

MATERIAL DATA SHEET

Thermo-glass

Thermo-E-glass

E-glass is the high-quality basis of HKO's Thermo-glass products.

E-glass stands out by high thermal stability and excellent electrical insulation properties.

Thermo-glass products are made from filament yarns or texturized and twisted yarns. The texturing considerably improves the insulating properties of the finished products. The diameter of filament amounts to ≥ 6 micron.

Properties

root-proof

resistant to swelling

resistant to heat and cold

good chemical resistance

non-carcinogenic

Physical properties

density	[g/cm ³] / [Lb/in ³]	2,6 / 0,094
tensile strength	[N/mm ²] / [KSi]	3400-3700 / 493-537
Young's Modulus, E	[GPa] / [KSi] (23°C/73°F)	72,3 / 10,5
elongation at break	[%]	3,3 - 4,8
coefficient of thermal expansion	[10 ⁻⁶ K ⁻¹]	5
thermal conductivity (textiles)	[W/(m*K)]	0,85 - 1,0
dielectric constant	[ε]	5,8 - 6,7
specific electrical resistance	[Ω*cm/ 20°C (68°F)]	10 ¹⁵
	[Ω*cm/ 250°C (482°F)]	10 ¹³
	[Ω*cm/ 450°C (842°F)]	10 ¹¹
temperature resistance ¹⁾	[°C] / [°F]	550 / 1022
softening point (Littleton)	[°C] / [°F]	840 / 1544

1) When assessing the temperature resistance, the influence of the medium and the type of stress are of decisive importance.

Chemical composition (reference values)

SiO ₂	[%]	app. 52 - 56
CaO	[%]	app. 16 - 25
Al ₂ O ₃	[%]	app. 12 - 16
B ₂ O ₃	[%]	app. 5 - 10
MgO	[%]	app. 0 - 5

miscellaneous: TiO₂, Fe₂O₃, Cr₂O₃, F₂, K₂O, Na₂O, MnO, P₂O₅, SO₂

Subject to tolerances!

We supply Thermo-E-Glass products in form of:

stuffing fibres	yarns	webbings	ropes
packings	sleeves	fabrics	needle mats

MATERIAL DATA SHEET

Thermo-glass

Thermo-C-glass

Thermo-C-glass comes within the group of alkali-lime glass, but has an increased percentage of boron trioxide. One of this characteristic is the good chemical resistance. The diameter of filaments amounts to approx. 9 - 11.5 micron.

Properties

root-proof

resistant to swelling

resistant to heat and cold

high chemical resistance

non-carcinogenic

Physical properties

density	[g/cm ³] / [Lb/in ³]	2,52 / 0,091
tensile strength	[N/mm ²] / [KSi]	3300 / 479
Young's Modulus, E	[GPa] / [KSi] (23°C/73°F)	68,9 / 10,0
elongation at break	[%]	3,3 - 4,8
temperature resistance ¹⁾	[°C] / [°F]	450 / 842
softening point (Littleton)	[°C] / [°F]	740 / 1364

1) When assessing the temperature resistance, the influence of the medium and the type of stress are of decisive importance.

Chemical composition (reference values)

SiO ₂	[%]	app. 64 - 68
CaO	[%]	app. 11 - 15
Na ₂ O+K ₂ O	[%]	app. 7 - 10
Al ₂ O ₃	[%]	app. 3 - 5
B ₂ O ₃	[%]	app. 4 - 6
MgO	[%]	app. 2 - 4

miscellaneous: F₂O₃, BaO, K₂O, F, SO₃

Subject to tolerances!

We supply Thermo-C-glass-products in form of:

Thermo-C-glass -insulation ropes

GPCE-packings

Type of glass	Composition/application	Basic material
E-glass	aluminium-borosilicate, alkali oxide content < 1 %, general reinforcement for plastics and electrical applications	filament
C-glass	alkali-lime with increased addition of boron, special chemical resistance	filament, staple fibre

Chemical resistance

Thermo-glass products based on E-glass or C-glass are resistant to oils, fats, solvents and organic acids. In case of inorganic acids - except from phosphoric and hydrofluoric acid - C-glass products have to be used.

As per DIN 12111 materials are classified into hydrolytic classes according to their resistance to water. E-glass is rated as having class I (best class).

Remark:

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