



항공·방산용 보호 제품 카탈로그

Systems Protection Aerospace Defense Catalog · English Edition

Global Industrial Cable Management Solutions

(주)위트솔루션즈 | WIT Solutions Co., Ltd.

서울특별시 송파구 송파대로 167, 문정역테라타워 A동 12층 1210-1호

TEL 02-2054-8688 · FAX 02-2054-8690 · sales@witsolutions.co.kr

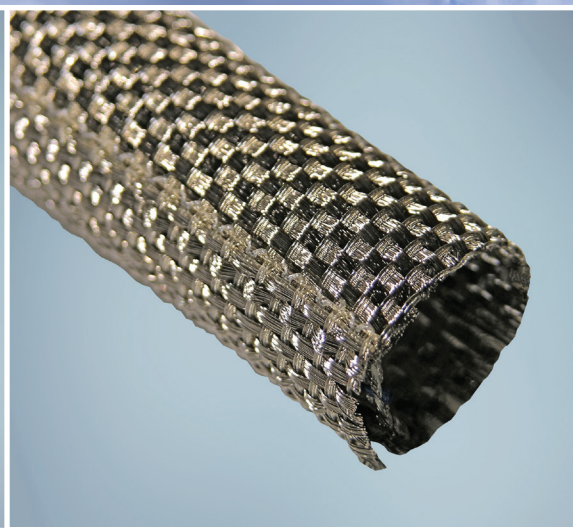
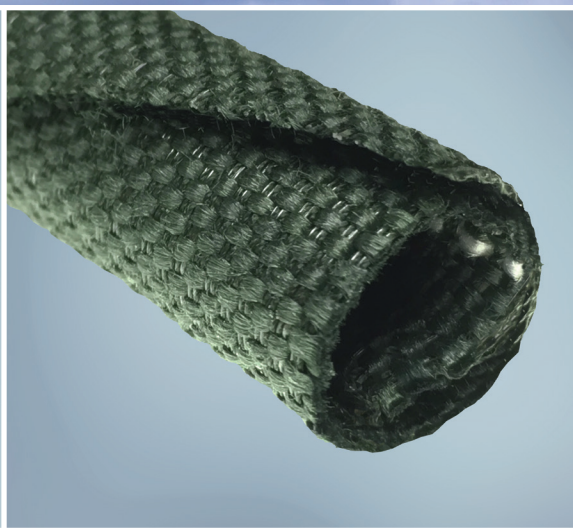
www.witsolutions.co.kr



