

Datasheet Insulation Materials - Tubes

	Material			Availability	Electrical Properties								Thermal Properties	
	Characteristic property applications	Resin	Substrate	Diameter	Compressive strength axial	Cohesion between layers	Dielectric strength perpendic at 90 °C in oil (thickness 3 mm)	Dielectric strength parallel at 90 °C in oil	Insulation resistance	Permittivity 50 Hz	Permittivity 1 MHz	Dissipation factor 50 Hz	Dissipation factor 1 MHz	Thermal endurance
DIN EN 61212-2					5.2	5.3	6.1	6.1	6.2	6.3	6.3	6.3	6.3	7.1
Test Standard					ISO 604	IEC 61212-2	IEC 60243-1	IEC 60243-1	IEC 60167	IEC 60250	IEC 60250	IEC 60250	IEC 60250	IEC 60216
Unit				mm	MPa	MPa	kV/m	kV	MΩ					T.I.
Min/Max					Min	Min	Min	Min	Min	Max	Max	Max	Max	Min
AS EP GC 21	Electrical and mechanical applications, TC 130	Epoxy	Woven glass cloth	2-250	175	200	7.7	40	1.000	-	5.2	0.5	0.4	130
AS EP GC 22	As type 21 but with TC 155	Epoxy	Woven glass cloth	2-250	175	200	7.7	40	1.000	-	5.2	0.5	0.4	155
AS EP GC 23	As type 21 but with combustibility according to UL 94 V-0	Epoxy	Woven glass cloth	2-250	175	200	7.7	40	1.000	-	5.2	0.5	0.4	130
AS EP MP 21	Epoxy mica paper, electrical applications at high temperatures	Epoxy	Mica paper	2-250	60	30	11	30	100	-	5.2	-	0.4	155
AS MF GC 21	Resistant to arcs and tracking	Melamine	Woven glass cloth	2-250	80	150	3.3	10	0.1	-	8	-	0.2	130
AS PF CC 21	Mechanical and electrical applications, fine weave	Phenolic	Woven cotton cloth	2-250	110	90	1.6	10	10	-	-	-	-	120
AS PF CC 22	Mechanical and electrical applications, coarse weave	Phenolic	Woven cotton cloth	2-250	100	90	1.6	10	2	-	-	-	-	120
AS PF CC 23	Mechanical applications, very coarse weave	Phenolic	Woven cotton cloth	2-250	100	90	1.6	8	0.5	-	-	-	-	120
AS PF CC 24	Mechanical and electrical applications, very fine weave	Phenolic	Woven cotton cloth	2-250	120	100	1.6	10	2	-	-	-	-	120
AS PF CP 21	Electrical and mechanical applications at low voltages	Phenolic	Cellulose paper	2-250	100	70	-	15	1	-	-	-	-	120
AS PF CP 22	Electrical applications at high-voltage mains frequency	Phenolic	Cellulose paper	2-250	80	70	9.9	50 ⁽²⁾	1	-	-	-	-	120

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AS PF CP 23	As type 21 but with better electrical properties	Phenolic	Cellulose paper	2-250	100	70	6.1	25	5	-	-	-	-	120
AS PF GC 21	Very high mechanical strength at moderate temperatures	Phenolic	Woven glass cloth	2-250	120	200	4.8	15	20	-	-	-	0.4	130

Standard types according to DIN EN 61212.

Tubes made from industrial laminated materials.

Value: Minimum requirements of DIN EN 61212.

Value: Typical values, general recommended values, which must not be used as standard values.

(1): The flexural strength measured at 150 °C ± 3K must not be less than 50% of the defined value.

(2): After 96 h pretreatment in air at 105 °C ± 5K directly prior to testing and immediate immersion in the hot oil.