



Material overview for tubes

Grønlandsvej 197

DK-7100, Vejle - Denmark

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www.elektro-isola.com

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**                                                                             |
| 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 DN                 | -             | -      | Synthetic fabric        | 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  |  |

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](http://www.elektro-isola.com)

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23/05/2025

| Electrical properties           |                   |               |      |                    |       |                                                 |                                  |
|---------------------------------|-------------------|---------------|------|--------------------|-------|-------------------------------------------------|----------------------------------|
| Electrical strength in 90°C oil |                   | Permittivity  |      | 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 kV/mm                         | 2 kV/25 mm        | 3             |      | 3                  |       | 4 MΩ                                            | 1 V                              |
| 6.7                             | 25                | 5             | 5    | 0.03               | 0.03  | 200                                             |                                  |
| 8.3                             | 25                | 5             | -    | 0.04               | -     | 10                                              |                                  |
| 10 <sup>(5)</sup>               | 50 <sup>(5)</sup> | 5             | -    | 0.04               | -     | 10                                              |                                  |
| 8.3                             | 35                | 5             | -    | 0.04               | -     | 100                                             |                                  |
| 3                               | 40                | 4             | -    | 0.04               | -     | 5000                                            |                                  |
| 2                               | 15                | -             | -    | -                  | -     | 100                                             |                                  |
| 3                               | 20                | -             | -    | -                  | -     | 200                                             |                                  |
| 4                               | 20                | -             | -    | -                  | -     | 50                                              |                                  |
| -                               | -                 | -             | -    | -                  | -     | -                                               |                                  |
| -                               | -                 | -             | -    | -                  | -     | -                                               |                                  |
| 8                               | 50                | 5             | 5    | 0.03               | 0.04  | 1000                                            | 100 <sup>(F)</sup>               |
| 11                              | 60                | 4.5           | 4.5  | 0.01               | 0.01  | 10000                                           | 200 <sup>(F)</sup>               |
| 11                              | 60                | 4.5           | 4.5  | 0.01               | 0.01  | 10000                                           | 200 <sup>(F)</sup>               |
| 11                              | 60                | 4.5           | 4.5  | 0.01               | 0.01  | 10000                                           | 200 <sup>(F)</sup>               |
| 11                              | 60                | 4.5           | 4.5  | 0.01               | 0.01  | 10000                                           | 600 <sup>(F)</sup>               |
| 10                              | 50                | 4.5           | 4.5  | 0.01               | 0.01  | 10000                                           | 200 <sup>(F)</sup>               |
| 10                              | 70                | 4             | -    | 0.01               | -     | 1000                                            | 250 <sup>(F)</sup>               |
| 6.7                             | 40                | 4             | 4    | 0.006              | 0.006 | 5000                                            | 400 <sup>(F)</sup>               |

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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| Physical and thermal properties      |                              |                   |                     |                                    |                      |                            |                            |                                |
|--------------------------------------|------------------------------|-------------------|---------------------|------------------------------------|----------------------|----------------------------|----------------------------|--------------------------------|
| Temperature index<br>20,000 h (T.I.) | Fire class                   | Density           | Water<br>absorption | Smoke emission &<br>toxicity       | Oxygen Index<br>(OI) | Smoke density (Ds<br>max.) | Smoke density (Ds<br>max.) | Toxicity (CIT <sub>NLP</sub> ) |
| 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               | -                   | -                                  | 3 mm                 | -                          | -                          | -                              |
| -                                    | -                            | 1                 | 4                   | -                                  | -                    | -                          | -                          | -                              |
| °C                                   | Thickness in mm<br>/Category | g/cm <sup>3</sup> | mg                  | Thickness in mm<br>/Classification | %                    | Thickness in mm<br>/Value  | Thickness in mm<br>/Value  | -                              |
| 120                                  |                              | 1.25              | 2                   |                                    |                      |                            |                            |                                |
| 120                                  |                              | 1.25              | 4.5                 |                                    |                      |                            |                            |                                |
| 120                                  |                              | 1.25              | 4.5                 |                                    |                      |                            |                            |                                |
| 120                                  |                              | 1.25              | 3.5                 |                                    |                      |                            |                            |                                |
| 130                                  |                              | 1.15              | 1                   |                                    |                      |                            |                            |                                |
| 115                                  |                              | 1.25              | 2                   |                                    |                      |                            |                            |                                |
| 115                                  |                              | 1.3               | 2.5                 |                                    |                      |                            |                            |                                |
| 115                                  |                              | 1.3               | 2                   |                                    |                      |                            |                            |                                |
| 100                                  |                              | 1.3               | 1.8                 |                                    |                      |                            |                            |                                |
| 100                                  |                              | 1.3               | 5                   |                                    |                      |                            |                            |                                |
| 155                                  |                              | 1.85              | 2                   |                                    |                      |                            |                            |                                |
| 140                                  |                              | 1.75              | 0.2                 |                                    |                      |                            |                            |                                |
| 180                                  | ≥ 3 / V-0 <sup>(F)</sup>     | 1.8               | 0.2                 | ≥ 3 / HL3 <sup>(F)</sup>           | ≥ 32 <sup>(F)</sup>  | 25 / 1 <sup>(F)</sup>      | 1 / 106 <sup>(F)</sup>     | 0.06 <sup>(F)</sup>            |
| 160                                  |                              | 1.75              | 0.2                 |                                    |                      |                            |                            |                                |
| 180                                  |                              | 1.8               | 0.3                 |                                    |                      |                            |                            |                                |
| 145                                  |                              | 1.85              | 0.3                 |                                    |                      |                            |                            |                                |
| 190                                  | ≥ 4 / V-0 <sup>(F)</sup>     | 1.9               | 0.4                 |                                    |                      |                            |                            |                                |
| 220                                  | ≥ 3 / V-0 <sup>(F)</sup>     | 1.8               | 0.2                 |                                    |                      |                            |                            |                                |

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