Aerospace and Defense

Protection Products

*Leading the Future Through
Innovative Technologies*



Abrasion & Bundling



Product	Description	Temperature	Flammability	Halogen Free	Design and Construction	Available Sizes
 ROUNDIT® PPS	A lightweight solution that provides abrasion protection in areas within close proximity to fluid lines or in space applications where low outgassing is required.	-60°C to +175°C (-76°F to +347°F)	FAR 25 § 853	✓	Design: Wrappable Material: Polyphenylene sulfide (PPS) Color: Black with a white tracer	5 to 38 mm (3/16" to 1-1/2")
 ROUNDIT® 2000 NX	A flexible solution that provides excellent abrasion and cut-through resistance; oil and water repellent. Qualified to ASD EN6049-006 and BMS 13-81 Type 1.	-60°C to +200°C (-76°F to +392°F)	FAR 25 § 853	✓	Design: Wrappable Material: Nomex® and PPS Color: Green	5 to 40 mm (3/16" to 1-1/2")
 ROUNDIT® 2000 NX Ptr/Vtr	Designed with a pink tracer to identify fuel lines or a violet tracer to identify fiber optics, as well as an ivory tracer to indicate maximum operating diameter; oil and water repellent. Qualified to ASD EN6049-006.	-60°C to +200°C (-76°F to +392°F)	FAR 25 § 853	✓	Design: Wrappable Material: Nomex® and PPS Color: Green with a pink or violet tracer	5 to 40 mm (3/16" to 1-1/2")
 ROUNDIT® 2000 NX Red / Orange	Designed to identify wire harnesses connected with test equipment taken on-board airplanes (Orange) or with weapon systems (Red); oil and water repellent. Qualified to ASD EN6049-006.	-60°C to +200°C (-76°F to +392°F)	FAR 25 § 853	✓	Design: Wrappable Material: Nomex® and PPS Color: Red or orange	5 to 40 mm (3/16" to 1-1/2")
 ROUNDIT® 2000 NX GRIP	Designed with a sewn loop textile attachment method which, in conjunction with an adhesive hook, enables attachment of the wire harness directly to the aircraft structure thus reducing the space needed between the wire harness and the structure.	-60°C to +200°C (-76°F to +392°F)	FAR 25 § 853	✓	Design: Wrappable Material: Nomex® and PPS Color: Green with natural loop attached	5 to 40 mm (3/16" to 1-1/2")
 Expando® HR Plus	Fray-resistant and flame retardant solution used for abrasion protection over a range of temperature environments.	-70°C to +150°C (-94°F to +302°F)	FAR 25 § 853, VW-1		Design: Tubular Material: Halar® (E-CTFE) fluoropolymer Color: Black with white tracer or white with black tracer	3 to 64 mm (1/8" to 2-1/2")
 Expando® 686 DM	Optimal solution for use where a combination of abrasion protection and lightweight properties are required.	-70°C to +200°C (-94°F to +392°F)	FAR 25 § 853, VW-1	✓	Design: Tubular Material: PEEK and PPS Color: Black or natural	3 to 64 mm (1/8" to 2-1/2")
 Expando® PPS	Designed for mechanical protection in high temperature areas. Often used for its outstanding properties in extreme environments.	-70°C to +200°C (-94°F to +392°F)	FAR 25 § 853, VW-1	✓	Design: Tubular Material: PPS Color: Black or natural	3 to 45 mm (1/8" to 1-3/4")
 Expando® HTNS-L/HO	Low flammability sleeve which resists damage from most chemicals. Features an open-braid construction, making the product highly flexible and resistant to trapping water, heat and humidity. Qualified to ASD EN 6049-003.	-60°C to +240°C (-76°F to +464°F)	FAR 25 § 853	✓	Design: Tubular Material: Nomex® Color: Green and natural	2 to 30 mm (1/16" to 1-3/16")
 Expando® PEEK	Designed for mechanical protection in temperature extremes and hostile conditions.	-70°C to +260°C (-94°F to +500°F)	FAR 25 § 853	✓	Design: Tubular Material: PEEK Color: Black or natural	3 to 64 mm (1/8" to 2-1/2")
 Expando® PFA	Self-extinguishing when used to encase typical non-flammable wires or cables, has low flammability and resists damage from most chemicals.	-70°C to +260°C (-94°F to +500°F)	FAR 25 § 853		Design: Tubular Material: PFA Color: Natural	3 to 32 mm (1/8" to 1-1/4")
 Silicone Tapes	Provide good fluid resistance and are ideal for sealing, connecting and finishing cut ends. Also available with fiberglass reinforcement for increased mechanical strength.	-60°C to +250°C (-76°F to +482°F)	FAR 25 § 853		Design: Flat Material: Silicone (unsupported) or silicone with fiberglass (supported) Color: Black, red, and black with a blue tracer	Max. elongation ranges from 200% to 500%. Multiple widths and thicknesses available.
 Lacing Tapes	Flat braided textiles that feature outstanding chemical and thermal stability, are fray resistant and have a high breaking strength. TG series conforms to CID-A-A-52083 Finish D.	-55°C to +1100°C (-67°F to +2012°F)			Design: Flat Available in Teflon coated fiberglass, Nomex®, or ceramic fibers	Available in various widths

Electrical Insulation



Product	Description	Temperature	Flammability	Halogen Free	Design and Construction	Available Sizes
 Ben-Har® 1151 FR-B	A rugged, flame retardant solution that provides both electrical insulation and abrasion resistance. Difficult to ignite and self-extinguishes promptly. Grade B qualified to DMS 2109.	-70°C to +200°C (-94°F to +392°F)	FAR Part 25 § 853	✓	Design: Tubular Material: Silicone rubber coated fiberglass Color: Blue/gray	1.7 to 76 mm (14 AWG through 3") (Grade B only)
 ROUNDIT® 2000 NX HT	A high temperature version of ROUNDIT® 2000 NX. Includes a wide ivory tracer on the outer side for identification purposes; oil and water repellent. Qualified to ASD EN6049-007.	-60°C to +260°C (-76°F to +500°F)	FAR Part 25 § 853	✓	Design: Wrappable Material: Nomex® and Polyetheretherketone (PEEK) Color: Green with ivory tracer	5 to 40 mm (3/16" to 1-1/2")

