



HelaGuard

Metallic and Non-Metallic Conduit & Fittings



HelaGuard Flexible Protection Conduits & Fittings

HellermannTyton has expanded its flexible cable protection product range to include metallic and non-metallic conduits, tubings, fittings and accessories.

The HelaGuard **Non-Metallic** series includes flexible corrugated conduits that offer high fatigue life properties and snap-on liquid tight fittings for high ingress protection. The HelaGuard Non-Metallic system provides a highly versatile and lightweight solution for flexible cable management protection.

The HelaGuard Flexible **Metallic** series includes galvanized, jacketed and liquid-tight metal core conduits that offer exceptional flexibility, a high degree of mechanical strength and wide range of protection against environmental conditions. Fittings are manufactured to fit UL 360 conduit standards and provide high ingress protection ratings, corrosion resistance and electrical continuity.

Markets Served

The HelaGuard range of conduits and fittings is suitable for the requirements of machine building, shipping, offshore, mining, rail infrastructure, rolling stock and chemical industries.

- Rail & Transportation
- Machinery, Equipment & OEM
- Renewable Energies
- Robotics & Automation
- Oil & Gas
- Medical Equipment & Instrumentation



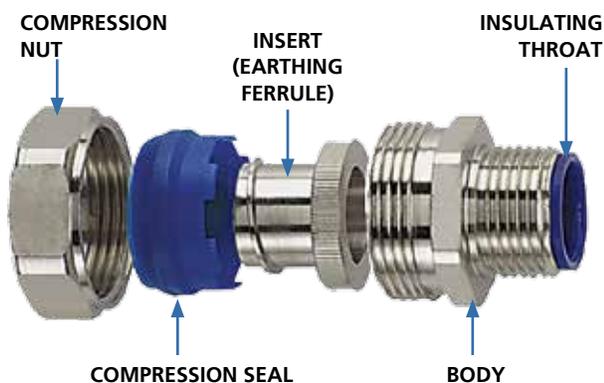
Not all fittings are created equal

HelaGuard metallic fittings are made from nickel plated brass and are machine tooled to achieve extremely tight tolerances. They offer exceptional corrosion resistance, mechanical strength, electrical continuity and high ingress protection. Manufactured to and interchangeable with all liquid-tight conduits made to UL 360 standards, these fittings also feature a superior quality compression seal that enables the high levels of ingress protection required in demanding environments and applications.



Liquid-Tight Systems

- Fittings manufactured to fit UL 360 conduit standards
- Machined parts, which improve:
 - ◇ Corrosion Resistance
 - ◇ Mechanical Strength
 - ◇ Electrical Continuity
 - ◇ Ingress Protection
- Level of ingress protection dependant upon:
 - ◇ Insert
 - ◇ Compression Seal
- Nickel plated brass coating maintains high electrical continuity, pull-off strength and resists scrapes or scratches which may expose base material to environmental hazards



Non-Metallic Snap-On Fittings

- One-piece push fit connection takes less than 3 seconds
- Delivers IP66 or IP68 ingress protection
- All around teeth design provides anti-vibration protection and high pull off strength
- Available in Nylon NPT, Metric or PG thread; Nickel Plated Brass in Metric swivel thread
- Can be removed with screwdriver as needed



WHICH TYPE OF FLEXIBLE CONDUIT IS REQUIRED? Flexible conduit and fitting systems address protection needs against the following risk factors: Loss of Electrical Supply, Personal Safety and System Integrity. To assist in determining which conduit system is best for the application at hand, consider these factors to narrow down the options and deliver the best protection solution.

Determine the **ENVIRONMENTAL CONDITIONS** under which the conduit system will reside.



Indoor / Outdoor

Determine where the conduit or system will be used and what type of hazards may exist. Conditions vary, which will ultimately impact the performance, functionality and lifespan of the system (humidity levels, existence of airborne particles, wind, seasonality changes, weather).



