



UV Black Cable Ties

Technical Specifications

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Overview

Kable Kontrol UV Black Cable Ties use **Vydyne 21SPF/21SPG** ; a specialized polyamide nylon 6-6. It is particularly suitable for applications where sunlight and UV exposure is high due to its carbon black additive. This material has an operating temperature of -40°F to + 185°F. Additionally, it is notable for its mechanical strength, weather resistance, and good resistance to bases, oils, greases, oil derivatives, and chloride solvents.

Kable Kontrol UV Black Cable Ties are infused with carbon black. This specialized *Ascend* material ensures UV stability equivalent to 12 years of weather exposure.

Country of Origin: China

SKU	Length	Width	Strength	Pack Quantity
CT242	4"	2.5mm	18 lbs.	100 1000
CT506	5.5"	2.5mm	18 lbs.	1000
CT507	5.5"	3.5mm	40 lbs.	1000
CT25	8"	2.5mm	18 lbs.	1000
CT243	8"	3.5mm	40 lbs.	1000
CT266	8"	4.8mm	50 lbs.	100 1000
CT278	8"	7.9mm	120 lbs.	100
CT102	9"	12.7mm	250 lbs.	100
CT267	11"	4.8mm	50 lbs.	100 1000
CT277	11"	7.6mm	120 lbs.	100
CT268	14"	4.8mm	50 lbs.	100 1000
CTUV-14-75-100-BK*	14"	4.8mm	75 lbs.	100
CT274	14"	7.6mm	120 lbs.	100
CT15BK	15"	12.7mm	250 lbs.	100
CT7109	18"	7.6mm	120 lbs.	100
CT-18-175-BK	18"	9mm	175 lbs.	100
CT19BK	19"	12.7mm	250 lbs.	100
CT104	22"	12.7mm	250 lbs.	100
CT-24-BK-100PK	24"	9mm	175 lbs.	100
CT276	28"	9mm	175 lbs.	100
CT275	32"	9mm	175 lbs.	50
CT299	36"	4.8mm	50 lbs.	100
CT297HV-50	36"	9mm	175 lbs.	50
CT40BK-50	40"	12.7mm	250 lbs.	50
CT293	48"	9mm	175 lbs.	50
CT298B	60"	9mm	175 lbs.	50

SKU's followed by an asterisk (*) currently do not possess a UL listing.

Physical Properties		Test Conditions	Dry as Moulded	Conditioned 2.5% Moisture
Specific Gravity (g/cm³)		ISO 1183	1.14	-
Mold Shrinkage (%)		ISO 294-4		
2 mm—Parallel			1.6	-
2 mm—Normal			2.1	-
Water Absorption @ 23°C (%)		ISO 62		
24 Hours			1.3	-
Equilibrium at 50% RH			2.4	-
Mechanical Properties		Test Conditions	Dry as Moulded	Conditioned 2.5% Moisture
Tensile Strength @ Yield (MPa)		ISO 527	85	62
Tensile Strength @ Break (MPa)		ISO 527	-	-
Elongation @ Yield (MPa)		ISO 527	10	20
Elongation @ Break (MPa)		ISO 527	35	160
Tensile Modulus (MPa)		ISO 527	3,400	1,500
Poisson's Ratio		ISO 527	0.42	-
Flexural Modulus (MPa)		ISO 178	3,000	1,350
Flexural Strength (MPa)		ISO 178	36	23
Notched Charpy Impact (KJ/M²)		ISO 179		
23°C			6.1	-
-30°C			4.9	-
Unnotched Charpy Impact (KJ/M²)		ISO 179		
23°C			NB	-
-30°C			114	-
Notched Izod Impact (KJ/M²)		ISO 180	5.5	-
Thermal Properties		Test Conditions	Dry as Moulded	Conditioned 2.5% Moisture
Melting Point (°C)		ISO 3146	260	-
Heat Deflection Temperature (°C)		ISO 75		
1.82 MPa			74	-
0.45 MPa			205	-
Vicat @ 50N (°C)		ISO 306	239	-
Coefficient of Linear Thermal Expansion		ISO 11359		
2 mm—Parallel, 20°C—55°C (10 ⁻⁵ mm/mm/°C)			1.1	-
2 mm—Normal, 20°C—55°C (10 ⁻⁵ mm/mm/°C)			1.2	-
Electrical Properties		Test Conditions	Dry as Moulded	Conditioned 2.5% Moisture
Dielectric Strength (kV/mm) (step-by-step) 3.0 mm		IEC 60243	12	-
Volume Resistivity (ohm-cm x 10¹⁸) 3.0 mm		IEC 60093	6	-
Comparative Tracking Index (volts) 3.0 mm		IEC 60112	> 600	-
Electrical Properties		Test Conditions	Dry as Moulded	
Glow Wire Flammability Index (GWFI/°C)		IEC 60695-2-12		
Glow Wire Ignition Temperature (GWFI/°C)		IEC 60695-2-12		
Limiting Oxygen Index (%)		ASTM D-2863		

UV Resistance

Vydyne® 21SPF/21SPG, holds excellent UV resistance due to its carbon infusion. Kable Kontrol UV Black Cable Ties are ideal for applications with high UV exposure and has UV strength equivalent to 12 years of weather resistance.