Nomex is a registered trademark of E.I. DuPont de Nemours • Panox is a registered trademark of SGL Group • Halar is a registered trademark of Solvay Solexis

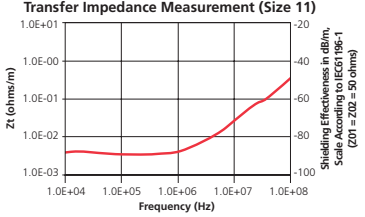
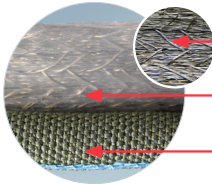
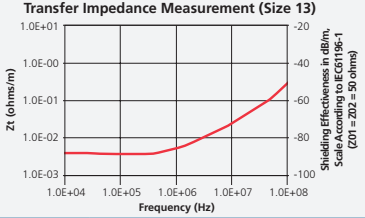
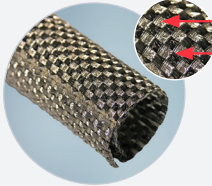
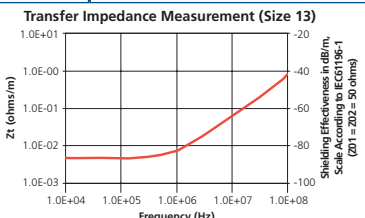
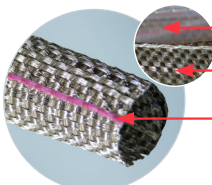
Thermal Protection



Product	Description	Temperature	Flammability	Halogen Free	Design and Construction	Available Sizes
 Aerospace FyreJacket®	Protects components in extreme temperatures. Silicone rubber coating has excellent shedding properties. Meets AS1072.	-54°C to +260°C (-65°F to +500°F)	Withstands 15 minutes at +1100°C (+2012°F) when installed on AS1055 hose assembly	✓	Design: Tubular Material: Fiberglass and silicone Color: Red iron oxide	5 to 100 mm (1/4" to 4")
 ROUNDIT® Therm-A	Three layer design provides thermal/fire protection and excellent cut-through and abrasion resistance. Water repellent.	-60°C to +260°C (-76°F to +500°F)	Withstands 5 minutes at +1100°C (+2012°F) according to ISO2685	✓	Design: Wrappable Material: ROUNDIT® 2000 NX HT, silica, and Panox® Color: Green with an ivory tracer	10 to 32 mm (3/8" to 1-1/4")
 ROUNDIT® Therm-B	Two layer design provides increased thermal/fire protection and excellent cut-through and abrasion resistance. Water repellent.	-60°C to +260°C (-76°F to +500°F)	Withstands 15 minutes at +1100°C (+2012°F) according to ISO2685	✓	Design: Wrappable Material: ROUNDIT® 2000 NX HT and Fyretape® Color: Green with an ivory tracer	10 to 32 mm (3/8" to 1-1/4")
 ROUNDIT® Therm-C	Self-wrapping silica woven sleeve coated with an intumescent coating designed to provide fire protection of wire harnesses.	-50°C to +150°C (-58°F to +302°F)	BSS 7230 Category F1	✓	Design: Wrappable Material: Silica and intumescent Color: Natural	10 to 32 mm (3/8" to 1-1/4")
 FyreTape®	Silicone-coated tape with good fire protection; easy to install on big pipes; may be used to replace or compliment FyreJacket.	-54°C to +260°C (-65°F to +500°F)		✓	Design: Wrappable Material: Fiberglass and silicone Color: Red iron oxide, aluminum	25 to 152 mm (1" to 6")
 Therm-L-Wrap™ 66	Self-wrappable sleeve with an adhesive closure; offers excellent radiant heat protection; provides component protection in high temperature areas.	-60°C to +200°C (-76°F to +392°F)	FAR Part 25 § 853	✓	Design: Wrappable Material: Aluminum with Fiberglass Color: Aluminum	10 to 25 mm (3/8" to 1")

