

## Cable Ties for Special Environments

### Material Selection Ordering Guide

Thomas & Betts offers Ty-Rap® cable ties and accessories in a wide variety of materials, each suited for specific environments. The purpose of this document is to assist you in choosing the best material for your particular application. The effects of weathering, flame, chemicals, extreme temperatures, and radiation on the different materials are clearly presented in the following tables to simplify this process. Once you have determined the most suitable material, you can choose from the wide variety of Ty-Rap® cable ties, identification ties, mounting bases, lashing ties, etc., offered by Thomas & Betts.

#### How to use Table 1:

Table 1 simplifies the material selection process by giving the relative performance ratings of the materials offered by Thomas & Betts. For example, if your application is in an extremely cold environment, four materials will answer your need: Fluoropolymer, nylon 12, Halar® (\*), and stainless steel. Then, cost may be your next most important criteria, so out of those four options, nylon 12 would be the most cost effective. However, if tensile strength is important, then stainless steel would be the better choice.

Refer to tables 2 (page C37) and 3 (pages C38-C40) for more detailed information regarding physical properties of the materials and chemical resistance of the materials respectively.

It is extremely difficult to provide data on all the possible combinations or conditions that can occur. This information is based on data provided by the manufacturers of the specific materials listed and is provided only as a general guide. No specific recommendation is intended. As each application may differ, cable tie samples should be tested in the intended application by the user to determine suitability.

\* Halar® is the trademark of Solvay Solexis, Inc.

**TABLE 1**

**Available Materials** **5 = Most Suitable** **1 = Least Suitable**

	Natural Nylon 6/6	Weather Resistant Nylon 6/6	Heat Stabilized Natural Nylon 6/6	Flame Retardant Nylon 6/6	Weather Resistant Nylon 12	Resistant Polypropylene	Fluoro-polymer	Weather Halar®	Stainless Steel	Weatherable Acetal
Ultraviolet Resistance	1	4	1	1	4	4	5	5	5	4
Radiation Resistance	1	1	1	1	1	1	4	4	5	1
Low Temperature	3	3	3	2	4	3	4	4	5	4
High Temperature	3	3	4	3	2	2	4	4	5	2
Flammability	3	3	3	4	1	1	4	4	5	1
Tensile Strength	3	3	3	3	2	1	3	3	5	2
Relative Cost	Low	Low	Low	Med	Med	Low	High	High	High	High
Chemical Resistance	See Table 3									

## Cable Ties for Special Environments

Perfect for outdoor applications!



**Colour** — Black  
For use in temperatures ranging from -60°C to 105°C (-76°F to 221°F)

- Ideal for Industrial OEM and MRO (includes, but not limited to industrial, lawn/garden/farming equipment, recreation vehicles, heavy equipment)
- Can be placed in environments requiring heat stabilization and UV resistance
- Provides a smooth, low-profile look and offers unlimited tensioning range for a perfect fit
- Features an oval head on every original Ty-Rap® Cable Tie
- Quicker to install and less expensive than metallic fasteners, lacing cord or tape
- Made of UV resistant, heat-stabilized nylon



Bulk Cat. No.	Type DSG	Usage	Length (in./mm)	Tensile Strength (lb./N)	Bulk Pkg.
<b>Ty-Rap® Heat Stabilized/Ultraviolet Resistant Cable Ties</b>					
TY23MX-A	2/21	Indoor/ Outdoor	3.62/91.95	18/80.00	1,000
TY24MX-A			5.50/139.70	30/133.00	
TY25MX-A	2S/21S		7.31/185.67	50/222.00	
TY27MX-A			13.40/340.36	120/540.00	500



## Beat the heat!

- Ideal for Industrial OEM and MRO (includes, but not limited to metal processing, paper mills, lighting and commercial construction markets with high temperature environments up to 150°C (302°F))
- Provides a smooth, low-profile look and offers unlimited tensioning range for a perfect fit
- Features an oval head on every original Ty-Rap® Cable Tie
- Quicker to install and less expensive than metallic fasteners, lacing cord or tape
- Made of extra high-temperature resistant nylon



Bulk Cat. No.	Type DSG	Usage	Length (in./mm)	Tensile Strength (lb./N)	Bulk Pkg.
<b>Ty-Rap® Extra High-Temperature Cable Ties</b>					
TYHT23M	1/11	Indoor Only	3.62/91.9	18/80	1,000
TYHT24M			5.5/139.7	40/178	
TYHT25M			7.31/186	50/222	
TYHT27M			13.4/340	120/534	500
TYHT28M*			14.2/361	50/222	1,000

\*UR Pending



**Colour** — Olive  
For use in temperatures ranging from -40° to 150°C (-40° to 302°F)

## Cable Ties for Special Environments



Detectable using metal detection and X-ray detection systems and visions systems. Polypropylene parts are also bouyant in liquid application.

