ELEKTRO-ISOLA

Material overview for tubes

Grønlandsvej 197 +45 7642 8200
DK-7100, Vejle - Denmark ei@elektro-isola.dk
VAT no.: DK20429488 www.elektro-isola.com

Closest relevant standards

Material designation	IEC 61212-3-1	NEMA	Reinforcement	Resin	Colour**
Etronit IV C	-	XXX	Paper	Phenol	
Etronit B 65	PF CP 21	XX	Paper	Phenol	
Etronit B 66	PF CP 22	XX	Paper	Phenol	
Etronit B 67	PF CP 23	XX	Paper	Phenol	
Etronax MF	PF CC 22	C	Cotton fabric	Phenol	
Etronax MMF	PF CC 21	L	Cotton fabric	Phenol	
Etronax MMMF	PF CC 24	-	Cotton fabric	Phenol	
Etronax MF G	-	-	Cotton fabric	Phenol	
Etronax MFP G	-	-	Cotton/synthetic fabric	Phenol	
G-Etronax B	PF GC 21	G - 3	Glass fabric	Phenol	
G-Etronax EP 10	EP GC 21	G - 10	Glass fabric	Epoxy	
G-Etronax EP 11	EP GC 22	G - 11	Glass fabric	Epoxy	
G-Etronax EP 22	EP GC 22	G - 11	Glass fabric	Epoxy	
G-Etronax EP 311 HC		FR-5	Glass fabric	Epoxy	
G-Etronax EP FR	EP GC 23	FR-4	Glass fabric	Epoxy	
G-Etronax PI	-	-	Glass fabric	Polyimide	
G-Etronax SI	SI GC 21	G - 7	Glass fabric	Silicone	

Test method: IEC/EN 61212-2
Norm
Sample dimension
Conditioning: IEC 60212

Mechanical properties		
Bending strength	Compressive strength	Cohesion between layers
5.1	5.2	5.3
ISO 178	ISO 604	IEC 61212-2
ID > 100 mm	-	ID < 100 mm
1	1	1
MPa	MPa	MPa
120	130	145
130	140	160
120	130	150
120	140	160
90	170	130
100	170	130
120	170	150
100	180	140
120	160	150
300	220	250
325	200	400
325 (D)	200	480
325 (D)	200	400
300	200	400
350	230	400
380	300	460
110	45	135

The above data are average values based on the results of comprehensive tests in our laboratories. Elektro-Isola A/S does not assume responsibility for the performance of our products in applications over which we have no control. For updated technical values, we refer to our website: www.elektro-isola.com

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09/11/2026

Conditioning

1: 24h/23°C/50%RH
2: 24h/23°C/50%RH + 1h/ in oil at 90°C
3: 96h/105°C + 1h/23°C/20%RH
4: 24h/50°C/<20% RH + 24h in water at 23°C
5: 96h/105°C + 1h/ in oil at 90°C

Notes

A: ID > 8 mm and/or OD > 10 mm
B: Wall thickness
C: Halogen free
D: 230 MPa measured at 150°C
E: Wall thickness ≥ 4,0 mm
F: Tested on sheet material

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Test method: IEC/EN 61212-2
Norm
Thickness of sample
Conditioning: IEC 60212

Closest relevant standards

Material designation	IEC 61212-3-1	NEMA	Reinforcement	Resin	Colour**	Electrical properties							
						Electrical strength in 90°C oil		Permitivity		Dissipation factor		Insulation resistance after submersion in water	Comparative tracking index [CTI]
						Perpendicular	Parallel	50HZ	1MHz	50HZ	1MHz		
						6.1.2.2	6.1.2.1	6.3		6.3		6.2	
						IEC 61212-2		IEC 62631-2-1		IEC 62631-2-1		IEC 62631-3-3	IEC 60112
						B) 3 mm	B) ≥ 3 mm	-		-		A)	-
						2	2	3		3		4	1
						kV/mm	kV/25 mm					MΩ	V
Etronit IV C	-	XXX	Paper	Phenol		6.7	25	5	5	0.03	0.03	200	
Etronit B 65	PF CP 21	XX	Paper	Phenol		8.3	25	5		0.04		10	
Etronit B 66	PF CP 22	XX	Paper	Phenol		10 (5)	50 (5)	5		0.04		10	
Etronit B 67	PF CP 23	XX	Paper	Phenol		8.3	35	5		0.04		100	
Etronax MF	PF CC 22	C	Cotton fabric	Phenol		2	15					100	
Etronax MMF	PF CC 21	L	Cotton fabric	Phenol		3	20					200	
Etronax MMMF	PF CC 24	-	Cotton fabric	Phenol		4	20					50	
Etronax MF G	-	-	Cotton fabric	Phenol									
Etronax MFP G	-	-	Cotton/synthetic fabric	Phenol									
G-Etronax B	PF GC 21	G - 3	Glass fabric	Phenol		8	50	5	5	0.03	0.04	1000	100 (F)
G-Etronax EP 10	EP GC 21	G - 10	Glass fabric	Epoxy		11	60	4.5	4.5	0.01	0.01	10000	200 (F)
G-Etronax EP 11	EP GC 22	G - 11	Glass fabric	Epoxy		11	60	4.5	4.5	0.01	0.01	10000	200 (F)
G-Etronax EP 22	EP GC 22	G - 11	Glass fabric	Epoxy		11	60	4.5	4.5	0.01	0.01	10000	200 (F)
G-Etronax EP 311 HC		FR-5	Glass fabric	Epoxy		11	60	4.5	4.5	0.01	0.01	10000	600 (F)
G-Etronax EP FR	EP GC 23	FR-4	Glass fabric	Epoxy		10	50	4.5	4.5	0.01	0.01	10000	200 (F)
G-Etronax PI	-	-	Glass fabric	Polyimide		10	70	4		0.01		1000	250 (F)
G-Etronax SI	SI GC 21	G - 7	Glass fabric	Silicone		10	70	4	4	0.006	0.006	500	400 (F)