Exposure to Chemicals

Nylon materials are generally tolerable and resistant to corrosive materials and environments. A variety of jacketed conduit materials are available to help minimize exposure and help protect the inner metallic core from chemicals and corrosive build-up.



Temperature Range

Certain types of materials function better or last longer than others at extreme hot or cold conditions. Nylons are commonly acceptable in conditions where -40°C to +120°C exist, while specialized jacket materials are available with metallic conduit cores to reach lower or higher conditions when a more robust conduit system is required. PVC is restricted to a much narrower temperature range.



Exposure to Dust & Moisture

This factor is more applicable for fittings than conduit. Ingress Protection ratings play a critical role in preventing water, dust or moisture from seeping into the conduit assembly if exposed to rain, snow, dust storms or wash down environments. High ingress rated metallic fittings keep corrosive materials away from metal core conduits.



UV Resistance

If the conduit is used for an outdoor application, its material resistance to ultra-violet rays is very important. One should also determine if the exposure is direct or indirect and for what amount of time the conduit will exist under these conditions. PA12 nylon conduit is considered one of the best materials available for conditions that demand long periods of direct exposure to UV rays.

Determine which **SAFETY FACTORS** are critical to the application.



Low Fire Hazard

Many indoor or confined areas require that a conduit system contain all the following properties to reduce the risk of conduit causing harm to persons via smoke, toxic fumes or flames. Non-metallic conduits are typically self-extinguishing or highly flame retardant. Metallic conduits have jacketed materials which are designed for varying degrees of flammability, smoke and toxicity.



Flammability

Also referred to as Flame Retardant; prevent a fire starting or limit its development if one does start. UL as well as other validation labs provide ratings to distinguish levels of flammability. The two primary ratings are UL 94-V0 which is highly flame retardant, and UL94-V2, which is considered self-extinguishing.



Low Smoke Emissions

In the event of a fire, a low smoke emission that would allow personnel to see their way to an escape.

Determine the **MECHANICAL DUTY / PERFORMANCE** required of the conduit system.



Impact Resistance

Determine how likely a heavy object will come in contact with the conduit system and whether such contact would crush the conduit entirely, along with the wires contained inside. If such an event is likely, a metallic system will have a much higher success rate protecting the interior components. If this scenario is not likely, a non-metallic solution may meet the requirements and provide a higher degree of flexibility.



Compression Strength

Compression strength evaluates the conduits ability to withstand a steady amount of pressure applied to the system. Nylon conduit construction allows the material to compress and self-recover to its original state. A metallic conduit will be able to withstand more weight, which may or may not be necessary within a given application. Look for a balance between flexibility and strength needed to protect the wiring in the application.



Pull Off Strength

Pull off strength refers to the amount of force that is required to pull the fittings off the conduit. The level of strength is a combination of the fittings design and the profile construction of the conduit material. Nylon Snap-on fittings are resistant to failure caused by motion and vibration. Metallic fittings are intended for more robust conditions requiring the use of a metallic conduit.



Fatigue Life

Fatigue life evaluates how long or how often a conduit can perform a repetitive motion before it experiences a stress line, fails or cracks. Although labeled as flexible, certain types of metallic conduit are not designed for repetitive motion. Nylon corrugated or PVC tubings generally perform very well in repetitive motion conditions. Extra flexible metallic conduits are available and designed for repetitive motion for those conditions requiring a more robust application.



Weight

When looking to reduce or minimize the amount of weight within a given project or piece of equipment, non metallic conduits are by far much lighter than their metallic counterparts.



Low Toxicity

In the event of a fire, a low toxic emission level that would ensure personnel are not overcome during their escape.



Halogen Free

HF gives an indication of low smoke and low toxicity. It also rules out the existence of a halogen acid gas emission which can destroy computer equipment and cause damage to the structure of a building.



