Banding tapes

Polyglas® K 220

- Class C insulation material
- High mechanical resistance (x2 standard banding tape)
- Moisture resistance
- Corrosion resistance

General description
Polyglas® K 220 is the ultimate class C (220°C) moisture resistant tape Kelvar® based and used for banding perrmanent magnets, high speed starters and whenever step operative cycles or reduced spaces are required.
K 220 is a B stage banding tape made of parallel Kevlar® plied yarn pre-impregnated with a special thermosetting polyester PEI base resin. The banding tape forms a mechanical loop to hold coils in place against centrifual forces and replace metal armature or steel bands.

Application
Generators bracing and fixing
High stressed motors and Traction motors banding
Permanent magnet rotors or brushless applications for traction motors and windmill generators
High speed servomotors, ie starter motors
high speed AC motors
Generators for aircrafts
Slip ring motors

Specifications

Characteristics as supplied		**value**	**Test norm**
Thickness	mm	0.33 ± 0.04	IEC 60371-2
Total weight	g/sqm	600 ± 60	IEC 60371-2
Yarns number	yarn/cm	26 ± 1	ASTM D 902
Volatile content	%	0.9 ± 0.5	ASTM D 2369-A
Resin content	%	28 ± 2	ASTM D 2408-6.2.2
Tensile strength	N/cm	≥ 4000	IEC 60934-2
Characteristics after application and polymerization			
thickness	**mm**		
Thermal class	°C	220	IEC 60085
Tensile strength each turn at 20°C	N /cm	3500	Test Method GI09.01b
Tensile strength each turn at 220°C	N /cm	2500	/
Elongation at break at 20°C	%	0.6 ± 0.4	/
Elongation at break at 220°C	%	0.5 ± 0.4	/
Breaking load at -35°C	N/cm	2700	/
Modulus of elasticity at 20°C	N/mm²	≥ 80 000	/
Modulus of elasticity at 220°C	N/mm²	≥ 65 000	/
Thermal conductivity	W/(m°C)	0.48	
Weight loss	%	≤ 5	IEC 2016
Tracking Index	V	380	IEC 60112
Arc Resistance	s	180	ASTM D 495
Vertical fire resistance over 12 mm		V0	UL 94
Breakdown voltage in oil at 20 °C	KV/cm	28 ± 2	IEC 60243-1
Breakdown voltage after 24 H in water at 23°C	KV/cm	10 ± 2	IEC 60243-1

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Main characteristics

The main advantages of Polyglas® tapes in comparison with steel wire bandages are listed as follows:

Eddy currents proof material and locally not exposed to overheating
Outstanding properties of breaking through fatigue
Elimination of flashover among windings and steel bands
Saving in insulating materials and in weight
Saving in material costs and in process costs through reduced application time
Resistance to corrosion in tropical environments
Reduces noise and improve harmonics of transfomer

Processing

By using a suitable tensioning device the tape should be applied with up to maximum suggested pull at a temperature ranging from 80 to 100 °C and at a speed around 10 m/min.

This procedure is strongly suggested for those applications in which the purpose is to obtain at least the 60% of pull as residual tension in the cured bandage.

A proper locking of tape to secure the pull applied during bandage must be performed through an hot iron or a soldering pin for a time necessary to fix the ends.

To obtain a shiny surface after curing it's suggested a masking procedure with normal or shrinkable polyester foil. It allows even a controlled flowing off the resin during curing avoiding any bubble or lump on the surface.

Cure Time

Curing times are related for each product to temperature applied for a certain time through following table:
(Time required the object to reach the temperature isn't included in the table)

Temperature °C	Hours
160	3.5
150	5
135	10
120	24
115	48

Shelf life

If not for immediate use, tape must be stored in its original container in a cool and dry area.
Notice: Before removing cooled material from the plastic bag, let the tape reach room temperature

Storage conditions	
Temperature	Shelf life
10 °C	24 months
15 °C	18 months
20 °C	12 months
25 °C	8 months

Form of delivery

Supplied in polyethylene bags which should not be open until time of use.
Type A packing : flat pancakes plastic core ID 83 mm
Type B packing : spools, flange OD 160 mm, width 200mm
Type C packing : spools, flange OD 290 mm, width 280mm

Banding tape widths available from 6.5 to 51 mm packing Type A length 100 or 200 M or spools as below :
Other length like 50 M upon request.

Packaging

Spool type and content						
Tape width	mm	10	15	20	25	30
Packing type		B	B	C	C	C
Roll length	m	750	500	1800	1500	1200

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