



ADVANCED POLYMER SCIENCE FOR NEW TECHNOLOGIES



PEEK™ Insulated Wire

Regarded by many as the best performing thermoplastic, PEEK has amazing strength, heat resistant properties and is able to withstand intense pressure and caustic fluids. Zeus PEEK Insulated Wire results from the extrusion of PEEK over copper wire.

PEEK Insulated Wire has a high continuous operating temperature, excellent abrasion and chemical resistance and dielectric strength. Material properties are maintained in long, continuous lengths without pinholes.

Designed specifically for use in challenging environments, typical applications include magnet and winding wire for motors, generators and transformers. PEEK Insulated Wire is currently used in petroleum, automotive, aerospace and electrical industries.

Capitalizing on more than 40 years of polymer experience, Zeus continues to provide superior products with the highest standards of quality and control. Please contact Zeus for samples for testing or prototype builds.

Features/Capabilities:

- #4 to #32 AWG sizes including ½ sizes
- Wall thickness ranging from 0.001" - 0.015" (0.025mm - 0.381mm)
- 100% AC spark tested during extrusion
- Amorphous or crystalline PEEK Insulated Wire available
- Round, stranded, square and rectangular profiles available
- Various types of wire available, including silver and nickel plated wire as well as custom wire types

Properties (see testing results on back):

- High continuous operating temperature 500°F/260°C
- Outstanding abrasion resistance
- Excellent dielectric strength
- Exceptional chemical resistance
- Protects against corrosion

Typical Applications:

- Magnet wire and lead wire for actuators, generators, motors, solenoids, or transformers for the electrical, petroleum, automotive, aerospace, military, and nuclear industries

Technical Notes:

- Can be spliced using Zeus PEEKshrink®
- Annealed, solid, round bare copper wire according to ASTM B3

PEEK Insulated Wire

INSULATED COPPER WIRE FOR CHALLENGING ENVIRONMENTS

SIZE	NOMINAL BARE COPPER DIAMETER	NOMINAL BARE COPPER DIAMETER
(AWG)	(INCHES)	(MM)
4	0.2043	5.189
5	0.1819	4.620
6	0.1620	4.115
7	0.1443	3.665
8	0.1285	3.264
9	0.1144	2.906
10	0.1019	2.588
11	0.0907	2.304
12	0.0808	2.052
13	0.0720	1.829
14	0.0641	1.628
15	0.0571	1.450
16	0.0508	1.290
17	0.0453	1.151
18	0.0403	1.024

SIZE	NOMINAL BARE COPPER DIAMETER	NOMINAL BARE COPPER DIAMETER
(AWG)	(INCHES)	(MM)
19	0.0359	0.912
20	0.0320	0.813
21	0.0285	0.724
22	0.0253	0.643
23	0.0226	0.574
24	0.0201	0.511
25	0.0179	0.455
26	0.0159	0.404
27	0.0142	0.361
28	0.0126	0.320
29	0.0113	0.287
30	0.0100	0.254
31	0.0089	0.226
32	0.0080	0.203

*All PEEK Insulated Wire is custom ordered. Wall thicknesses available from 0.001" - 0.015" (0.025mm - 0.381mm) depending on the conductor size.

ASTM PEEK Insulated Wire Testing			
PROPERTIES	ASTM	UNITS	NOMINAL TEST VALUE
Resistivity Testing	B3	$\Omega \cdot \text{lb}/\text{mile}^2$	859
Dielectric Breakdown	D149	kV RMS, at 60Hz	25
Relative Permittivity	D150		2.72
Dissipation Factor	D150	%	0.14%
DC Resistance	D257	$\Omega \cdot \text{in}$	2.72

*AWG 8 with 0.008" (0.203mm) wall. Insulation thickness tested according to ASTM D374. Performance and characteristics may change based on size.

NEMA PEEK Insulated Wire Testing			
NEMA MW 1000 Test Section	Requirements (AWG 18 Heavy Build)	Results	Pass/Fail
3.3 Adherence & Flexibility	No cracks visible in film coating	No cracks visible	Pass
3.5 Heat Shock	No cracks visible in film coating at 280°C	No cracks visible	Pass
3.8 Dielectric Breakdown - Twisted Pair			
➤ 260°C	Minimum 5,700 VAC	11,650 VAC	Pass
➤ Room Temperature	Minimum 5,700 VAC	12,200 VAC	Pass
3.9 Continuity	Shall not exceed 10 faults	0 Faults	Pass

*There are no NEMA requirement values for PEEK Insulated Wire. These requirements are based off the highest temperature rated MW-16C (240°C) from the NEMA MW 1000 standard. Performance and characteristics may change based on size.

► Advancing Your Ideas

Your ideas have the potential to transform the world. The right partners will help make it happen. Talk to Zeus about how polymer science can advance your ideas. We welcome the opportunity to collaborate with you.



www.zeusinc.com

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