Vandalism

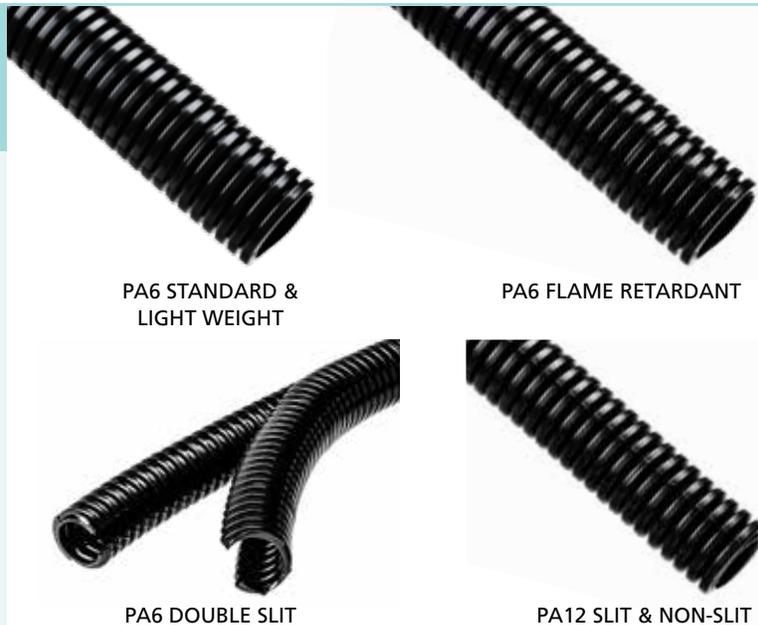
A well designed conduit and fitting system will deter vandals from attempting to sabotage or damage equipment. Using a system that is "too easy" to access by unauthorized personnel could cause injury or temporary disruption to an operation.

Non-Metallic Conduit, Fittings & Accessories

The HelaGuard line of Non-Metallic conduits, fittings and accessories is a versatile, liquid-tight solution for routing and protecting wires in application where a highly flexible, lightweight and corrosion-resistant system is required.

Flexible Corrugated Conduit

HelaGuard Flexible Corrugated Nylon Conduits are preferred whenever conditions call for a lightweight, flexible material with good corrosion resistance properties. Available in slit or non-slit versions. Nylon PA6 is widely used in OEM applications while PA12 is well suited for repetitive motion applications and extended exposure to UV light.



Liquid Tight Non-Metallic Snap-On Fittings

HelaGuard Non-Metallic Snap-on Fittings provide superior tensile strength with a simple “push-on and twist” motion. Available in either IP66 or IP68 rated ingress protection levels against dirt and moisture. Additional styles include T-connectors, reducers/dividers and flanges. Straight and elbow fittings available in either NPT or metric thread.



non-metallic

Flexible Tubing & Compression Style Fittings

HelaGuard Flexible PVC Tubings provide excellent flexibility and a smooth internal bore surface for easy insertion of wires. Well suited for protecting wires in extremely tight spaces. LPC tubing provides enhanced flexibility, high fatigue life and greater compression strength. Used with compression style fittings. Compression fittings offer easy future access and are affixed to the exterior of tubing for more reliable fit in applications with prolonged vibration or motion.



Accessories for Flexible Non-Metallic Systems

Specially designed clips hold the corrugated tubings in place, along with endcaps, locknuts and sealing washers.



Flexible Metallic Conduit, Fittings & Accessories

HelaGuard Flexible Metallic Conduits and Fittings address wire routing applications that require a robust yet flexible raceway solution to protect electrical wires from mechanical failure caused by vibration, crushing, corrosion or moisture ingress.

Flexible Metallic Conduit & Fittings

An extra-flexible, galvanized steel conduit used in tight or constrained spaces. FU-x series is a helically wound, non-UL rated metallic conduit used in applications that demand higher levels of movement, vibration and bending. Designed for use where an extra-flexible metallic conduit is needed for protecting hydraulic or pneumatic hoses in machinery as well as in elevated temperature conditions. Use with FU-M series metallic fittings for IP40 ratings.