Chemical Resistance

Vydyne 21SPF/21SPG exhibits good resistance to many chemicals, solvents, gasoline, and machine/motor oils, making it suitable for applications exposed to these substances. However, its resistance to acids and bases is limited. For this reason, Kable Kontrol UV Black Cable Ties are ideal for a variety of applications.

Flame Resistance

Vydyne 21SPF/21SPG has a flammability rating of UL 94 - V2, meaning it is slowly self-extinguishing but may still drip flaming particles. It is not highly flame-resistant, making it unsuitable for applications requiring high fire safety standards.

Polyamide-based materials such as this can generate moderate smoke and toxic fumes when burned, depending on the specific combustion conditions. Proper ventilation and fire precautions are recommended when processing or using the material in high-temperature environments.

Effects of Heat Aging

Vydyne® 21SPF/21SPG has good thermal stability, with short-term resistance up to 230°F and recommended continuous use at –40–185°F. However, prolonged heat exposure can cause oxidation, embrittlement, loss of tensile strength, increased brittleness, and discoloration. Over time, this heat aging effect weakens the material, making it less durable in high-temperature applications.

Hydrolytic Stability and Water Absorption

Vydyne® 21SPF/21SPG absorbs moisture, with up to 7–9% water uptake when fully saturated, leading to increased flexibility but reduced tensile strength and potential dimensional changes. While it has moderate hydrolytic stability, it is not ideal for prolonged exposure to high-temperature water or steam. This makes it suitable for dry or moderately humid environments but not recommended for continuous high-moisture or steam applications.

Effects of Radiation

Vydyne 21SPF/21SPG has moderate resistance to radiation (such as gamma and X-rays). It can withstand low to moderate doses of ionizing radiation without significant degradation. However, prolonged or high-dose exposure may cause embrittlement, discoloration, and a reduction in mechanical properties over time.

Kable Kontrol UV Black Cable Ties remain generally unaffected by gamma exposure under one Mrad. Above one Mrad, the polymer chains start breaking down, leading to embrittlement.

Loss of Weight with Aging

Vydyne® 21SPF/21SPG, experiences minimal weight loss under normal conditions.

UL Standards & Engagement

UL Standards & Engagement UL standard is a published set of best practices for manufacturing and testing the safety, security, and sustainability of a product or system, developed and voted on by experts across industries and interests.

Kable Kontrol UV Black Cable Ties Possess the following UL certifications:

- **File No. E530766**—Unique identification number assigned to the product's UL certification. It can be used to find detailed information about the product, including its specification and the scope of the certification.
- **Positioning Device 33AS**—Refers to a specific category or application for which the product has been evaluated and certified. Indicates that the material is suitable for use as a positioning device under the standard specifications set by UL.
- **UL Standard UL 62275**—Ensures that cable management products are suitable for various installations and applications, focusing on factors such as mechanical strength, temperature, resistance, and durability under different environmental conditions.
- **TYPE 21 or 21S**—Helps manufacturers and users confirm that the products are tested and deemed safe for their intended use.
- **AH-2 Rating**—Evaluates the flame resistance and performance of materials used in electrical and electronic equipment. It indicates that the material has undergone testing for ignition resistance and flame spread, ensuring suitability for environments where fire safety is critical. Additionally, materials with an AH-2 rating are assessed for smoke production and toxicity when exposed to flames, minimizing hazards during a fire.
- **Flammability Rating: UL 94-V2**—Self-extinguishing within 30 seconds after being exposed to a flame for 10 seconds and may not ignite a cotton substrate if it drips molten particles during the test. This rating indicates moderate flammability resistance.

ASTM International

The ASTM (American Society for Testing and Materials) is a globally recognized standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.

Kable Kontrol UV Black Cable Ties Conform to the following ASTM Standards:

- **ASTM-D4066 PA181**—This grade is known for its high mechanical strength, excellent chemical resistance, and good thermal stability. PA181 meets stringent performance requirements for properties such as tensile strength, impact resistance, and heat deflection temperature, ensuring reliability and durability in demanding environments.

U.S. Military Specifications

Military specifications ensure that materials, products, and systems used in defense and military operations meet rigorous performance, safety, and quality standards. They promote standardization and consistency across various military branches, facilitating compatibility among different components and systems. By outlining specific performance requirements and testing protocols, military specifications ensure that items can withstand extreme conditions and effectively support mission success.

Kable Kontrol UV Black Cable Ties Meet or Exceed the following MIL Specs:

- **MIL-S-23190E**—Defines the requirements for thermoplastic elastomers (TPEs) used in military applications, focusing on performance characteristics like tensile strength, elongation, hardness, and thermal stability. Compliance ensures durability and reliability under demanding conditions, with guidelines for testing and quality assurance to promote standardization across military branches.

Kable Kontrol UV Black Cable Ties comply with RoHS regulations.

RoHS is a European Union Regulation that restricts the use of 10 hazardous substances in electrical and electronic equipment. It aims to reduce environmental pollution and protect human health by limiting toxic materials.