Electromagnetic Interference



Product	Description	Temperature	Flammability	Halogen Free	Design and Construction	Available Sizes
 ROUNDIT® 2000 NX EMI	Provides mechanical / abrasion protection with outer layer and EMI shielding with inner layer; water repellent. Qualified to ASD EN6049-008.	-55°C to +200°C (-65°F to +392°F)	FAR Part 25 § 853	✓	Design: Wrappable Material: Nickel plated copper C27 according to ASTM B355 combined with Nomex® multifilaments and PPS monofilaments; optional PTFE layer Color: Green	6 to 38 mm (1/4" to 1-1/2")
Transfer Impedance Measurement (Size 11)   - Braided nickel-plated copper wire provides EMI insulation - Optional PTFE inner layer provides protection of component from the metal - Nomex® & PPS construction with oil and water repellent treatment						
 ROUNDIT® EMI FMJ	Self-wrapping metal solution with 95% optical coverage; flexible and easy to install providing very high performance EMI shielding.	-65°C to +200°C (-85°F to +392°F)	FAR Part 25 § 853	✓	Design: Wrappable Material: Nickel plated copper C4 according to ASTM B355 combined with PPS monofilaments Color: Light gray	5 to 38 mm (3/16" to 1-1/2")
Transfer Impedance Measurement (Size 13)   - Nickel-plated copper strands are woven to provide high conductivity and ensure EMI shielding with a 95% optical coverage - PPS monofilaments ensure aerospace-grade temperature and a highly flexible assembly						
 ROUNDIT® EMI XWS	Flat braided textiles that feature outstanding chemical and thermal stability, are fray resistant and have a high breaking strength. TG series conforms to CID A-A-52083 Finish D.	-65°C to +200°C (-85°F to +392°F)	FAR Part 25 § 853	✓	Design: Wrappable Material: Nickel-plated copper C4 (blue tracer) or C27 (pink tracer) according to ASTM B-355 combined with PPS monofilament Color: Light gray	5 to 165 mm (3/16" to 6-1/2")
Transfer Impedance Measurement (Size 13)   - Internal PTFE layer provides protection of component from the metal - Nickel plated copper strands are woven in a specially designed construction to optimize weight and EMI - Blue (C4) or pink (C27) tracer used to identify class of metal wires according to ASTM B-355						

About Systems Protection

Systems Protection (SP) is the world's foremost supplier of protective sleeving and shielding solutions for wires, hoses, and mechanical assemblies. Major industries served include automotive and aerospace, as well as the Energy, Industrial, and Transport (EIT) markets. With sales, manufacturing, and innovation centers located in the Americas, Europe and Asia, SP delivers the broadest, most innovative product portfolio to both original equipment and tier suppliers. SP is the proud manufacturer of Bentley-Harris® protection products.

1924

BentleyHarris®
Protection Products

1998

**FEDERAL
MOGUL**
Systems Protection

2018

TENNECO
SYSTEMS PROTECTION

2024

**SYSTEMS
PROTECTION™**

About Tenneco

Formed from the combination of Tenneco Clean Air and Federal-Mogul Powertrain, the new Tenneco will bring together more than a century of innovation to serve the automotive, light, medium and heavy-duty commercial, marine, rail, aerospace, power generation and industrial markets worldwide. By building more efficient, more powerful and more sophisticated powertrain systems, Tenneco's engineered solutions improve fuel economy and power and electrified powertrains.

Certifications

Systems Protection is committed to providing the highest quality systems for our customers, employees, and environment and continues to follow the rigorous requirements needed to maintain several industry certifications.

