**Pre-compressed High Density Transformer board**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.1g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil | Minimum 45kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.5% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Thickness (0.8mm to 8mm) | 0.8mm to 8mm |  |
| Tolerance on thickness | ±5% |  |
| Length (machine direction) | Max. |  |
| Width | Max. |  |
|  |  |  |
|  |  |  |

**High Density Polyester Laminated Transformer Board**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with polyester glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.2 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.35g/cm3 |  |
| Electric strength in oil - parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.4% |  |
| Shrinkage CMD | Maximum 0.6% |  |
| Shrinkage Thickness | Maximum 4% |  |
| Thickness (13mm-200mm) | 13mm-200mm |  |
| Tolerance on thickness | ±4% |  |
| Length | Max. |  |
| Width | Max. |  |
|  |  |  |
|  |  |  |

**High Density Casein Laminated Transformer Board**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Thickness (13mm-200mm) | 13mm-200mm |  |
| Tolerance | ±4% |  |
| Length | Max. |  |
| Width | Max. |  |
|  |  |  |
|  |  |  |

**T sticks**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Profile  Tstick |  |  |
| Thickness (8mm-15mm) | 8mm |  |
| Length | 3000mm |  |
| Type | T and V |  |
|  |  |  |
|  |  |  |

**Calibrated Clack strips**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Calibrated Pre-compressed High Density Transformer board |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.1g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil | Minimum 45kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.5% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Thickness 1mm; 1.5mm; 2mm; 3mm | 1mm; 1.5mm; 2mm; 3mm |  |
| Tolerance on thickness | ±2% |  |
| Width 38mm; 50mm; 60mm | 38mm; 50mm; 60mm |  |
| Type | Precut or strips |  |
| Edge radius | Minimum 0.5 mm |  |
|  |  |  |

**Inner and Outer Collars**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Low Density Moulded Transformer board |  |
| Material according to specification | Standard: IEC 60641-1 |  |
| Composition | 100% Sulphate Wood Pulp |  |
| Profile |  |  |
| Type Inner Collar/Outer Collar | Outer Collar |  |
| Thickness 1mm-6mm | 1mm-6mm |  |
| Radius (R) | 5mm-20mm |  |
| Height (H) | 100mm |  |
| Inner diameter | Limits? |  |
| Outer Diameter | Limits? |  |

**Edge Protectors**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Low Density Moulded Transformer board |  |
| Material according to specification | Standard: IEC 60641-1 |  |
| Composition | 100% Sulphate Wood Pulp |  |
| Profile |  |  |
| Type Inner /Outer |  |  |
| Thickness 0.5mm-1mm | 0.5mm-1mm |  |
| Radius (R) | 1mm |  |
| Height (H) | Limits? |  |
| Flange | Limits? |  |
| Inner diameter | Limits? |  |
| Outer Diameter | Limits? |  |

**Winding Cylinders**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.1g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil | Minimum 45kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.5% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Thickness 3 to 5 |  |  |
| Scarf/Chamfer length | Minimum 90mm |  |
| Closed(glued)/Open (one scarfed joint open) | Both |  |
| Stabilised/Unstabilised | Both |  |
| Inner Diameter | Limits? |  |
| Outer Diameter | Limits? |  |
| Tolerance on Outer Diameter | ±1mm |  |
| Height | Limits? |  |
|  |  |  |

**Stress Ring Cores**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Profile |  |  |
| Thickness (13mm-30mm) | 13mm-30mm |  |
| Tolerance on thickness | ±4% |  |
| Inner Diameter | Limits? |  |
| Outer Diameter | Limits? |  |
| Radius 1 (R1) | 8mm |  |
| Radius 2 (R2) | 2mm |  |
| Tolerance on dimensions | ±1mm |  |
|  |  |  |

**Helical end supports**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Profile |  |  |
| Thickness (10mm-30mm) | 10mm-30mm |  |
| Tolerance on thickness | ±4% |  |
| Inner Diameter | Limits? |  |
| Outer Diameter | Limits? |  |
| Corner Radius (R) | Various |  |
| A | various |  |
| B | Various |  |
| C | 1mm min. |  |
| Tolerances on dimensions | ±1mm |  |

**Snouts / Moulded Components**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Low Density Moulded Transformer board |  |
| Material according to specification | Standard: IEC 60641-1 |  |
| Composition | 100% Sulphate Wood Pulp |  |
| Profile |  |  |
| Type Snout | Snout |  |
| Tube Length | Limits? |  |
| Outer Radius | Limits? |  |
| Depth | Limits? |  |
| Tube Diameter (D) | Limits? |  |
| Radius (R1) | Limits? |  |
| Radius (R2) | Limits? |  |
| Width | Limits? |  |
| Thickness | 2mm-6mm |  |
| Height |  |  |

**Angle board/L profile**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.1g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil | Minimum 45kV/mm |  |
| Profile |  |  |
| Thickness (6mm-14mm) |  |  |
| Tolerance | ±4% |  |
| Width | Limits? |  |
| height | Limits? |  |
| Length | Limits? |  |

