment required for hot-knife cutting.

Expando HR Plus protective oversleeve has many uses in the aerospace, marine, electronic, military, nuclear and general manufacturing industries.

Expando 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.



Our manufacturing sites are certified ISO 9001, IATF 16949, or AS/EN 9100, ISO 14001 and ISO 45001 (Selected Sites)

# Performance Data – Expando® HR Plus

Property	Test Method	Result
Operating Temperature Range		-70°C to +150°C (-94°F to +302°F)
Low Temperature Flexibility	MIL-DTL-23053D	-70°C
Flammability	UL 1441	VW-1
	FAR 25 § 853	Pass
Smoke Density	ASTM E-662	
	Flaming Mode	Dmax <50
	Non-Flaming Mode	Dmax <50
Abrasion resistance	EN 6059 Part 403	Pass

All numeric performance data shows average or typical values. Please consult your sales representative for product drawings, test reports and OEM approvals.

## 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 Weight g/m (lb/ft)	Standard Packaging m (ft)
	Min Ø	Max Ø		
Expando HR Plus 3-XX	2 (3/32")	6 (1/4")	4.42 (0.00297)	610 (2,000')
Expando HR Plus 6-XX	3 (1/8")	11 (7/16")	6.55 (0.00440)	305 (1,000')
Expando HR Plus 13-XX	6 (1/4")	19 (3/4")	19.64 (0.0132)	152 (500')
Expando HR Plus 19-XX	13 (1/2")	32 (1-1/4")	29.47 (0.0198)	152 (500')
Expando HR Plus 32-XX	19 (3/4")	45 (1-3/4")	37.65 (0.0253)	76 (250')
Expando HR Plus 45-XX	32 (1-1/4")	70 (2-3/4")	62.21 (0.0418)	76 (250')
Expando HR Plus 51-XX	38 (1-1/2")	89 (3-1/2")	73.66 (0.0495)	76 (250')

XX = Color Code: 0/9 for black with white tracer  
9/0 for white with black tracer

\* 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 Systems Protection for information on protection products for these applications.

## Part Numbering System

Example	Product Name	Size	Color	Quantity
	Expando HR Plus	3	9/0 (white with black tracer)	610m

United States: (1) 800 926 2472 • México: (52) 442 101 8100 • Brazil: (55) 19 3116 1600  
 EMEA: (33) 3 44 39 06 06 • Japan: (81) 45 330 0300 • China: (86) 21 6182 7560  
 Southeast Asia: (66) 35 276 400 • Korea: (82) 44 861 6368 • India: (91) 124 4784565  
[www.systemsprotection.com](http://www.systemsprotection.com)



For informational purposes only. SP makes no warranties as to the accuracy or completeness of the information provided herein and disclaims any liability in connection with its use. SP's only obligations are those provided in its terms and conditions of sale for this product, and SP will not be liable for any damages, whether direct or indirect, arising out of the use or misuse of this product. Users should undertake their own evaluations to determine the suitability of the product for specific applications. ©2024 Systems Protection - A Tenneco Company, manufacturer of Bentley-Harris protection products.

EXPHRPLUS-GL(EN-A4)A