



## PVDF (Polyvinylidene Fluoride)

PVDF (Polyvinylidene Fluoride) is a naturally white plastic that combines a number of the useful properties of PTFE with a toughness similar to Nylon.

- Exceptionally good resistance to attack by a wide range of chemicals.
- Resistance to abrasion.
- Low coefficient of friction.
- Good electrical insulating properties.
- Non-toxic at normal temperatures, approved for contact with foodstuffs, virtually odourless and tasteless.
- Resistant to U.V, Beta and Gamma radiation.
- Almost no moisture absorption.
- Classified as self extinguishing.
- Easily machined.

### Chemical Resistance

PVDF has an outstanding resistance to most acids, oxidizing media, aliphatic and aromatic hydrocarbons, alcohols and halogenated solvents. It is resistance to weak bases, the halogens chlorine, iodine and particularly bromine but not to fluorine. It is degraded by oleum, some strongly basic primary amines, hot concentrated alkalis and alkali metals. It swells slightly in strongly polar solvents such as acetone and ethyl acetate and is slightly soluble in aprotic polar solvents such as dimethylformamide, dimethylsulphoxide, tetramthylurea or hexamethylphosphotriamide.

### Health and Safety

At temperatures above 350°C PVDF will decompose releasing hydrofluoric acid and possibly other fluorinated compounds that are, in a confined space, hazardous to health. It is, therefore, advisable not to smoke or carry tobacco products (because of the risk of contamination) when machining PVDF, or to dispose of scrap material by burning.

### AVAILABILITY - PVDF

- Rod
- Sheet
- Section
- Machined Parts

| MECHANICAL PROPERTIES                                  |            | Test Method | Natural           | Units                             |
|--|------------|-------------|-------------------|-----------------------------------|
| Density  |            | DIN 53479   | 1.78              | g/cm <sup>3</sup>                 |
| Tensile Strength at Yield                              |            | DIN 53455   | 51 - 57           | N/mm <sup>2</sup>                 |
| Elongation at Break                                    |            | DIN 53455   | 12 - 100          | %                                 |
| Modulus of elasticity                                  |            | DIN 53457   | 1950              | N/mm <sup>2</sup>                 |
| Ball Indentation Hardness                              |            | DIN 53456   | 105               | N/mm <sup>2</sup>                 |
| Rockwell Hardness                                      |            | ASTM D785   | R110              |                                   |
| Impact Strength  |            | DIN 53453   | no break          | kJ/m <sup>2</sup>                 |
| Notched Impact Strength                                |            | DIN 53453   | 12                | kJ/m <sup>2</sup>                 |
| Moisture Absorption 24hrs Immersion                    |            | DIN 53495   | 0.03              | %                                 |
| Coefficient of Dynamic Friction against Polished Steel |            |             | 0.34              |                                   |
| THERMAL PROPERTIES                                     |            |             |                   |                                   |
| Crystalline Melting Range                              |            |             | 170 - 172         | °C                                |
| Vicat softening Temperature                            |            | DIN 53460   | 140 - 147         | °C                                |
| Coefficient of Linear Expansion                        |            | DIN 52328   | 13                | 10 <sup>-5</sup> °C <sup>-1</sup> |
| Heat Deflection Temperature                            | Method A   | DIN 53461   | 80 - 92           | °C                                |
|  | Method B   | DIN 53461   | 148 - 150         | °C                                |
| Thermal Conductivity                                   |            | DIN 52612   | 0.19              | W/mK                              |
| Specific Heat  |            |             | 0.96              | kJ/kgK                            |
| Maximum Service Temperature                            | Short Term |             | 160               | °C                                |
|  | Continuous |             | 140               | °C                                |
| Minimum Service Temperature                            | Continuous |             | -40               | °C                                |
| Flammability   |            | UL94        | V-0               |                                   |
| ELECTRICAL PROPERTIES                                  |            |             |                   |                                   |
| Volume Resistivity                                     |            | DIN 53482   | >10 <sup>15</sup> | ohm cm                            |
| Surface Resistance                                     |            | DIN 53482   | >10 <sup>13</sup> | ohm                               |
| Dielectric Strength                                    |            | DIN 53481   | 40                | kV/mm                             |
| Dielectric Constant                                    | 1K Hz      | DIN 53483   | 9.7               |                                   |
|  | 1M Hz      | DIN 53483   | 7.2               |                                   |
| Dissipation Factor 1K Hz                               |            | DIN 53483   | 0.01              |                                   |
|  | 1M Hz      | DIN 53483   | 0.18              |                                   |
| Tracking Resistance KC Method                          |            | DIN 53480   | 380               |                                   |