



PLASTICS INTERNATIONAL™

SHEET, ROD, TUBE, FILM...CUT TO SIZE

ESD MATERIALS

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Engineering Plastic Stock Shapes with Static Dissipative (ESD) Properties

In recent years, industry has demanded a range of materials that not only possess strength, wear properties, heat and chemical resistance; but materials that are less resistive to the build-up of a static charge. Ensinger has a family of such materials; their properties are listed on the reverse side of this sheet and described below.

Please note, some materials listed below have been discontinued.

- **TECAFORM™ SD**

Ensinger's static dissipative acetal contains no carbon fibers or powders and is generally accepted for cleanroom use. With its surface resistivity of 10^9 to 10^{11} ohm/square and its excellent bearing and wear characteristics, TECAFORM™ SD is ideal for moving components which may experience frictional or fluid-flow static charges.

- **HYDEL® PC-7-Discontinued**

A polycarbonate based material with a proprietary carbon filler component. The highly dispersed filler imparts outstanding electrical consistency to minimize any hot spots. The material has the best repeatability and predictability of any commercially available carbon based filler. HYDEL® PC-7 has minimal sloughing as compared to other carbon based fillers. This material also retains much of the physical properties of polycarbonate without the loss of impact and tensile properties that can occur with standard carbon based or fiber fillers.

- **HYDEL® PC-P ESD -Partially discontinued, contact for info**

HYDEL PC-P ESD polycarbonate is a static dissipative thermoplastic product containing carbon powder. This material has good stiffness, excellent dimensional ability, and low outgassing properties.

- **HYDEL® PEI-7-Discontinued**

A static dissipative polyetherimide utilizing proprietary filler technology which renders this material electrically conductive. This technology allows for good dimensional stability after machining (unlike conventional carbon fibers), consistent electrical properties, excellent surface quality and minimal sloughing. It also possesses outstanding toughness and excellent thermal stability.

- **SINTIMID ESD 23 -Discontinued**

SINTIMID ESD 23 has the highest compressive strength and use temperature of the group. It is based on an Ensinger manufactured polyamide imide (PAI).

TYPICAL PROPERTY VALUES

| PROPERTIES | Test Methods | Units | Tecaform™ SD | Hydel® PC7 Discontinued | Hydel® PC-P Discontinued | Hydel® PE17 Discontinued | Sintimid® ESD 23 Discontinued | |
|-------------------|----------------------------------|-------|--------------|----------------------------|-----------------------------|-----------------------------|----------------------------------|-----------------------|
| PHYSICAL | Base Material | - | Acetal | Polycarb | Polycarb | Polyetherimide | PAI | |
| | Sp. Gr. 73°F | D792 | - | 1.33 | 1.20 | 1.27 | 1.42 | |
| | Water Absorption | D570 | % | 0.2 | 0.15 | 0.18 | 0.25 | |
| | Saturation | - | % | 0.2 | 0.15 | 0.18 | - | |
| MECHANICAL | Tensile Strength | D683 | psi | 6,600 | 9,000 | 9,500 | 9,400 | 12,300 |
| | Tensile Modulus | D638 | psi | - | 333,000 | - | 400,000 | 580,000 |
| | Tensile Elongation | D638 | % | 45 | 8 | 5 | 4 | 2.7 |
| | Flexural Strength | D790 | psi | 7,000 | 10,800 | 15,500 | 16,200 | 19,500 |
| | Flexural Modulus | D790 | psi | 210,000 | 340,000 | 450,000 | 400,000 | - |
| | Compressive Strength | D695 | psi | - | 12,300 | - | 16,200 | 34,800 |
| | Hardness | D2240 | - | - | - | - | - | 93 |
| | Izod Impact | D256 | ft lbs/in | 1.8 | 1.2 | 1.5 | 1.4 | - |
| | Coefficient of Friction | - | - | - | - | - | - | - |
| | | - | dynamic | 0.18 | 1.2 | - | - | - |
| | | - | static | 0.11 | - | - | - | - |
| THERMAL | Coefficient of Thermal Expansion | - | in/in° F | - | 3.7×10^{-5} | - | 2.9×10^{-5} | 2.25×10^{-5} |
| | Heat Deflection Temp. | D648 | °F | 190 | 280 | 270 | 390 | 600 |
| | Continuous Service Temp. | - | °F | 180 | 260 | 270 | 340 | 595 |
| | | | | | | | | |
| ELECTRICAL | Surface Resistivity | D257 | ohms/square | $10^9 - 10^{11}$ | $10^5 - 10^7$ | $10^7 - 10^{12}$ | $10^6 - 10^8$ | $10^8 - 10^{11}$ |
| | Flammability | UL94 | - | HB | V2 | V2 | VO | VO |

This information is only to assist and advise you on current technical knowledge and is given without obligation or liability. All trade and patent rights should be observed. All rights reserved. Data obtained from extruded shapes material.

PLASTICS INTERNATIONAL

7600 Anagram Drive
Eden Prairie, Minnesota 55344

Telephone: 952-934-2303

800-776-7769

Fax: 952-934-2314

Website: www.plasticsintl.com

E-mail: sales@plasticsintl.com