

# Cable Tie Material Specifications

## GENERAL PURPOSE APPLICATIONS

### Nylon 6/6 - General Purpose

General purpose nylon 6/6 is suitable for use in most practical applications at a continuous temperature up to 150°F. Nylon 6/6, the grade most often used for cable tie production, meets UL 94V-2 flammability ratings. Its working temperature range is from 40°F to 185°F.

## OUTDOOR APPLICATIONS

### Nylon 6/6 - UV Stabilized

UV Stabilized Nylon 6/6 is used in continuous or extended exposure to outdoor use. The nylon cable tie is a weather resistant grade, enduring additional ultraviolet (UV) light. This grade is produced by incorporating stabilizers in the nylon resin. UV Stabilized Nylon cable ties are available only in black.

### Nylon 6/6 - UV Stabilized/Heat Stabilized

Heat Stabilized Nylon 6/6 is used in continuous or extended exposure to high temperatures (up to 250°F). A general-purpose nylon will have a reduction in physical properties and fatigue as a result of high temperatures. Nylon cable ties containing specially formulated heat stabilizers provide additional thermal endurance. Heat stabilized nylons are engineered for continuous exposure to temperatures above 185°F, which meet UL standards for electrical applications.

## CHEMICAL RESISTANT APPLICATIONS

### Polypropylene - General Purpose

Polypropylene is used in environments where chemical effects on nylon are a concern, because it is not affected by inorganic acids (hydrochloric), polyhydric alcohols (ethylene glycol), neutral salts (sodium chloride), and basic salts (sodium bicarbonate). Polypropylene also resists a number of other chemicals with good results although it has a lower tensile strength than nylon 6/6. In addition, this material has the ability to withstand ultraviolet light exposure.

### Tefzel\*

Although weaker than general purpose nylon 6/6 (about 37%), Tefzel is resistant to a wide range of chemicals such as concentrated hydrofluoric and sulfuric acids. It is also a low water absorbing material; therefore, moisture has a minimal effect on it. Tefzel is radiation resistant up to 100 megarads and meets IEEE requirement 333. Tefzel also withstands high temperatures, ultraviolet light exposure, and meets UL flammability requirement 94V-0.

## FLAME RETARDANT APPLICATIONS

### Halar\*

Halar is similar to Tefzel in performance. Its outstanding characteristic is a lower smoke density when burned. This makes Halar more desirable for use in areas where smoke generation is a concern, as when bundling wire in plenum spaces.

### FLEXties (Hook & Loop Cable Ties)

#### HTH (888)

A unique back-to-back fastening system featuring a polyethylene hook laminated to a nylon loop without the use of an adhesive.

#### HTH (889)

A flame retardant version. This product meets UL requirements for a rating of 94-V-2 and also meets requirements for FAR 25.853 A/B. Specified configurations of black HTH (889) meet the requirements for use in air handling applications in accordance with NEC's section 300-22 (C) & (D).



MATERIAL	CONTINUOUS OPERATING TEMPERATURE		TENSILE STRENGTH AT 73°F DRY AS MOLDED ASTM-D-638 (psi)	UL FLAME RATING	OXYGEN INDEX %	GAMMA RADIATION RESISTANCE	UV RESISTANCE	MILITARY, FEDERAL, AND ASTM SPECIFICATIONS
	MAX.	MIN.						
Nylon 6/6-General Purpose	185°F 85°C	-40°F -40°C	12,000	94V-2	28	1 x 10 <sup>5</sup> RADS	Poor	ASTM-D4066 PA111 FDA CFR 177.1500
Nylon 6/6- Heat Stabilized	220°F 105°C	-40°F -40°C	12,000	94V-2	26	1 x 10 <sup>5</sup> RADS	Poor	ASTM-D4066 PA121
Nylon 6/6- UV Stabilized	185°F 85°C	-40°F -40°C	12,000	94V-2	NA	1 x 10 <sup>5</sup> RADS	Very Good	ASTM-D4066 PA181
Nylon 6/6- Heat & UV Stabilized	220°F 105°C	-40°F -40°C	12,000	94V-2	25	1 x 10 <sup>5</sup> RADS	Very Good	ASTM-D4066 PA121
Nylon 6/6-Flame Retardant	185°F 85°C	-40°F -40°C	10,800	94V-0	34	1 x 10 <sup>5</sup> RADS	Poor	
Nylon 6/6-High Impact Weather Resistant	185°F 85°C	-40°F -40°C	8,800	94-HB	19	1 x 10 <sup>5</sup> RADS	Good	ASTM-D4066 PA171
Nylon 4/6-Heat Stabilized	275°F 135°C	-40°F -40°C	14,400	94V-2	27	9 x 10 <sup>6</sup> RADS	Poor	
Nylon 12-UV Stabilized	176°F 80°C	-40°F -40°C	5,800	94-HB	NA	1 x 10 <sup>5</sup> RADS	Very Good	ASTM-D4066 PA411
Polypropylene-General Purpose	185°F 85°C	-40°F -40°C	3,400	94-HB	NA	1 x 10 <sup>6</sup> RADS	Poor	ASTM-D4101
Tefzel*	302°F 150°C	-50°F -46°C	7,500	94V-0	30	2 x 10 <sup>8</sup> RADS	Excellent	UL 83 ASTM-D2633 ASTM-D3159 Type I
Halar*	284°F 140°C	-50°F -46°C	7,000	94V-0	60	2 x 10 <sup>8</sup> RADS	Excellent	ASTM-D3275 Type II

\*Tefzel is a registered trademark of E.I. DuPont Corporation.

\*Halar is a registered trademark of Solvay Solexis, Inc.