**Transformer board rings**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.1g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil | Minimum 45kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.5% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Profile |  |  |
| Thickness T (2 mm-8 mm) | 2 mm-8 mm |  |
| Tolerance | ±4% |  |
| Inner Diameter | Limits? |  |
| Outer Diameter | Limits? |  |

**End support blocks**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Height /Thickness | 8mm-50mm |  |
| Tolerance on thickness | ±4% |  |
| Width | Various |  |
| Length | Various |  |

**Press frames/rings**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with polyester glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.2 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.35g/cm3 |  |
| Electric strength in oil - parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.4% |  |
| Shrinkage CMD | Maximum 0.6% |  |
| Shrinkage Thickness | Maximum 4% |  |
| Profile |  |  |
| Thickness T | Limits? |  |
| Tolerance | ±4% |  |
| Inner Diameter | Limits? |  |
| Outer Diameter | Limits? |  |
| Impregnation holes in slots at S mm spacing | 100 mm spacing |  |
| Ability to cut/mill various noncircular shapes | Yes/No |  |

**Ribs/Slats**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
| Shrinkage Thickness | Maximum 6% |  |
| Thickness (1mm-15mm) | 1mm-15mm |  |
| Tolerance | ±4% |  |
| Length | Various |  |
| Width | Various |  |
|  |  |  |

**Support Structure elements**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with casein glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.1 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.3g/cm3 |  |
| Electric strength in oil parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.5% |  |
| Shrinkage CMD | Maximum 0.7% |  |
|  |  |  |
| Thickness | 30 mm |  |
| Tolerance | ±4% |  |
| Length | 2500 mm |  |
| Width | 40 mm |  |
|  |  |  |

**Step Blocks**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board laminated with polyester glue |  |
| Material according to specification | Standard IEC 60763 Type LB.3.1 A.2 and ERI specification |  |
| Composition | 100% sulphate wood pulp |  |
| Density | 1.15g/cm 3 to1.35g/cm3 |  |
| Electric strength in oil - parallel to layers | Minimum 8kV/mm |  |
| Shrinkage MD | Maximum 0.4% |  |
| Shrinkage CMD | Maximum 0.6% |  |
| Shrinkage Thickness | Maximum 4% |  |
| Profile (Typical) |  |  |
| Thickness T | Limits? |  |
| Tolerance | ±4% |  |
| Length L | Limits? |  |
| Height H | Limits? |  |
| Tolerance | 1 mm |  |

**Clack Band**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Pre-compressed High Density Transformer board and presspaper |  |
| Material according to specification | IEC 60641-1 Type B3.1 and ERI Specification |  |
| Profile (Typical) |  |  |
| Shape (rectangular/trapezoidal) | rectangular/  trapezoidal |  |
| Shape Length |  |  |
| Shape Spacing |  |  |
| Thickness | 5 mm-6mm |  |
| Tolerance | ±4% |  |
| Radius R1 | 1.5 mm |  |
| Width | Limits? |  |
| Length | Various |  |

**Crepe tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Kraft Paper |  |
| Specification | IEC  60554 |  |
| Width 20/40mm | 20-40mm |  |
| Thermal Class | A 105ºC |  |
| Colour | Natural brown |  |
| Roll Length | Typical |  |
|  |  |  |
|  |  |  |

**Thermally upgraded Crepe Tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Thermally upgraded Kraft Paper |  |
| Specification | IEC  60554 |  |
| Width | 20 mm |  |
| Thermal Class | E 120ºC |  |
| Colour |  |  |
| Roll Length |  |  |
|  |  |  |
|  |  |  |

**Strong Tape/Fibre Reinforced Kraft Paper tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Fibre Reinforced Kraft Paper |  |
| Specification | IEC  60554 |  |
| Width | 20 mm |  |
| Thermal Class | A 105ºC |  |
| Colour |  |  |
| Roll Length |  |  |
|  |  |  |
|  |  |  |

**Thermo- setting Resin impregnated Fibre-glass tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Thermo- setting Resin impregnated Fibre-glass |  |
| Specification |  |  |
| Width | Range? |  |
| Thermal Class | H 200ºC |  |
| Colour |  |  |
| Roll Length | Typical |  |
|  |  |  |
|  |  |  |

**Foil Tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Conductive foil tape |  |
| Specification |  |  |
| Width | 20 mm |  |
| Thermal Class | E 120ºC |  |
| Colour |  |  |
| Roll Length | Typical |  |
| Alternatives? |  |  |
|  |  |  |

**Cotton Tape**

**Schedule A and B**

|  |  |  |
| --- | --- | --- |
| Requirements | A | B |
| Material | Woven pure cotton |  |
| Specification |  |  |
| Width | 40 mm |  |
| Thermal Class | A 105ºC |  |
| Colour |  |  |
| Roll Length | Typical |  |
|  |  |  |
|  |  |  |