



# UNIGARD™ HP DFDA-6530 NT

## Halogenated Flame Retardant Insulation Compound

**Overview** UNIGARD™ HP DFDA-6530 NT is a flame retardant, irradiation crosslinkable, polyethylene copolymer wire insulation material. It is recommended for use in 600 volt power cable and control cable applications and is suitable for 90°C service in wet locations.

UNIGARD™ HP DFDA-6530 NT is formulated for use in XHHW, RHW, RHH, SIS, and USE A, B or C applications and is VW-1 on 14 AWG wire with a 30 mil (0.76 mm) insulation wall thickness. This compound has been approved for constructions for UL Style 20292. Each manufacturer must contact UL regarding approval requirements for the intended application. Optimum performance is obtained at an irradiation dosage level of 20 megarads.

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	1.30 g/cm <sup>3</sup>	1.30 g/cm <sup>3</sup>	ASTM D1505
Mechanical	Nominal Value (English)	Nominal Value (SI)	Test Method
Tensile Strength	1800 psi	12.4 MPa	ASTM D638
Tensile Elongation (Break)	250 %	250 %	ASTM D638
Flexural Modulus - 1% Secant	15000 psi	103 MPa	ASTM D790
Aging	Nominal Value (English)	Nominal Value (SI)	Test Method
Retention of Tensile Elongation - 7 days 250°F (121°C)	95 %	95 %	ASTM D638
Retention of Tensile Strength - 7 days 250°F (121°C)	100 %	100 %	ASTM D638
Electrical	Nominal Value (English)	Nominal Value (SI)	Test Method
Dielectric Constant (60 Hz)	3.20	3.20	ASTM D150
Dissipation Factor (60 Hz)	3.0E-3	3.0E-3	ASTM D150
Insulation Resistance - in water (60°F (16°C))	50000 Mohms/1000 ft	50000 Mohms/1000 ft	UL 44
SIC			UL 44
in water 75°C (167°F), after 24 hrs	3.23	3.23	
in water 75°C (167°F), increase, 1 to 14 days	2.0 %	2.0 %	
in water 75°C (167°F), increase, 7 to 14 days	0.10 %	0.10 %	
Flammability	Nominal Value (English)	Nominal Value (SI)	Test Method
Oxygen Index	28 to 30 %	28 to 30 %	ASTM D2863
Flame Test - Horizontal	Pass	Pass	UL 44
VW-1	Pass	Pass	UL 44

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**Extrusion Notes**

Conditions for a commercial extrusion run using DFDA-6530 NT are shown below. Using these conditions with a standard polyethylene screw afforded high quality finished wire. Exact extrusion characteristics will, of course, be dependent on the equipment in use and can only be determined during cable trials. Hopper drying at 150°F (66°C) before extrusion is recommended to remove moisture and diminish the possibility of die drool. Drying time is 4-6 hours.

**Compound**

- DFDA-6530 NT on #14 Solid Copper Conductor with 0.030" (0.76 mm) Wall Thickness.

**Extruder**

- Screw L/D: 15:1 to 20:1
- Screw Suggested: Single Flight
- Compression Ratio: 2.5:1 to 3.5:1
- Screen Pack: 40/20 mesh

**Extrusion Temperatures**

- Typical conditions for 2.5 in diameter 24:1 L/D extruder
- Barrel Feed Zone: 255°F (124°C)
- Barrel Center Zone: 255°F (124°C)
- Barrel Metering Zone: 260°F (127°C)
- Crosshead:
  - Head: 255°F (124°C)
  - Die: 250°F (121°C)
  - Melt Temperature: 265°F (129°C)
- Screw:
  - Circulating Water: 170°F (77°C)

**Coloring**

- UNIGARD™ HP DFDA-6530 NT is a colorable compound. Our experience has been that the color masterbatch materials recommended for use with polyethylene wire and cable products serve the purpose in the DFDA-6530 NT. Generally speaking, color masterbatch added at the two percent by weight level gives adequate color and disperses well in the extrusion process.

Irradiation Processing Parameters: E-BEAM Services, Inc. Cranbury, NJ utilizing RDI 4.5 MeV Dynamitron accelerator. Respective voltage/current is 3.0 MeV/28 - 48 Ma.

**Notes**

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

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