FU-X



STRAIGHT M-FITTINGS

Flexible Jacketed Metallic Conduit & Fittings

HelaGuard Jacketed Metallic Conduits have an extra-flexible galvanized steel core with specialized coatings to address a wide range of environmental conditions. Designed for use in conditions that require extended or repetitive movement. Nickel plated brass compression fittings provide additional level of protection against corrosion and are available in metric or NPT thread with IP65 ingress ratings.



FSU



ELBOW FITTINGS



STRAIGHT FITTINGS

metallic

Liquid-Tight Flexible Metallic Conduit & Fittings

A series of flexible, liquid-tight galvanized steel core conduits with coatings designed for specific environmental conditions. Intended for applications that require some movement and a high degree of mechanical strength. Fittings are nickel plated brass, provide IP68 or greater ingress protection and may be suitable for use in hazardous locations as defined by NEC Article 501.*



Hazardous Location Fittings

Flameproof straight and elbow glands with an inner compound barrier offers a high specification, high quality solution for EX d, EX e, and EX ta applications. ATEX and / or IEC approvals for Group I and Group II. For indoor or outdoor use applications in Zone 1, Zone 2, Zone 21 and Zone 22 Hazardous Areas. Use with LTP / LTPHC / LTPPU / LTPLFH / and LTBRDP series of flexible metallic conduit.



	Conduit System	Image	IP Rating Available	Liquid-tight	Colors	Compression Strength 100mm 20mm Size
Flexible Metallic Conduit	FU-x <i>galvanized steel core</i>		IP40		Metal	350 kg 770 lbs
	FSU <i>galvanized steel core, PVC cover</i>		IP54, IP65		Black	350 kg 770 lbs
Flexible Jacketed Metallic Conduit	LF HU <i>galvanized steel core, LFH cover</i>		IP54, IP65		Black	350 kg 770 lbs
	FPU <i>galvanized steel core, polyurethane cover</i>		IP54, IP65		Black	350 kg 770 lbs
	LTP <i>galvanized steel core, PVC cover, liquid-tight</i>		IP66, IP67, IP68, IP69	TRUE	Black, Gray	400 kg 880 lbs
Flexible Liquid-Tight Metallic Conduit	LTP LFH <i>galvanized steel core, LFH cover, liquid-tight</i>		IP66, IP67, IP68, IP69	TRUE	Black	400 kg 880 lbs
	LTP HC <i>galvanized steel core, thermoplastic elastomer cover, liquid-tight</i>		IP66, IP67, IP68, IP69	TRUE	Black	400 kg 880 lbs
	LTP PU <i>galvanized steel core, polyurethane cover, liquid-tight</i>		IP66, IP67, IP68, IP69	TRUE	Black, Blue	400 kg 880 lbs
	LTB RDP <i>galvanized steel core, braided center, PVC cover, liquid-tight</i>		IP66, IP67, IP68, IP69	TRUE	Black	400 kg 880 lbs
Flexible Corrugated Conduit	HG-SW <i>standard weight corrugated PA6 nylon, non-slit or slit</i>		IP66, IP67, IP68, IP69	TRUE	Black	75 kg 165 lbs
	HG-LW <i>lightweight corrugated PA6 nylon</i>		IP66, IP67, IP68, IP69	TRUE	Black	60 kg 132 lbs
	HG-HI <i>standard weight corrugated PA12 nylon, non-slit or slit</i>		IP66, IP67, IP68, IP69	TRUE	Black	45 kg 99 lbs
	HG-FR <i>standard weight conduit, modified PA6, flame retardant</i>		IP66, IP67, IP68, IP69	TRUE	Black	75 kg 165 lbs
	HG-DC <i>standard weight PA6 conduit, double slit overlapping design</i>		IP40		Black	60 kg 132 lbs
	Flexible Non-Metallic Tubing	PSR <i>smooth bore spiral ribbed surface PVC tubing</i>		IP65		Black
LPC <i>smooth bore and smooth surface PVC tubing</i>			IP66, IP67, IP68, IP69	TRUE	Black	120 kg

