

Product Data Sheet EP GC 23 HFD (halogen free)

EP GC 23

Property	Method of testing	Unit	max. or min.	Ref. Value IEC 61212-3-1	Test value (median)
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Mechanical properties

Flexural stress at rupture, perpendicular to laminations	ISO 178	MPa	min.	300	354,04
Compressive strength parallel to laminations (axial)	ISO 604	MPa	min.	175	302,43
Cohesion between layers	IEC 61212-2	MPa	min.	200	495,56

Electrical properties

Electric strength at 90°C in oil perpendicular to laminations	IEC 60243-1	kV/mm	min.	7,7	12,66
Breakdown voltage at 90°C in oil parallel to laminations	IEC 60243-1	kV	min.	40	50
Insulation resistance after immersion in water	IEC 60167	MOhm	min.	1.000	623.000
Proof tracking index PTI	IEC 60112	PTI			
Comparative tracking index CTI	IEC 60112	CTI	min.		600
Tracking resistance	IEC 60112	Klasse	min.		

other properties

Thermisches Langzeitverhalten	IEC 60216	T.I.		130*	>180
Dichte	ISO 1183	g/cm ³		1,7 - 1,9*	1,931
Wasseraufnahme	ISO 62	mg/cm ²	max.	1,5	0,28

Base material Woven glass cloth
Matrix resin: Epoxy (epoxide)
Compound: halogen free

* Are typical values intended to give only general guidance and are not to be considered as requirement of this standard.

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Certifications Underwriter Laboratories



Flammability	E307596	IEC 60695-11-10	UL 94		V-0	V-0
Hot-wire Ignition	E307596	UL746A	HWI			0
High Amp Arc Ignition	E307596	UL746A	HAI			0
Relative Temperature Index	E307596	UL746A	RTI			130

Fire behaviour and fire side effects of materials and parts DIN 5510 – 2

flammability group	DIN 5510 T.2	class			S 4
smoke emission class	DIN 5510 T.2	class			SR 2
drop forming category	DIN 5510 T.2	class			ST 2

Fire testing at DIN EN 45545-2

Oxygen index	T01	EN ISO 4589-2	Vol. %	min.		76,7
Smoke density D _s max	T10.3	EN ISO 5659-2		max.		82
Smoke toxicity CIT _{NLP}	T12	NF X 70-100		max.		0,09
					3 mm	20 mm
MARHE- value	T03.01	ISO 5660-1	kW/m ²	max.	22,1	16,2
Smoke density D _s max	T10.04	EN ISO 5659-2		max.	431	388
Smoke density D _s (4)	T10.01	EN ISO 5659-2		max.	116	52
Smoke density VOF4	T10.02	EN ISO 5659-2		max.	179	75
Smoke toxicity CIT _G -Wert	T11.01	EN ISO 5659-2		max.	0,12	0,06
flux at extinguishment CFE	T11.02	EN ISO 5658-2	kW/m ²	min.	42,3	46,3

These tests allow a classification into the requirement levels R1, R2, R3, R7, R11, R12, R17, R22 and R23 according to EN 45545-2.

Glowing/hot-wire based test methods

Glow-wire flammability index GWFI	DIN EN 60695-2-12				GWFI: 960/3,0
Glow-wire ignition temperature GWIT	DIN EN 60695-2-13				GWIT:>960/3,0

The test certificates for the special tests have been issued for the sheet material **EP GC 202 HFD**, which happens to be identical to the tested material. Usually, the tests are not carried out with tubes.

RoHS- Declaration

This material does not contain any substances of very high concern as listed in the EU directive 2011/65/EU, article 4, paragraph 1