

Halar® 558

ethylene chlorotrifluoroethylene copolymer

Halar® 558 fluoropolymer is a foamable grade for wire coating, including primary insulations, coaxial cable cores, cross-webs, fire alarm cable, jackets, and foam tubing. Like other grades of Halar® resin, this grade of resin offers broad use temperature capability, from cryogenic temperatures to 150°C, and excellent chemical

resistance to a wide variety of acids, bases and organic solvents. Cables incorporating Halar® 558 have met the fire performance requirements called out in NFPA 90a ("Standard for Air-Conditioning and Ventilating Systems"). To meet these requirements they must pass NFPA 262 Standard Method of Test for Flame Travel and Smoke of Wire and Cables.

General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Additive	• Blowing Agent • Nucleating Agent	• Processing Aid
Uses	• Cable Jacketing	• Electronic Insulation
Agency Ratings	• NFPA Code 90a	• UL 444
Forms	• Pellets	
Processing Method	• Foam Extrusion	

Physical

	Typical Value	Unit	Test method
Density / Specific Gravity ¹	1.68		ASTM D792
Melt Mass-Flow Rate (MFR) ¹	15 to 20	g/10 min	ASTM D3275
Water Absorption (Equilibrium)	< 0.10	%	ASTM D570

Thermal

	Typical Value	Unit	Test method
Melting Temperature	242	°C	DSC

Flammability

	Typical Value	Unit	Test method
Flame Rating	V-0		UL 94
Oxygen Index (1.60 mm)	52	%	ASTM D2863

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Additional Information

Color Master Batches

- In common with all other grades of Halar resins, Halar 558 can be easily pigmented with commercially available color concentrates. When coloring primary insulation with color concentrates it is highly recommended that the percentage used less than 1% by weight. This is due to the fact that color concentrates will affect the electrical properties of the primary insulation.

Safe Handling and Use

- Processing of Halar 558 fluoropolymer at temperatures above 572°F (300°C) is not recommended. Thermal degradation can occur at significant rates. When degradation occurs Halar 558 liberates hydrochloric acid (HCL) and hydrofluoric acid (HF) which are irritating, corrosive, and toxic gases at relatively low concentrations. Please refer to the Safe Handling of Fluoropolymer Resins published by the Society of Plastics Industry.
- To avoid inhalation of decomposition products, it is recommended that adequate local ventilation in the form of hoods or flexible duct be utilized to remove extrusion fumes. If handled inappropriately Halar 558 may release harmful toxic chemicals.

Extrusion	Typical Value	Unit
Cylinder Zone 1 Temp.	243	°C
Cylinder Zone 2 Temp.	249	°C
Cylinder Zone 3 Temp.	263	°C
Cylinder Zone 4 Temp.	280	°C
Flange Temperature		
Flange 1	252	°C
Flange 2	252	°C
Throat Temperature	243	°C
Crosshead Temperature	254	°C
Die Holder Temperature	246	°C
Die Temperature	274	°C
Screw L/D Ratio	24.0:1.0	

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Extrusion Notes

Halar 558 resin is a completely pre-compounded fluoropolymer which contains a nucleating agent, a chemical blowing agent that decomposes when the resin is extruded and a processing aid. There is no need to inject nitrogen gas into the system. The closed cell voids may be controlled from 0-70% by adjusting processing conditions such as melt temperature, head pressure and quench rates. If it is desired to reduce void content through reduction of blowing agent Halar 558 may be blended with Halar 500.

Halar 558 has been processed successfully with a number of different screw designs including a standard fluoropolymer design, with or without a pineapple mixing head including 3:1 compression ratio with 12/5/9 flights of feed/transition/compression respectively. Specific screws to avoid are rapid (1-2 flight) transition and Maddox mixing head designs.

Equipment/Tooling Recommendations

- Extruder Size: 1in to 2.5in
 - Extruder L/D: 24:1
 - Screens: 40 / 60
 - Crosshead Type: Fixed or Adjustable
 - Cone Length: 0.25in to 0.75in
 - Line Speed: Up to 1700 fpm
 - Tooling Set: Pressure
 - Blow Up Ratio: 1.75 to 2.75
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Notes

Typical properties: these are not to be construed as specifications.

¹ Density and MFR are measured on the base ECTFE resin before the addition of foaming agent. If density and MFR are measured on compounded 558, these values can vary significantly due to interaction of foaming agent with process conditions during sample preparation.

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