

## Electrical insulating materials

### Melinex® 238 FI 13020

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**Composition:** Melinex® 238 FI 13020 is a flexible, white polyester film with matt surfaces.

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**Properties:** Melinex® 238 FI 13020 has a relevant temperature index of 140°C according to UL classification, a mechanical RTI of 130°C and an excellent ageing behaviour in comparison to other standard polyester films which have a higher oligomer content. Furthermore Melinex® 238 FI 13020 has a high dielectric strength, small change of dielectric values, special mechanical properties as well as very good hydrolytic stability. The half-life period of the mechanical properties is comparatively doubled.

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**Applications:** Melinex® 238 FI 13020 was especially designed for usage as slot insulation, phase insulation and slot closure in electric motors with high chemical stress. It can also be used for hermetic motors which are refrigerant-stressed because of its low oligomer extraction.

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**Form of supply:** Melinex® 238 FI 13020 is supplied on rolls (up to ca. 1100 mm), as reels (with a width from 6 mm), as feathered reels and as adhesive tapes. Further sheets, cuts, die-cut and formed parts are available on request, other forms, e.g. self-adhered are also available.

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## Melinex® 238 FI 13020

| Property  | Test method   | Unit                                     | Value   |     |     |     |
|---|---|--|---|-----|-----|-----|
|   |   |  | 125   | 190 | 250 | 350 |
| Total thickness                                       | -   | µm                                       | 125   | 190 | 250 | 350 |
| Yield   | -   | m <sup>2</sup> /kg                       | 5.7   | 3.8 | 2.9 | 2.0 |
| Density   | ASTM D 1505-68 (1975)<br>at 23°C (changed to<br>Melinex®-Test)    | g/cm <sup>3</sup>                        | 1.40  |     |     |     |
| Water absorption                                      | ASTM D 570-81 at 23°<br>(1972)                                    | %  | 0.55  |     |     |     |
| Oligomer extraction                                   | 24 h in boiling xylene  | %  | 0.6   |     |     |     |
| Tear strength<br>CD<br>MD                             | ASTM D 822-75b (250<br>µm film, 23°C, 50%/min<br>elongation speed | kg/mm <sup>2</sup><br>kg/mm <sup>2</sup> | 21<br>22  |     |     |     |
| Elongation at break<br>CD<br>MD                       | ASTM D 822-75b (250<br>µm film, 23°C, 50%/min<br>elongation speed | %<br>%                                   | 150<br>130  |     |     |     |
| Coefficient of friction                               | ASTM D 1894-75<br>(changed to Melinex®-<br>Test)                  | -  | 0.30  |     |     |     |
| Melting temperature                                   | ASTM E794-85  | °C                                       | 255 – 260   |     |     |     |
| Heat capacity   | at 25°C   | kJ /kg.K                                 | 1.3   |     |     |     |
| Heat capacity   | at 25 °C  | cal/g. °C                                | 0.32  |     |     |     |
| Coefficient of thermal<br>expansion                   | 20 to 50 °C   | 1/K(cm/cm<br>°C)                         | 33 x 10 <sup>-6</sup> (MD) / 32 x 10 <sup>-6</sup> (TD) |     |     |     |
| Shrinkage<br>CD<br>MD                                 | after 5 min at 90°C<br>after 5 min at 90°C                        | %<br>%                                   | 2<br>2  |     |     |     |
| Breakdown voltage                                     | IEC 243, 50 Hz, 500V/ s<br>ramp, 6,3 mm<br>electrodes             | kV                                       | 16  | 19  | 23  | 26  |
| Dielectric constant<br>(AC, 23°C, 50 Hz)              | IEC 250   | -  | 3.3   |     |     |     |
| Dielectric dissipation<br>factor (AC 50 Hz, 23<br>°C) | IEC 250   | -  | 0.0020  |     |     |     |
| Volume resistivity                                    | IEC 93 (100V DC at<br>25°C und 1000s)                             | Ω/m                                      | 10 <sup>15</sup>  |     |     |     |
| Surface resistivity                                   | EC 93 (500 V DV at<br>20°C und 54 % rel. air<br>humidity)         | Ω/m                                      | > 10 <sup>13</sup>                                      |     |     |     |
| Weak acids and<br>bases                               | -   | -  | Good  |     |     |     |
| Lubricants, oils and<br>greases                       | -   | -  | Good  |     |     |     |
| Organic solvents,<br>alcohol and carbon<br>hydride    | -   | -  | Good  |     |     |     |

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## Melinex<sup>®</sup> 238 FI 13020

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**Trademark information:** Melinex<sup>®</sup> is a registered trademark of the company Du Pont.

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**Information:**

The information in this Technical Data Sheet is based on our present knowledge and experiences. It does not release the user from conducting their own trials and examinations to determine the suitability of the product for his intended use. A legally obligatory warranty of certain characteristics or the suitability for a specific targeted application cannot be derived from our data. Depending upon individual cases we recommend consultation with us. Any patent rights as well as existing laws are to be considered by the receiver of our products as their own responsibility.

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