

Technical material data

Panel EP GC 202 EN 60893-3-2

HGW 2372.1 | FR-4

CARRIER: glass filament fabric
MATRIX: modified epoxy resin

MECHANICAL PROPERTIES

	unit	test value	norm value
flexural strength	MPa	350-560	340
Impact strength	kJ/m ²	100	-
notched impact strength (charpy) parallel to laminations	kJ/m ²	50-80	33
tensile strength	MPa	300-430	(300)
compressive strength parallel to laminations	MPa	200	-
compressive strength perpendicular to laminations	MPa	350-520	(350)
splitting force	N	3000	-
elasticity module bending test	MPa	18000-25000	(24000)
shear strength parallel to layer direction	MPa	55	(30)

ELECTRICAL PROPERTIES

insulation resistance	MΩ	5*10 ⁴ - 27*10 ⁶	5*10 ⁴
dielectric strength (1-minute test voltage) at 90°C in oil parallel to the layer direction	kV	40-60	35
dielectric strength (1-minute test voltage) at 90°C in oil perpendicular to the layer direction	kV/mm	13.3-16.7	10.2
dissipation factor at 48-62 Hz	max.	0.05	-
dissipation factor at 1 MHz	max.	0.04	0.04
permittivity at 48-62 Hz	max.	5.5	5.5
permittivity at 1 MHz	max.	5.5	5.5
dielectric constant		5	-
tracking resistance	CTI	200	(200)
electrolytic corrosion	max.	AN 1.4	-

THERMAL PROPERTIES

thermal conductivity	W/m*k	0.3	-
coefficient of elongation	10 ⁻⁶ /K	10-20	-
temperature limit	°C	120 / 180*	(155)
limit determination of the threshold temperature due to flexural strength	MPa	175	-
oxygen index	%	-	-
thermal class		E	-
incandescence resistance	level	2a	-

OTHER PROPERTIES

raw density	g/cm ³	1.7-1.9	(1.7-1.9)
water absorption at 3 mm thickness	mg	10	22
Flammability	Level	FV0	FV0

The values in () are specific values which are only noted for information; they cannot be seen as a requirement of this norm. The stated values are average values which are confirmed by regular statistical tests and controls. These data are pure representative information and may only lead by an explicit agreement to an assurance for a sales agreement. Directive 2011/65/EU of European Union on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) became operative as from the 27th of January, 2011. Following substances namely are involved: lead, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers, mercury. We herewith declare that all of our products were manufactured RoHS conformal. As downstream users (i.e., as manufacturer of products), we act in accordance with European Union Regulation 1907/2006 (the REACH Regulation). According to information provided to us by our suppliers, no substances from the latest Candidate List (the List of Substances of Very High Concern, or SVHC List) from the 15th of June, 2015 exist in the materials used by us in concentrations of more than 0.1 % by mass.

PROPERTIES

- low water absorption
- very good mechanical properties
- excellent electrical properties even in extreme climatic conditions
- low dielectric loss
- good chemical resistance
- flame retardant in accordance with UL94 V0*
- low water absorption

APPLICATIONS

- threaded rods and other rotationally symmetrical components, pressure bolts
- electrical insulation in mechanical engineering / medium voltage range
- base plates, capacitors cover
- aerospace and telecommunications engineering
- precision parts
- test adapters, test gauges
- chemical plant construction
- mechanical engineering
- extremely low temperature loaded parts
- electroplating
- motors and electrical equipment manufacturing
- high-voltage insulating parts
- applications which demand low flammability

* TI 180°C and UL-listed available on request