



GORE® Hook-Up Wires

For Oil and Gas
Downhole Equipment

Increase design freedom and tool reliability with small, mechanically robust hook-up wires

Today's oil and gas industry is demanding smaller downhole tools with improved signal integrity and higher signal density. At the same time, the downhole environment is becoming increasingly challenging with high pressures, extreme temperatures, and vibration.

Whether the function is power or signal, GORE® Hook-Up Wires for oil and gas downhole equipment are engineered specifically to withstand extremely harsh conditions without compromising the mechanical and electrical performance of the tools (Table 1). The small size and enhanced mechanical performance of GORE® Hook-Up Wires simplify the complex design challenges that can affect equipment life and reliability in extreme temperatures.

INCREASED DESIGN FREEDOM

The increased electrical requirements and smaller size of downhole tools have reduced the amount of available space for wire bundles and pathways. GORE® Hook-Up Wires deliver outstanding mechanical and electrical performance in smaller wire sizes, which improves flexibility when designing new tools.

Because of the optimized insulation in GORE® Hook-Up Wires, they require less space — more than 30 percent less space — than a NEMA HP3 Type E AWG 24 wire (Figure 1). This smaller diameter, along with the improved dielectrics of these wires, enable you to increase the number of conductors in a given space or reduce the amount of space required for the wires — all of which translates to more design freedom.

ADDED DURABILITY FOR EASY INSTALLATION AND LONGER TOOL LIFE

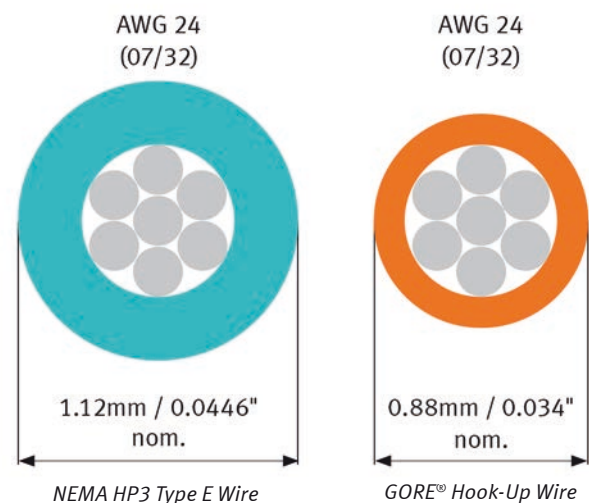
Sharp edges and routing through small spaces can damage the conductor insulation during installation. Therefore, wires can fail during use if the damage is undetected. Engineered for superior cut-through and abrasion resistance, GORE® Hook-Up Wires have a unique mechanical and dielectric performance (Figure 2). The improved durability of the dielectric and the abrasion-resistant construction increases first-pass yields and reduces the risk of tool failures due to insulation damage. The smaller diameter and added durability increases flexibility with a smaller bend radius that makes it easier to route wires through tighter spaces during installation. It also reduces re-work caused by damage from sharp edges.



Benefits of GORE® Hook-Up Wires

- Increased design options with smaller diameters and more durable construction
- Superior electrical and mechanical performance in extreme environments with temperatures up to 260°C
- Longer tool life with abrasion-resistant and low-creep wire insulation
- Reliable installation due to cut-through resistance that eliminates damage from sharp edges or burrs
- Easy routing with smaller, more flexible wire

FIGURE 1: SIZE COMPARISON OF NEMA HP3 TYPE E WIRES AND GORE® HOOK-UP WIRES





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INCREASED TOOL RELIABILITY

With the increased cost of oil and gas exploration, the industry expects downhole tools to operate reliably over multiple well logging cycles without failure. The conditions to which the wires are exposed can easily compromise many wires. For example, exposure to extreme temperatures and vibration may lead to failure due to material creep that is common in most state-of-the-art thermoplastic insulation materials.

GORE® Hook-Up Wires maintain consistent signal integrity and reduce the risk of abrasion and cut-through because of the unique engineered fluoropolymer insulation. The materials used in these wires are chemically inert, which reduces reaction to fluids such as those found in downhole environments. GORE® Hook-Up Wires also withstand extreme temperatures ranging from -60°C to 260°C.