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3: 96h/105°C + 1h/23°C/20%RH
4: 24h/50°C/<20% RH + 24h in water at 23°C
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Test method: IEC/EN 61212-2

Norm

Thickness of sample

Conditioning: IEC 60212

Closest relevant standards

Material designation	IEC 61212-3-1	NEMA	Reinforcement	Resin	Colour**	Physical and thermal properties								
						Temperature index 20,000 h (T.I.)	Fire class	Density	Water absorption	Smoke emission & toxicity	Oxygen Index (OI)	Smoke density (Ds max.)	Smoke density (Ds max.)	Toxicity (CIT_{NLP})
						7.1	7.4	7.3	7.2	-	-	-	-	-
						ISO 60216	IEC 60695-11-10	ISO 1183-A	ISO 62-1	EN 45545-2; R22, R23 & R24	EN ISO 4589-2	EN ISO 5659-2	EN ISO 5659-2	NF X 70-100-1/-2
						B) ≥ 3 mm	-	All	-	-	-	-	-	-
						-	-	1	4	-	-	-	-	-
						°C	Thickness in mm /Category	g/cm³	mg	Thickness in mm /Classification	Thickness in mm /%	Thickness in mm /Value	Thickness in mm /Value	-
Etronit IV C	-	XXX	Paper	Phenol		120 (F)		1.25	2					
Etronit B 65	PF CP 21	XX	Paper	Phenol		120 (F)		1.25	4.5					
Etronit B 66	PF CP 22	XX	Paper	Phenol		120 (F)		1.25	4.5					
Etronit B 67	PF CP 23	XX	Paper	Phenol		120 (F)		1.25	3.5					
Etronax MF	PF CC 22	C	Cotton fabric	Phenol		115 (F)		1.25	2					
Etronax MMF	PF CC 21	L	Cotton fabric	Phenol		115 (F)		1.3	2.5					
Etronax MMMF	PF CC 24	-	Cotton fabric	Phenol		115 (F)		1.3	2					
Etronax MF G	-	-	Cotton fabric	Phenol		100 (F)		1.3	1.8					
Etronax MFP G	-	-	Cotton/synthetic fabric	Phenol		100 (F)		1.3	5					
G-Etronax B	PF GC 21	G - 3	Glass fabric	Phenol		155 (F)	≥ 3 / V-0 (F)	1.85	2					
G-Etronax EP 10	EP GC 21	G - 10	Glass fabric	Epoxy		140 (F)		1.75	0.2					
G-Etronax EP 11	EP GC 22	G - 11	Glass fabric	Epoxy		180 (F)		1.8	0.2					
G-Etronax EP 22	EP GC 22	G - 11	Glass fabric	Epoxy		160 (F)		1.75	0.2					
G-Etronax EP 311 HC		FR-5	Glass fabric	Epoxy		180 (F)	≥ 3 / V-0 C	1.8	0.3	≥ 3 / HL1, HL2, HL3 (F)	3 / ≥ 32 (F)	25 / 3 (F)	1 / 75 (F)	(F)
G-Etronax EP FR	EP GC 23	FR-4	Glass fabric	Epoxy		145 (F)	≥ 3 / V-0 (F)	1.85	0.3					
G-Etronax PI	-	-	Glass fabric	Polyimide		190 (F)	≥ 4 / V-0 (F)	1.9	0.4					
G-Etronax SI	SI GC 21	G - 7	Glass fabric	Silicone		220 (F)	≥ 3 / V-0 (F)	1.8	1					

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