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## HALAR® EXPANDABLE BRAIDED MONOFILAMENT SLEEVING

- NU-GUARD HR rated for continuous use from -70°C to 150°C.
- Low Temperature Flexibility: -70°C
- Applicable Specifications:
  - UL1441 VW-1 Flame Retardant
  - UL94 V-O Flame Rating
  - FAR25.853 Flammability
- RoHS and WEEE compliant.
- Available Sizes: 1/8" to 2 1/2"
- Packaging: Standard Spools, Bulk Spools, Cut to length.
- Colors: NU-GUARD HR Standard color is Black with a contrasting white diagonal tracer strand. It is also available in white with a contrasting black tracer strand subject to factory quotation upon request.



### DESCRIPTION

NU-GUARD HR is a lightweight, tough expandable sleeving made from .011" (11mil) diameter Halar® Ethylene Chlorotrifluoroethylene (E-CTFE) copolymer monofilament braided into a cylindrical sleeve. NU-GUARD HR exhibits high temperature and flame resistant properties along with excellent abrasion and cut-through resistance, superior resistance to fungus, moisture, gas and most chemicals, and low out-gassing. It will not support combustion and does not melt or drip when exposed to a direct flame source. The open weave construction of the sleeving allows each size to expand to three times its original diameter and contract to provide a snug fit over irregular shapes. The open weave also allows for dissipation of heat and moisture, prevents condensation and provides for complete drainage. NU-GUARD HR can be flexed repeatedly even at low temperatures without losing its physical properties and has the ability to withstand radiation exposure in nuclear applications.

### USES

NU-GUARD HR expandable monofilament braided sleeveings provide a tough, durable protection over tubing, hoses, wire, wire bundles, wire harnesses, cable assemblies and flat ribbon cable where high temperature endurance and flammability are of vital concern. The resistance of the Halar® monofilament to most oils, salt water, fuels (includes jet fuel), cleaners, solvents and chemicals makes it ideal for applications in harsh environments. NU-GUARD HR is used in aerospace, military, electronic, fiber optic and construction applications where high temperature endurance, flame resistance, low-out gassing and low smoke generation are required.

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<b>NU-GUARD HR EXPANDABLE BRAIDED MONOFILAMENT SLEEVINGS</b>		
<b>CHARACTERISTICS OF HALAR® EXPANDABLE SLEEVINGS</b>		
<b>PROPERTY</b>	<b>TEST METHOD</b>	<b>NU-GUARD HR PERFORMANCE</b>
Tensile strength	ASTM D 876	45,000 psi
Elongation	ASTM D 876	25%
Specific Gravity	ASTM D 792	1.68
Moisture Absorption 24 hours	ASTM D 570	0.01%
Shrinkage @ 180°C		3%
Max. Operating temp.	UL 224	150°C
Melt Temperature	ASTM D 2117	240°C
Low Temp. Flexibility	MIL I 23053	-70°C
Flammability	UL 224	VW-1/FR-1
Limiting Oxygen Index	ASTM D 2863	60%
Smoke Density – Max.	ASTM E 662	94
Fungus Resistance	MIL STD 810 (508)	No Growth
Copper Corrosiveness	MIL I 23053	No Effect

## **FLUID RESISTANCE**

Testing verifies that there is virtually no effect on the tensile strength or elongation of NU-GUARD HR when exposed to the following fluids: cleaning fluid, de-icing fluid, fuel oil, gasoline, hydraulic fluid, jet fuel (JP-4), lubricating oil, salt water and solvents.

<b>HIGH TEMPERATURE (HALAR) EXPANDABLE SLEEVING DIMENSIONS</b>				
<b>Nominal I.D. (inches)</b>	<b>Nominal I.D. (mm)</b>	<b>Delfingen Part No.</b>	<b>Size Range (inches)</b>	<b>Approximate weight (lbs / 1000 ft)</b>
1/8	3.18	HT-321	3/32 – 1/8	2.5
1/4	6.35	HT-481	1/8 – 3/8	3.8
7/16	11.11	HT-363	1/4 – 5/8	7.7
1/2	12.70	HT-483	3/8 – 7/8	11.4
3/4	19.05	HT-723	1/2 – 1 3/8	17.2
1 1/4	31.75	HT-963	3/4 – 1 3/4	26.0
1 3/4	44.45	HT-1204	1 1/4 – 2 1/2	40.0
2	50.80	HT-1205	1 3/4 – 3	48.0
2 1/2	63.50	HT-1206	1 1/2 – 3 1/2	59.8

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