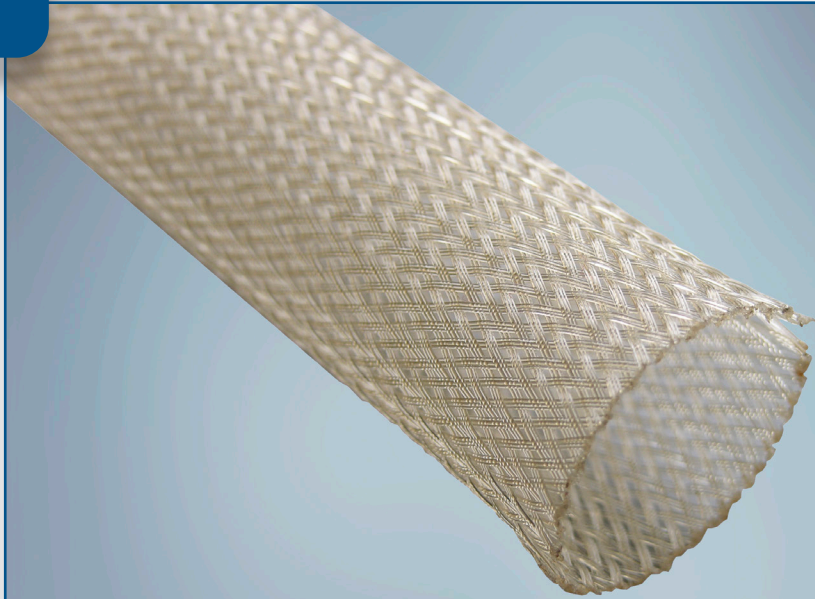


## Product Highlights

- Operating temperature from -70°C to +200°C (-94°F to +392°F)
- Outstanding abrasion protection
- VW-1 acc. to UL 1441
- FAR Part 25
- Halogen-free
- Low toxicity, smoke generation and offgassing
- Does not trap heat or humidity
- Rot-free
- Expandable design accommodates a variety of sizes



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



**Expando<sup>®</sup> 686DM** is an expandable oversleeve designed for mechanical protection in temperature extremes and hostile environmental conditions. Rated to +200°C (+392°F), Expando 686DM meets VW-1 and FAR Part 25 flammability requirements.

Featuring a dual monofilament construction, Expando 686DM blends larger PEEK (polyetheretherketone) guard strands with PPS (polyphenylene sulfide) support strands. The inherent properties of the raw materials give Expando 686DM low levels of flammability, toxicity, smoke generation and hard vacuum offgassing.

Expando 686DM is widely used in the aerospace industry for its outstanding properties in extreme environments. This product should be considered for aircraft, space, military, marine, and hostile-environment applications.

Expando<sup>®</sup> products are tough, lightweight oversleeves used to protect cable assemblies, hoses and wire harnesses from chafing, cutting and abrading. The braided construction of Expando products enables each size to expand to fit several application shapes and diameters. This open textile construction also makes them highly flexible and resistant to trapping water, heat and humidity.

# Performance Data – Expando® 686DM

Property	Test Method	Result
<b>Operating Temperature</b>		-70°C to +200°C (-94°F to +392°F)
<b>Low Temperature Flexibility</b>	MIL-DTL-23053E	-70°C
<b>Flammability</b>	UL 1441 FAR Part 25	VW-1 Pass
<b>Smoke Density</b>	ASTM E-662	D <sub>mc</sub> = 2.3
<b>Oxygen Index</b>	ASTM D-2863	36.5%
<b>Hard Vacuum</b>	ASTM E-595	Meets industry limits:
TML		1.0% max
CVCM		0.1% max
<b>Fluid Resistance</b>	MIL-DTL-23053	No visible degradation
Jet Fuel JP-4 (MIL-T-5624)		
Hydraulic Fluid (MIL-H-5606)		
Lube Oil (MIL-I-7808)		
De-Ice Fluid (MIL-A-8243)		
Reference Oil #2 (ASTM D-471)		
Salt Water (O-S-1926)		

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 686 DM 3-X	2 (3/32")	6 (1/4")	2.3 (0.0015)	610 (2,000')
Expando 686 DM 6-X	3 (1/8")	13 (1/2")	4.9 (0.0033)	305 (1,000')
Expando 686 DM 10-X	5 (3/16")	19 (3/4")	10.2 (0.0068)	152 (500')
Expando 686 DM 13-X	6 (1/4")	22 (7/8")	13.1 (0.0088)	152 (500')
Expando 686 DM 19-X	13 (1/2")	35 (1-3/8")	19.7 (0.0132)	152 (500')
Expando 686 DM 32-X	25 (1")	45 (1-3/4")	26.2 (0.0176)	76 (250')
Expando 686 DM 51-X	38 (1-1/2")	57 (2-1/4")	49.1 (0.0300)	76 (250')

X= Color Code: 0=Black 9=Natural

## Part Numbering System

Example	Product Name	Size	Color	Quantity
	Expando 686DM	13	0 (black)	152m (500 ft)



End view (enlarged diameter) of Expando® 686DM showing PEEK guard strands (larger) and PPS support strands (smaller, gray) in a typical configuration.



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