We are proud to confirm the following certifications:

- ISO 9001, IATF 16949, AS/EN 9100: Quality Management Systems
- ISO14001: Environmental Management Systems
- ISO 45001: Occupational Health and Safety Management Systems

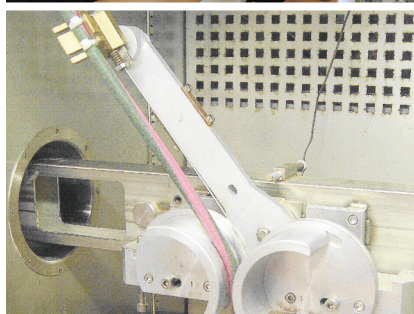
ROHS COMPLIANT **AS 9100** **EN 9100**



Our Mission

As the market leader, our mission is to serve our customers and deliver value through continual improvement in our products and processes by focusing on:

- Innovative Product Solutions
- Superior Engineering and Technical Support
- Outstanding Customer Service
- Manufacturing Excellence
- Global Presence



Systems Protection (SP) is committed to providing our customers with outstanding technical support in all stages of the product development process.

From application engineering in the field through new product design and testing, we strive to provide excellent technical support in all aspects of the engineering process.

Utilizing an extensive materials portfolio and the latest technology, SP strategically selects and blends unique fibers, coatings, adhesives, and other materials to create multifunctional designs capable of surviving in extreme conditions while providing varying levels of performance.

As a value to our customers, we have created a no cost service allowing design release engineers virtual access to our labs to observe real time testing and consult with our technical service engineers regarding a range of testing capabilities including the following:

- **EMI (Electromagnetic Interference):** transfer impedance, shielding effectiveness and electrical resistance
- **Environmental:** flammability, smoke density, toxicity, fluids exposure, durability, fogging, stone impingements, salt spray, and humidity
- **Material Analysis:** melting point, specific heat, infrared spectroscopy (FTIR), emissivity, thermal conductivity
- **Mechanical:** abrasion resistance, tensile strength, elongation, tear strength, vibration resistance, peel strength, flexural strength
- **Thermal:** Thermal effectiveness, and thermal containment / insulation



www.systemsprotection.com

BentleyHarris®
Protection Products

Global Presence



Americas

GLOBAL INNOVATION CENTER:

United States Exton, PA

ENGINEERING AND TECHNICAL SERVICES:

United States Exton, PA

SALES OFFICES:

United States
Auto (1) 734 468 3201 Detroit, MI • El Paso, TX
EIT* (1) 800 926 2472 Exton, PA
 Mexico (52) 442 101 8100 Queretaro

MANUFACTURING LOCATIONS:

United States El Paso, TX • Exton, PA
 Mexico Queretaro

Europe, Middle East, Africa (EMEA)

ENGINEERING AND TECHNICAL SERVICES:

France Crépy-en-Valois

SALES OFFICES:

France (33) 3 44 39 06 06 Crépy-en-Valois • Toulouse
 Italy Chivasso
 Spain Barcelona
 Germany Burscheid • Wiesbaden • Stuttgart

MANUFACTURING LOCATIONS:

France Crépy-en-Valois
 Hungary Kimle
 Morocco Tangier

* EIT markets include Aerospace, Railway, Industrial, Off-Road and other Electronics markets

Asia

ENGINEERING AND TECHNICAL SERVICES:

Japan Shonan
 China Shanghai

SALES OFFICES:

Japan (81) 45 330 0300 Nagoya • Yokohama
 China (86) 21 6182 7560 Shanghai • Changchun
 Tianjin • Guangzhou • Beijing
 Thailand (66) 35 276 400 Ayutthaya
 Korea (82) 44 861 6368 Sejong
 India (91) 124 4784565 Gurgaon, NCR Delhi
 Chennai

MANUFACTURING LOCATIONS:

Japan Shonan
 China Changshu • Tianjin
 Thailand Ayutthaya
 Korea Sejong
 Vietnam Haiphong
 India Bhiwadi
 Philippines Laguna

DISTRIBUTION CENTERS:

China Guangzhou
 Indonesia Jakarta



ISO14001: Environmental Management Systems
 ISO 45001: Occupational Health and Safety Management Systems
 ISO 9001, IATF 16949, AS/EN 9100: Quality Management Systems

© 2024 Systems Protection, manufacturer of Bentley-Harris protection products.

www.systemsprotection.com

BentleyHarris
 Protection Products

ADTSBrochure-EN-B