Impact Strength	Pull Off Strength kg 20mm Size	Minimum Bend Radius 20mm Size	Flexibility	Fatigue Life	High Fatigue Life	Temperature Range	Fire Hazard Rating	Low Smoke	Low Toxicity
Very High	120 kg	45	Very High	Very High	TRUE	-100° C to +300° C	Inherently Low Fire Hazard	TRUE	TRUE
	265 lbs					-148° F to +572° F			
Very High	120 kg	45	High	High	TRUE	-15° C to +70° C			
	265 lbs					5° F to +158° F			
Very High	120 kg	45	High	Medium		-25° C to +90° C	Extra Low Fire Hazard	TRUE	TRUE
	265 lbs					-13° F to +194° F			
Very High	120 kg	45	High	High	TRUE	-40° C to +100° C			
	265 lbs					-40° F to +212° F			
Very High	130 kg	65	Medium	Medium		-20° C to +105° C			
	285 lbs					-4° F to +221° F			
Very High	130 kg	60	Medium	Medium		-25° C to +90° C	Extra Low Fire Hazard	TRUE	TRUE
	285 lbs					-13° F to +194° F			
Very High	130 kg	65	Medium	Medium		-60° C to +150° C			
	285 lbs					-76° F to +302° F			
Very High	130 kg	65	Medium	Medium	TRUE	-40° C to +100° C			
	285 lbs					-40° F to +212° F			
Very High	130 kg	65	Low	Medium		-20° C to +105° C			
	285 lbs					-4° F to +221° F			
High	40 kg	45	High	Very High	TRUE	-40° C to +120° C	Standard Low Fire Hazard	TRUE	TRUE
	88 lbs					-40° F to +248° F			
Low	30 kg	40	Very High	High	TRUE	-40° C to +120° C			
	66 lbs					-40° F to +248° F			
Very High	30 kg	35	Very High	Very High	TRUE	-50° C to +110° C	Standard Low Fire Hazard	TRUE	TRUE
	66 lbs					-58° F to +230° F			
High	40 kg	45	High	High	TRUE	-40° C to +120° C	Extra Low Fire Hazard	TRUE	TRUE
	88 lbs					-40° F to +248° F			
High	15 kg	120	High	High	TRUE	-40° C to +120° C	Standard Low Fire Hazard	TRUE	TRUE
	33 lbs					-40° F to +248° F			
Medium	25 kg	35	High	Medium		-20° C to +70° C			
	55 lbs					-4° F to +158° F			
Very High	35 kg	70	Medium	Medium		-5° C to +70° C			

	Halogen Free	Flammability	EMC Screening @ 1 MHz	Oil & Solvent Resistance	Chemical Resistance	Corrosion Resistance	Abrasion Resistance	UV Resistance	UL Certification	Suitable for Use in Hazardous Areas
	TRUE	Self-Extinguishing		Excellent	Low	Low	Very High	High		
		Self-Extinguishing		Limited	Good	High	Medium	Medium		
	TRUE	Self-Extinguishing		Limited	Good	High	Medium	Medium		
	TRUE	UL 94 V0		Limited	Good	High	High	Low		
		Self-Extinguishing		Excellent	Good	High	Medium	Medium		TRUE
	TRUE	Self-Extinguishing		Limited	Good	High	Medium	Medium		TRUE
	TRUE	Self-Extinguishing		Limited	Good	High	Medium	Medium		TRUE
	TRUE	UL 94 V0		Limited	Good	High	High	Low		TRUE
		Self-Extinguishing	60dB	Excellent	Good	High	Medium	Medium		TRUE
	TRUE	UL 94 V2		Excellent	Very High	High	High	High	c UL us	
	TRUE	Self-Extinguishing		Excellent	High	High	Medium	Low	c UR us	
	TRUE	Self-Extinguishing		Very Good	High	High	High	Very High	c UR us	
	TRUE	UL 94 V0		Excellent	Very High	High	High	High	c UR us	
	TRUE	Self-Extinguishing		Excellent	High	High	High	High		
		Self-Extinguishing		Good	Good	High	Low	Medium	c UR us	
		Self-Extinguishing		Good	Good	High	Medium	Medium		

