

## Properties of insulating and sheathing materials

### Remark

Only for basic material, deviations depending on the intended use / implementation are possible

| Material  | Parameter    |                              |                          |  |                                     |                                    |              |                           |                    |                 |                |                    |
|---|--------------|------------------------------|--------------------------|--|-------------------------------------|------------------------------------|--------------|---------------------------|--------------------|-----------------|----------------|--------------------|
|   | Abbreviation | Designation according to VDE | Operating temperature °C | Dielectric constant (10 <sup>3</sup> ) | Volume resistivity (Ohm x cm)       | Tensile strength N/mm <sup>2</sup> | Elongation % | Water absorption (20°C) % | Weather resistance | Fuel resistance | Oil resistance | Flammability       |
| Polyvinylchloride                               | PVC          | Y                            | -30 ... +70              | 4                                      | 10 <sup>12</sup> - 10 <sup>15</sup> | 10 - 25                            | 150 - 300    | 0,4                       | moderate           | moderate        | good           | self-extinguishing |
| Polyvinylchloride heat resistance               | PVC          | Y                            | -20 ... +90              | 3,5                                    | 10 <sup>12</sup> - 10 <sup>15</sup> | 10 - 25                            | 150 - 300    | 0,4                       | moderate           | moderate        | good           | self-extinguishing |
| High density Polyethylene                       | LDPE         | 2Y                           | -50 ... +70              | 2,3                                    | 10 <sup>17</sup>                    | 20 - 30                            | 500          | 0,1                       | good               | poor            | moderate       | flammable          |
| Low density Polyethylene                        | HDPE         | 2Y                           | -50 ... +100             | 2,3                                    | 10 <sup>17</sup>                    | 30                                 | 800          | 0,1                       | moderate           | poor            | moderate       | flammable          |
| Polyurethane                                    | PUR          | 11Y                          | -40 ... +90              | 4,0 - 6,0                              | 10 <sup>12</sup>                    | 30 - 45                            | 300 - 600    | 1,5                       | very good          | good            | good           | self-extinguishing |
| Polyamide                                       | PA           | 4Y                           | -40 ... +80              | 3,5 - 7,0                              | 10 <sup>14</sup>                    | 50 - 180                           | 200 - 300    | 1 - 2                     | good               | moderate        | good           | flammable          |
| Polybutylene-terephthalate                      | PBTP         | -                            | -60 ... +110             | 3,0 - 4,0                              | 10 <sup>16</sup>                    | 50 - 100                           | 50 - 300     | 0,5                       | good               | good            | good           | flammable          |
| Polytetrafluorethylene                          | PTFE         | 5Y                           | -190 ... +260            | 2,1                                    | 10 <sup>18</sup>                    | 14 - 40                            | 240 - 400    | 0,01                      | very good          | very good       | very good      | non-flammable      |
| Tetrafluorethylene Hexafluorpropylene Copolymer | FEP          | 6Y                           | -100 ... +200            | 2,1                                    | 10 <sup>18</sup>                    | 20 - 25                            | 250 - 350    | 0,01                      | very good          | very good       | very good      | non-flammable      |
| Ethylene-tetrafluorethylene                     | ETFE         | 7Y                           | -100 ... +150            | 2,6                                    | 10 <sup>16</sup>                    | 40 - 50                            | 100 - 300    | 0,01                      | very good          | very good       | very good      | non-flammable      |
| Perfluoralkoxypolymere                          | PFA          | -                            | -190 ... +260            | 2,1                                    | 10 <sup>15</sup>                    | 30                                 | 300          | 0,01                      | very good          | very good       | good           | non-flammable      |
| Chloroprene rubber                              | CR           | 5G                           | -40 ... +100             | 6,0 - 8,0                              | 10 <sup>13</sup>                    | 25                                 | 450          | 1,0                       | very good          | poor            | good           | self-extinguishing |
| Silicone rubber                                 | SI           | 2G                           | -60 ... +180             | 2,8 - 3,2                              | 10 <sup>15</sup>                    | 5 - 10                             | 200 - 350    | 1,0                       | very good          | poor            | moderate       | less flammable     |
| Ethylene vinyl acetate                          | EVA          | 4G                           | -30 ... +125             | 5 - 7                                  | 10 <sup>13</sup>                    | 5                                  | 200          | 0,01                      | good               | poor            | poor           | flammable          |
| Ethylen propylene rubber                        | EPM/EPDM     | 3G                           | -30 ... +120             | 3,2                                    | 10 <sup>14</sup>                    | 5 - 25                             | 200 - 450    | 0,02                      | good               | poor            | poor           | flammable          |
| Thermoplastic polyolefine elastomer             | TPE-O        | 18Y                          | -40 ... +120             | 2,7 - 3,6                              | 5 x 10 <sup>14</sup>                | >6                                 | >400         | 1,5                       | very good          | moderate        | moderate       | flammable          |
| Thermoplastic polyester elastomer               | TPE-E        | 12Y                          | -70 ... +125             | 3,7 - 5,1                              | 10 <sup>12</sup>                    | 3 - 25                             | 280 - 650    | 0,3 - 0,6                 | very good          | good            | very good      | flammable          |
| Styrene trile block copolymer                   | TPE-S        | -                            | -75 ... +105/140         | 2,2 - 2,6                              | 10 <sup>16</sup>                    | 9 - 25                             | 500 - 700    | 1 - 2                     | moderate           | good            | poor           | flammable          |