**Material** — Polyamide (Nylon 6/6) or Polypropylene

**Colour** — Blue

For use in temperatures ranging from -40°C to 85°C (-40°F to 185°F).

### Typical Applications

- Food and beverage processing
- Pharmaceutical production
- Chemical and compounds manufacturing
- Tobacco processing
- Tire and airbag manufacturing
- Any other industry sensitive to contamination and using detection equipment

Cat. No.	Length (in./mm)	Body Width (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Base Material	Std. Pkg.
<b>Ty-Rap® Detectable Cable Ties</b>						
<b>TY523M-NDT</b>	3.62/91.95	0.09/2.29	0.63/16.00	18/80	Nylon	100
<b>TY525M-NDT</b>	7.31/186.00	0.19/4.70	1.75/44.40	50/220		50
<b>TY527M-NDT</b>	13.40/340.00	0.27/6.86	3.50/89.00	120/540		
<b>TY528M-NDT</b>	14.20/36.00	0.19/4.70	4.00/102.00	50/220	Polypropylene	100
<b>TY523M-PDT</b>	3.62/91.90	0.09/2.29	0.63/16.00	18/80		50
<b>TY525M-PDT</b>	7.31/186.00	0.19/4.70	1.75/44.40	30/135		
<b>TY527M-PDT</b>	13.40/340.00	0.27/6.86	3.50/89.00	60/267		
<b>TY528M-PDT</b>	14.20/36.00	0.19/4.70	4.00/102.00	30/135		100



Make safety a priority!

This material meets UL 94V-0 flammability rating.

**Colour** — White

For use in temperatures ranging from -20°C to 65°C (-4°F to 149°F).

Cat. No.	Type DSG	Usage	Length (in./mm)	Body Width (in./mm)	Max. Wire Bundle Dia. (in./mm)	Marking Pad Size (in./mm) W x H	Tensile Strength (lb./N)	Std. Pkg.
<b>Ty-Rap® Cable Ties – Flame Retardant Nylon 6/6</b>								
<b>TY23MFR</b>	2/21	Indoor/ Outdoor	3.62/91.95	0.09/2.29	0.63/16.00	N/A	18/80.07	1,000
<b>TY232MFR</b>			8.00/203.20	0.09/2.29	2.00/50.80		40/177.90	
<b>TY24MFR</b>			5.50/139.70	0.14/3.56	1.13/28.70		50/222.40	
<b>TY25MFR</b>	2S/21S		7.31/185.67	0.18/4.57	1.75/44.45		120/533.80	500
<b>TY28MFR</b>	2/21		14.20/360.68	0.18/4.57	4.00/101.60			
<b>TY272MFR</b>	2S/21S		8.00/203.20	0.27/6.86	2.00/50.80			
<b>TY27MFR</b>		13.20/335.28	0.27/6.86	3.50/88.90				
<b>TY53MFR</b>	N/A	N/A	4.00/101.60	0.09/2.29	0.63/16.00	0.81 x 0.36/20.57 x 9.1	18/80.07	
<b>TY153MFR</b>			4.35/110.49	0.10/2.54	0.63/16.00	0.78 x 1/19.81 x 14.00		



This material provides very good resistance to ultraviolet light and chemical exposure. Nylon 12 is a lower, moisture-absorbing material than nylon 6/6 and the effect of water on properties is much less.

**Colour** — Black

For use in temperatures ranging from -40°C to 85°C (-40°F to 185°F).

Std. Cat. No.	Bulk Cat. No.	Length (in./mm)	Body Width (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Std. Pkg.	Bulk Pkg.
<b>Ty-Rap® Nylon 12 Cable Ties – Ultraviolet and weather-resistant!</b>							
<b>TYC525MX</b>	<b>TYC25MX</b>	7.31/185.67	0.18/4.57	1.75/44.45	35/155.70	100	1,000
–	<b>TYC28MX</b>	14.20/360.68		4.00/101.60		–	
–	<b>TYC272MX</b>	8.00/203.20	0.27/6.86	2.00/50.80	85/378.10	50	500
<b>TYC527MX</b>	<b>TYC27MX</b>	13.20/335.28		3.50/88.90			
–	<b>TYC29MX</b>	30.00/762.00	0.30/7.62	9.00/228.60		–	

## Cable Ties for Special Environments



Engineered to withstand high temperatures!

Material meets ASTM D4066 PA121.

**Colour** — Green Tint

For use in temperatures ranging from -60°C to 105°C (-76°F to 221°F).

