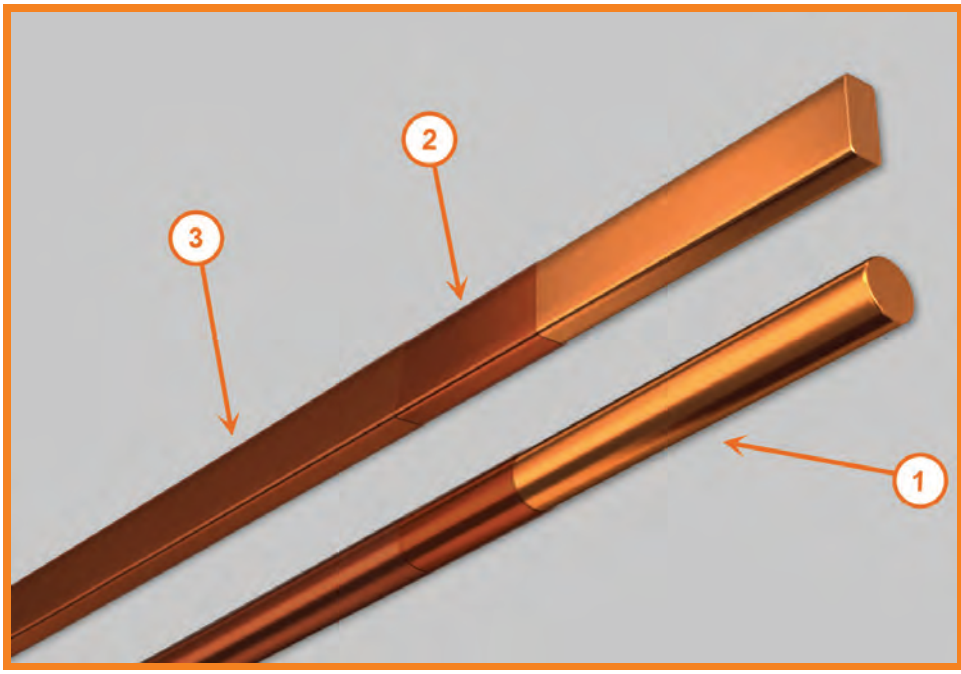
UNIVERSANEL™ 200 °C



Description:

1.Round, square or rectangular soft copper wire
2. Polyester imide resin as base coat
3. Polyamideimide resin as top coat

Application:

- Dry-type transformers
- Oil-type transformers
- Hermetic motors
- Open-type motors
- Automotive coils
- Ballast
- Tools motors
- Toroidal transformer

Features:

- Excellent thermal stability, excellent dielectric and mechanical performance.
- Excellent chemical resistance to usual solvents, very good resistance to coolants and very good resistance to dielectric mineral oil used on transformers.
- Universanel™ is resistant to Freon 22 and enviromental friendly freons as 134-A, 141-B, 404-A, 407-C, 410-A and 507.
- Excellent to make coils for applications designed for working on wet conditions

Special Features:

- Universanel™ is not a solderable product by immersion in soldering pot.

Standards:

This product may be designed according to any of the following standards:

- IEC 60317-1, IEC 60317-13, NMX-J-072-ANCE, NMX-J-482-ANCE, NEMA MW-1000: MW 15-C, MW 35-C y MW 73-C (round wire)
- IEC 60317-17, IEC 60317-29, NMX-J-063-ANCE, NMX-J-485-ANCE, NEMA MW 1000: MW 18-C y MW 36 (shaped wire)

Please contact our Technical Deparment if the requested product should fulfill a different standard from those shown.

Thermal Class:

200 °C, class N

Color:

clear

Certification:

Product certified by Underwriters Laboratories Inc. Records are available on File E87331.

How to order:

Universanel™ magnet wire, round, square or rectangular wire, gauge (AWG) or cross-section area (mm^2), or dimensions (thickness and width in case of rectangular wire), heavy built, weight and package

Magnet Wire

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Round wire production range Universanel™

Color	Build	Range	Bare wire diameter			
			Minimum		Maximum	
		AWG	mm	in	mm	in
clear	heavy	4-30	0.251	0.0099	5.227	0.2058

These data may vary due to manufacturing tolerances.

