

Isovolta 437320

Composition

Isovolta 437320 is a class F (155°C) tape composed of a woven glass fabric, mica paper and with a polyester mat covering the mica paper. 437320 was designed for use in vacuum pressure impregnation (VPI) applications. The binder is a modified epoxy resin, uncatalyzed, and fully compatible with most commonly used VPI resins. A specific compatibility technical report is available upon request

Properties

Because of the low resin content, the tapes and wrappers are very porous, very flexible, and conformable allowing tight hand or machine winding around both straight and irregular surfaces thereby helping to reduce air voids and therefore, the possibility of internal corona discharges.

- Low dissipation factor at operating temperature through 155° C with low factor VPI resin.
- Less than 1% dissipation factor tip up.
- High mica content.
- Good thermal conductivity.
- Excellent resin penetration.
- Compatible with most commercially available VPI resins.

Application

- Ground insulation in vacuum pressure impregnated AC motor coils operating at low, medium, and high voltages.
- Insulation for pole and interpole coils in traction motors.
- Insulation of magnet coils.

Format:

Sheets: 36" x 36" maximum
 Rolls: ½" to 38" wide

Storability

Two years from date of manufacture.

Technical Data

Properties	Test-method	Unit	Value
Thickness	ASTM D374	inches	0.007
Mica Paper Content		g/m ²	112
Resin Content		wt. %	15
Gurley Stiffness	ASTM D6125	mg	1500 max
Tensile Strength	ASTM D828	lbs/in	80 min.
Dielectric Strength	ASTM D149	Volts/mil	425 min.

All information given here is based on currently available facts and on the results of experiments performed with all due care in our laboratories. It does not in any way reduce the responsibility of the user for carrying out further tests in order to ensure successful processing and use in specific applications.

Typical Properties of the VPI Processed 437320 Insulation

The final electrical and mechanical properties of the VPI processed and cured insulation will depend not only upon the 437320 tape, but also upon the VPI resin chosen, the method of preparation and the process used. Some general properties of a cured system are:

Specific Gravity	1.7-1.8 gr/cm ³
Thermal Class with a Class F VPI Resin	Class F (311 F = 155°C)
Coefficient of linear expansion	10 to 11 X 10 ⁻⁶ 1/°C
Thermal Conductivity	0.28 k cal/m.h. °C or 0.32 watt/m °C'
Short time dielectric strength (measured in oil, wall thicknessca. 1 mm)	
VPM	600-700
kV/mm	23-28

APPLICATION OF TAPES & WRAPPERS

To provide high density insulation with good dielectric properties and high thermal conductivity, Isovolta tapes and wrappers should be applied to the coil as tight as possible.

Typical insulation wall thicknesses versus rated voltage of the machine are:

Voltage (kV)		<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
Thickness	mil	47	63	79	94	110	138
	mm	1.2	1.6	2.0	2.4	2.8	3.5

The 3470-07 tape by itself is not a "finished" insulation and needs to be saturated with a VPI resin and cured. Electrical proof testing of the coils before and after processing is suggested as follows:

- A. Taped coils before VPI (green state)
 - a. Apply 1000 to 1500 volts RMS AC for every ½ lapped layer of 437320 tape for a period of one minute. A DC power source can be used ant 1.7 times the AC equivalent.
 - i. Example 4 x 1500 x 1.7 = 10.2 kV DC
- B. VPI Processed and Cured
 - a. NEMA specification of twice the rated voltage plus 1000 volts AC for a period of one minute.

Other materials supplied by Isovolta and often used in conjunction with 437320 include:

Product	Description
Conductofel 2009	Mica conductor tape
342204	Mica turn insulation - Glass backed
4902	Mica turn insulation - film based
Contafel 0865	Conductive mat for Corona protection
EGSB 2709	Semi-conductive tape for end grading
Isoseal MF 0611	Thermo-shrinking glass/PET film used as a sealing tape and to minimize resin run-out
Poromat 2248	Expandable porous epoxy glass mat, use as interlayer, spacer and filler material
Isoval 11	G11 epoxy slot wedges
Magnoval	Magnetic slot wedges

Ask your Sales Engineer other insulating materials for a Complete Insulation Design.

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