FIGURE 2: DYNAMIC CUT-THROUGH RESISTANCE AT HIGH TEMPERATURES

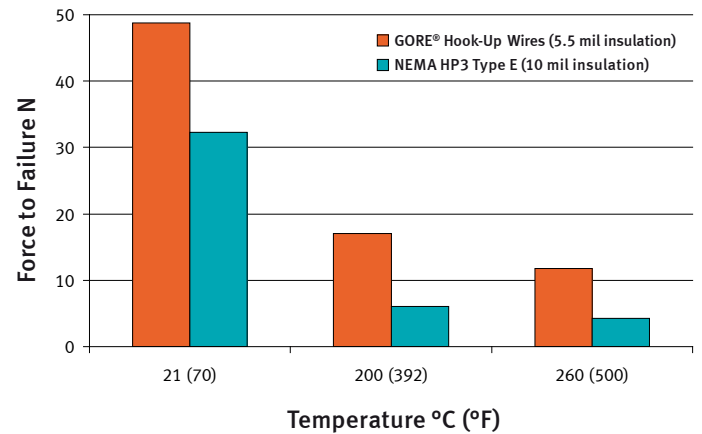


TABLE 1: CABLE PROPERTIES OF 24 AWG GORE® HOOK-UP WIRES

Property		Value
ELECTRICAL	Voltage Rating (RMS)	600 V
	Wrapback Test (AC)	3 kV
MECHANICAL	Wire Insulation	Engineered fluoropolymer
	Insulation Wall Thickness mm (inch)	0.140 (0.0055)
	Conductor	SPC / NPC
	Color Coding	White, grey, red, yellow, green, orange, blue, brown, black, purple
	Dynamic Cut-Through Resistance (ASTM D 3032 / 22) at 21°C (70°F) at 200°C (392°F) at 260°C (500°F)	> 48 N > 17 N > 12 N
	Abrasion Resistance (ASTM D 1676 / 850 g [1.87 lbs]) Abrasion Resistance (MIL-DTL-17 / 335 g [0.74 lbs])	> 148 cycles > 30 cycles
Tensile strength (insulated wire)	> 100 N	
ENVIRONMENTAL	Temperature Range °C (°F)	SPC: -65 to 200 (-85 to 392) NPC: -65 to 260 (-85 to 500)
	Thermoplastic Flow °C (°F) 24 AWG (07/32) SPC tested per ANSI/NEMA MW 1000-2012	> 300 (> 572)
	RoHS	Compliant

TABLE 2: SPECIFICATIONS FOR STANDARD PRODUCTS

Contact Gore if you need a customized hook-up wire or cable, such as shielded versions, pairs, triads, etc.

Standard versions with voltage ratings of 250 V and 1000 V are available as well.

	Part Number	Gauge Size AWG	Strands	Conductor Plating	Nominal Outer Diameter mm (inch)
Max. Operating Temp. °C (°F) -65 up to 260 (-85 up to 500)	GWN2987	16	19	NPC	1.73 (0.068)
	GWN3031	18	19	NPC	1.57 (0.062)
	GWN3032	20	19	NPC	1.32 (0.052)
	GWN3033	22	19	NPC	1.10 (0.043)
	GWN3034	24	19	NPC	0.94 (0.037)
	GWN3035	26	19	NPC	0.81 (0.032)
	GWN3036	28	19	NPC	0.70 (0.027)
	GWN3037	22	07	NPC	1.04 (0.041)
	GWN2986	24	07	NPC	0.91 (0.036)
	GWN3038	26	07	NPC	0.73 (0.029)
	GWN3039	28	07	NPC	0.64 (0.025)
Max Operating Temp. °C (°F) -65 up to 200 (-85 up to 392)	GWN3040	22	07	SPC	1.04 (0.041)
	GWN3041	24	07	SPC	0.86 (0.034)
	GWN3042	26	07	SPC	0.73 (0.029)
	GWN3043	28	07	SPC	0.64 (0.025)
	GWN2989	16	19	SPC	1.73 (0.068)
	GWN2998	18	19	SPC	1.57 (0.062)
	GWN2991	20	19	SPC	1.32 (0.052)
	GWN2990	22	19	SPC	1.10 (0.043)
	GWN2994	24	19	SPC	0.97 (0.038)
	GWN3044	26	19	SPC	0.81 (0.032)
	GWN3045	28	19	SPC	0.70 (0.027)

ORDERING INFORMATION

GORE® Hook-Up Wires are available in a variety of standard sizes (Table 2). For more information, visit gore.com



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NOTICE — USE RESTRICTIONS APPLY
Not for use in food, drug, cosmetic or medical device
manufacturing, processing, or packaging operations.