Shaped wire production range Universanel™

	Dimensions			
	Minimum		Maximum	
	mm	in	mm	in
Bare thickness	1.0	0.040	5.2	0.204
Bare width	2.5	0.100	14.0	0.551

Maximum width/thickness ratio(1)	Maximum cross-section area	
	mm^2	in^2
6	40.3	0.0625

(1) Width/thickness ratio has not units.

Magnet Wire

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Typical performance *

THERMAL PROPERTIES		
Test	**Requirement ****	**Results**
Thermal endurance	Minimum 20 000 h @ 200 °C	219 °C
Thermoplastic flow	Minimum 300 °C	389 °C
Heat shock	20% / 3d / 220 °C	No breaks

MECHANICAL PROPERTIES		
Test	**Requirement ****	**Results**
Adherence and flexibility	20% / 3d	No breaks
Elongation	Minimum 32%	39%
Springback	Maximum 58°	51°
Scrape resistance	Minimum average 1 150 g	1 764 g

CHEMICAL PROPERTIES		
Test	**Requirement ****	**Results**
Solubility	Xilol, Xilol/Butil Celosolve	Ok
Refrigerant (R-22) extraction	Maximum 0.25%	0.05%
Dielectric Breakdown after R-22 conditioning	Minimum 5700 V	8 700 V
Transformer oil resistance	-----	-----
Compatibility	Tolueno-Etanol	No swelling or blistering

ELECTRICAL PROPERTIES		
Test	**Requirement ****	**Results**
Dielectric Breakdown	Minimum 5 700 V	11 000 V
Dielectric Breakdown at rated temperature	Minimum 4 275 V	7 800 V
Continuity	Maximum 5 discontinuities @ 1 500 V	Maximum 1 discontinuities

NOTES: * Typical performance for a Universanel™ Heavy Build, 18 AWG
** Standard used: NEMA MW-1000 MW15-C, MW35-C, MW73-C

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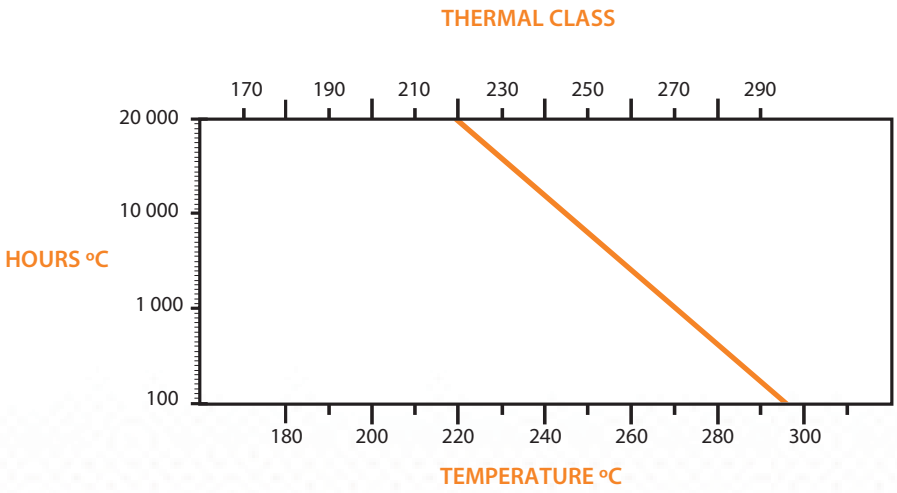

The plot above shows thermal endurance performance for a Universanel™ Magnet Wire, Heavy build, 18 AWG, tested according to ASTM D 2307. Plot was drawn using data obtained during test procedure until 5 000 h and extrapolated to 20 000 h.

Universanel™ Magnet Wire fulfills thermal requirements to get thermal class 200°C.