HelaGuard Fittings for Flexible Conduit Systems

	Fittings for Flexible Metallic Conduits				Fittings for Flexible Non-metallic Corrugated Conduit	Fittings for Flexible PVC Tubing	
Name of Fitting Series	FU-x Series	FSU Series	LTP Series	EXD Series	Non Metallic Snap-On	Non Metallic Compression	Metallic Fittings for LPC
Used with Conduit Range	FU-x Series	FSU, LFHU, FPU	LTP, LTPLFH, LTPHC, LTPPU, LTBRDP	LTP, LTPLFH, LTPHC, LTPPU, LTBRDP	HG-SW, HG-LW, HG-FR, HG-HI, HG-DC	PSR, LPC	LPC
IP Rating Available	IP40	IP54, IP65	IP66, IP67, IP68, IP69	IP66, IP67, IP68, IP69	IP66, IP67, IP68, IP69	IP65, IP68	IP66, IP67, IP68, IP69
Liquid-tight			TRUE	TRUE	TRUE		TRUE
Material	Nickel Plated Brass	Nickel Plated Brass	Nickel Plated Brass	Nickel Plated Brass	Nylon PA66	Nylon PA66	Nickel Plated Brass
Thread Style	Metric	Metric	NPT & Metric	NPT & Metric	NPT & Metric	NPT	NPT
Styles Available	Fixed-Thread	Straight, 90-Elbow, Fixed-Thread, Swivel	Straight, 90-Elbow, 45-Elbow, Swivel, Coupler	Straight, 90-Elbow, 45-Elbow	Straight, 90-Elbow, 45-Elbow, T's, Y, Flange, Coupler	Straight, 90-Elbow, 45-Elbow	Straight
Pull Off Strength kg 20mm Size	120 kg	120 kg	120 kg	120 kg	39 kg	24 kg / 70 kg	70 kg
	265 lbs	265 lbs	265 lbs	265 lbs	88 lbs	55 lbs / 154 lbs	154 lbs
Temperature Range	-50° C to +300° C	-50° C to +135° C	-50° C to +135° C	-60° C to +85° C	-50° C to +135° C	-40° C to +120° C	-50° C to +135° C
	-58° F to +572° F	-58° F to +275° F	-58° F to +275° F	-76° F to +185° F	-58° F to +275° F	-40° F to +248° F	-58° F to +275° F
Halogen Free	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
UL Certification			c UL us		c UL us	UR	
Suitable for Use in Hazardous Areas			TRUE	TRUE			



HellermannTyton North American Corporate Headquarters

7930 N. Faulkner Rd, PO Box 245017
Milwaukee, WI 53224-9517
Phone: (414) 355-1130, (800) 537-1512
Fax: (414) 355-7341, (800) 848-9866
email: corp@htamericas.com
www.hellermann.tyton.com

TS16949, ISO 9001, and ISO14001 certified

HellermannTyton Canada

Unit #4, 205 Industrial Parkway North
Aurora, Ontario L4G 4C4 Canada
Phone: (800) 661-2461
Fax: (800) 390-3904
email: sales@hellermanntyton.ca

HellermannTyton Mexico

Anillo Periferico Sur 7980 Edificio 6A
Parque Industrial Tecnologico II
Santa María Tequepexpan
Tlaquepaque, Jalisco, Mexico 45601
Phone: 011-52-33-3-133-9880
Fax: 011-52-33-3-133-9861
email: info@htamericas.com.mx

ISO 9001 certified