



# ESD MATERIALS

## 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-Hyde has a family of such materi-

als; their properties are listed on the reverse side of this sheet and described below.

- **TECAFORM™ SD**

Ensinger-Hyde static dissipative acetal contains no carbon fibers or powders and is generally accepted for clean room 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**

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**

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**

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.

- **TECAPEEK™ PVX**

An ultra high performance bearing material based on the PEEK polymer. Some of the wear enhancing additive also provides a high degree of static dissipation. TECAPEEK™ PVX provides high temperature use with low thermal expansion.

- **SINTIMID™ ESD 23**

SINTIMID™ ESD 23 has the highest compressive strength and use temperature of the group. It is based on an Ensinger-Hyde manufactured polyamide imide resin with a low sloughing, additive package.

# TYPICAL PROPERTY VALUES

PROPERTIES	Test Methods	Units	Tecaform™ SD	Hydel® PC-7	Hydel® PC-P	Hydel® PEI-7	Tecapeek™ PVX	Sintimid™ ESD 23
Base Material	-	-	Acetal	Polycarbonate	Polycarbonate	Polyetherimide	PEEK	PAI
Specific Gravity	D792	-	1.33	1.22 0.15	1.34 0.10	1.27 0.25	1.48	1.42
Water Absorption 24 hrs. 73°F	D570	%	0.2	0.15	-	-	<0.1	-
Saturation	-	%	0.2	-	-	-	0.1	-
Tensile Strength	D638	psi	6,600 -	9,000	9,500	9,400	17,300	12,300
Tensile Modulus	D638	psi	-	333,000	400,000	400,000	1,300,000	580,000
Tensile Elongation @ Break	D638	%	45	8	5	4	2.5	2.7
Flexural Strength	D790	psi	7,000	10,800	15,500	16,200	30,000	19,500
Flexural Modulus	D790	psi	210,000	340,000	450,000	400,000	1,200,000	-
Compressive Strength	D695	psi	-	12,300	-	16,200	22,000	34,800
Hardness	D2240	-	-	-	-	-	-	93
Izod Impact Notched	D256	ft-lbs/in -	1.8	1.2	1.5	1.4	1.6	-
Coefficient of Friction	-	-	-	-	-	-	-	-
40 psi and 50 fpm	-	dynamic	0.18	1.2	-	-	0.19	-
	-	static	0.11	-	-	-	0.23	-
Coefficient of Thermal Expansion	-	in/in° F	-	3.7 x 10 <sup>-5</sup>	-	2.9 x 10 <sup>-5</sup>	1.5 x 10 <sup>-5</sup>	2.25 x 10 <sup>-5</sup>
Heat Deflection Temperature @ 264 psi	D648	°F	190	280	270	390	530	600
Continuous Service Temperature	-	°F	180	260	270	340	480	595
Surface Resistivity	D257	ohms/square -	10 <sup>9</sup> - 10 <sup>11</sup>	10 <sup>7</sup> - 10 <sup>10</sup>	10 <sup>6</sup> - 10 <sup>10</sup>	10 <sup>6</sup> - 10 <sup>9</sup>	10 <sup>6</sup> - 10 <sup>8</sup>	10 <sup>8</sup> - 10 <sup>11</sup>
Flammability	UL94	HB	HB	V-2	V-2	V-O	V-O	V-O

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.

TECAFORM™ - Ensinger Industries, Inc.

HYDEL® - Ensinger Industries, Inc.

TECAPEEK™ - Ensinger Industries, Inc.

SINTIMID™ - Ensinger Industries, Inc.

*Profiles, tubes, and special sizes are custom-produced on request.*