Cat. No.	Type DSG	Plenum Rating	Usage	Length (in./mm)	Body Width (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Std. Pkg.
<b>Ty-Rap® Heat Stabilized Ties</b>								
<b>TYH23M</b>	2/21	AH-2	Indoor Only	3.62/91.95	0.09/2.29	0.63/16.00	18/80.07	1,000
<b>TYH232M</b>				8.00/203.20		2.00/50.80		
<b>TYH24M</b>				5.50/139.70	0.14/3.56	1.13/28.70	40/177.90	
<b>TYH242M</b>				8.19/208.03		2.00/50.80		
<b>TYH26M</b>				11.10/281.94		3.00/76.20	30/135	
<b>TYH25M</b>	2S/21S	AH-2	Indoor Only	7.31/185.67	0.18/4.57	1.75/44.45	50/222.40	500
<b>TYH253M</b>				11.40/289.56		3.00/76.20		
<b>TYH28M</b>				14.20/360.68	0.27/6.86	4.00/101.60		
<b>TYH27M</b>				13.20/335.28		3.50/88.90		
<b>TYH272M</b>				8.75/222.25		2.00/50.80		
<b>TYH29M</b>	30.00/762.00	0.30/7.62	9.00/228.60	120/533.80				



Many factors combine to determine the useful life of a cable tie, but none is as important as chemical exposure. Polypropylene cable ties are ideally suited for chemical environments.

**Colour** — Black

For use in temperatures ranging from -40°C to 85°C (-40°F to 185°F).



Cat. No.	Body Width (in./mm)	Length (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Std. Pkg.
<b>Ty-Rap® Weather-Resistant Polypropylene Ties</b>					
<b>TYP23MX</b>	0.09/2.29	3.62/91.95	0.63/16.00	18/80.07	1,000
<b>TYP25MX</b>	0.18/4.57	7.01/178.05	1.75/44.45	30/133.40	
<b>TYP28MX</b>		13.92/353.57	4.00/101.60	60/266.90	
<b>TYP27MX</b>	0.27/6.86	13.17/334.52	3.5088.90		500



**Colour** — Maroon

For use in temperatures ranging from -45°C to 140°C (-49°F to 284°F).



Ty-Rap® cable ties, made of Halar®, are designed for use in air-handling spaces. Due to its UL 94V-0 flammability rating and low-smoke density characteristics, Halar® material is most suitable in applications where flame resistance and smoke generation is a concern.

Std. Cat. No.	Bulk Cat. No.	Type DSG	Usage	Body Width (in./mm)	Length (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Std. Pkg.	Bulk Pkg.
<b>Halar®* Cable Ties</b>									
<b>TYV523M</b>	<b>TYV23M</b>	2/21	Indoor Only	0.09/2.29	3.62/91.95	0.63/16.00	18/80.07	100	1,000
<b>TYV525M</b>	<b>TYV25M</b>			0.18/4.57	7.31/185.67	1.75/44.45	50/222.40		

\* Solvay Solexis, Inc. registered trademark.

CSA Certified Natural 6/6 Nylon Cable Ties are suitable for use in air handling plenum spaces in accordance with rules 12-010 (3), (4) and (5), and 12-020 of the CEC.



Fluoropolymer cable ties offer high-radiation resistance and temperature stability from -60°C to 170°C (-76°F to 338°F). Also, fluoropolymer provides excellent resistance to ultraviolet light and meets UL flammability rating 94V-0.

**Colour** — Aqua



Std. Cat. No.	Bulk Cat. No.	Type DSG	Usage	Body Width (in./mm)	Length (in./mm)	Max. Wire Bundle Dia. (in./mm)	Tensile Strength (lb./N)	Std. Pkg.	Bulk Pkg.
<b>Ty-Rap® Nylon 12 Cable Ties – Ultraviolet and weather-resistant!</b>									
<b>TYZ523M</b>	<b>TYZ23M</b>	2/21	Indoor Only	0.09/2.29	3.62/91.95	0.625	18/80.07	100	1,000
<b>TYZ525M</b>	<b>TYZ25M</b>			0.18/4.57	7.31/185.67	1.750	50/222.40		
<b>TYZ528M</b>	<b>TYZ28M</b>			0.18/4.57	14.19/360.43	4.000	50/222.40	50	100
<b>TYZ527M</b>	<b>TYZ27M</b>			0.27/6.86	13.38/339.85	3.500	120/533.80		

CSA Certified Natural 6/6 Nylon Cable Ties are suitable for use in air handling plenum spaces in accordance with rules 12-010 (3), (4) and (5), and 12-020 of the CEC.