

THERMALEZE® QTW (QTW)

APPLICATIONS

Typical Applications

High speed windings with difficult insertion and winding characteristics for inverter-driven motors

PRODUCT DESCRIPTION

Thermal Class 200 (Copper)

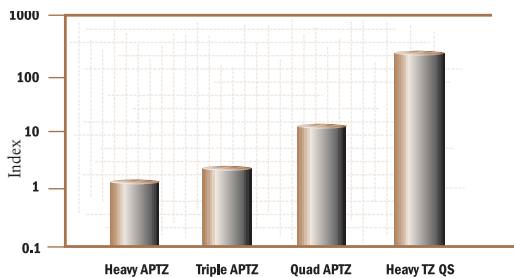
Improved topcoat, modified to optimize scrape resistance and surface lubricity

Combines the performance features of Poly-Thermaleze® TW and Thermaleze® QS

Superior insulation life in comparison to other magnet wires when exposed to extremely harsh electrical environments typical of inverter-driven motors

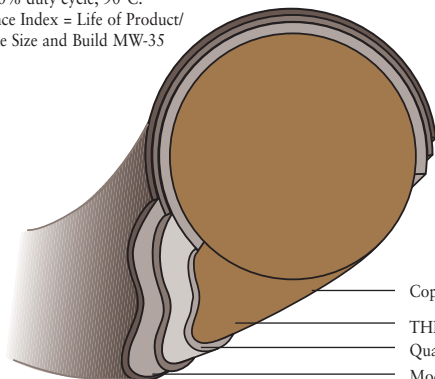
Improved insulation protection against transient spikes, high frequencies, elevated voltage levels, and short rise time pulses without increasing insulation thickness

PULSE ENDURANCE TEST



Test Conditions: Twisted pairs @ 20,000 Hz, 2 kV, 0.025 microsecond rise time, 50% duty cycle, 90°C.

Pulse Endurance Index = Life of Product/
Life of Same Size and Build MW-35
(Reference)



- Copper or Aluminum
- THEIC Modified Polyester*
- Quantumshield*
- Modified Polyamide Imide* (TOUGHWIRE)
- *multiple coats

GENERAL INFORMATION

References Are Provided For Comparative Purposes

Round

NEMA: MW 35-C, MW 73-C

IEC: 60317-13 (Cu)

UL: File No. E34609

Availability

Round

Copper

Heavy 4-32 AWG (5.20-0.20mm)

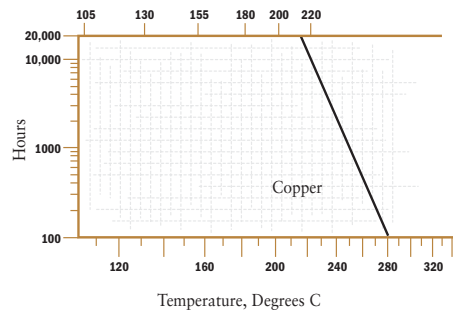
Aluminum

(Information Available on Request)



MEASURED THERMAL ENDURANCE

18 AWG Copper, Heavy Build Insulation



U.S. Patent No. 5,654,095

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THERMALEZE® QTW

(QTW)

TYPICAL PROPERTIES

This data is typical of 18 AWG copper, heavy build insulation only. It is not intended to be used to create specification limits.



THERMAL

Thermal Endurance (N,J,I,A*)

20,000 hr Life: >200°C

Thermoplastic Flow (N,J,I,PD*)

Min: 300°C

Typical: 350°C

Heat Shock (20% 3x) (N*,J,I)

1/2 hr @ 220°C min: no cracks

1/2 hr @ 240°C typical: no cracks

Solderability (N*,J,I,PD)

Not designed to be self-solderable

Overload (N,PD*) 5.9 OFM (420 sec)

Overload Figure of Merit

Stress Relief Temp (PD*) 160°C



MECHANICAL

Mandrel Flexibility (N,J,I,PD*)

After Elongation min: 20% 3x OK

typical: 30% 1x OK

After Snap

min: 3x OK

typical: 1x OK

Unilateral Scrape (N*,I)

Avg of 3 tests (taken at 120° increments)

min: 1150 gms

typical: 1300 gms

* Procedure followed to determine published value.

Procedures referenced:

N = NEMA = National Electrical

Manufacturers Association

J = JIS = Japanese Industrial Standards

I = IEC = International Electrotechnical Commission

A = ASTM = American Society for Testing

and Materials

PD = Phelps Dodge Procedure



ELECTRICAL

Pulse Endurance Test (PD*)

20,000 Hz, 2000 V, 0.025 microsecond rise time

90°C, 50% Duty Cycle - Twisted pairs

18 H APTZ Reference = 600 seconds

18 H TZ QS > 60,000 seconds

Pulse Endurance Index (PEI) > 100

Life of Product/Life of Same Size and Build MW-35 (Reference)

Voltage Endurance (PD*)

20 Times The Life of Heavy Armored Poly-Thermaleze

(When Tested at 2000 V, 60 Hz, 90°C)

Dielectric Breakdown (N*,J,I)

NEMA min: 5.7 kV typical: 11 kV

Corona Inception Voltage (PD*)

Typical: 580 V

High Voltage Continuity (N,J,I,PD*)

NEMA @ 1500 V DC: 5 faults/100 feet max

Typical @ 3000 V DC: 0-1 faults/100 feet max



CHEMICAL

Retained Dielectric (N,* J, I)

After 72 hrs. exposure to R-22 + 150°C conditioning:

NEMA min: 5.7 kV

typical: 10.7 kV

R-22 Extractables (N,* J, I): .08%

Resistance to Solvents (N, J, I, PD*)

After 24 hrs. @ RT: Pass,

Solvents Including:

Xylene,

50/50 Cellosolve/Xylene,

Perchloroethylene,

1% NaOH,

28% Sulfuric Acid,

Gasohol