PERMASTAT® COMPOUNDS FOR DRUG DELIVERY

Your Global Compounder Of Custom Engineered Thermoplastics

- Improve accuracy of drug delivery in DPI and pMDI devices
- Prevent drug and carrier particles from sticking to drug flow pathway using antistatic plastics
- Speeds product development with ISO 10993 pretested materials

ADDITIONAL BENEFITS

- Proven success using Permastat® compounds for drug delivery
- Bisphenol-A free compounds available
- Continuous dissipation of static charges regardless of humidity
- History of passing biocompatibility, extraction and drug interaction tests
- Available in clear and colorable compounds
- Technology functions in over 20 different thermoplastic resins
- In-depth white paper available for review

Inhaler chamber featuring PermaStat® technology

Imagine thermoplastic compounds that can dramatically improve drug delivery accuracy and reduce static effects on small drug particles. At RTP Company, we not only imagined them, we've made them a reality.

Powdered and aerosol drug formulations that require use of dry powder inhalers (DPI) and pressurized metered dose inhalers (pMDI) often adhere to the drug flow path due to static electricity, resulting in inaccurate dosages. Incorporating PermaStat compounds into such devices neutralizes the effects of static so that the full dosages reach the patient.

PermaStat compounds permanently dissipate static charges independent of ambient humidity. They offer a wide range of features such as clarity, chemical resistance, and colorability all in a clean, non-sloughing compound.

They feature a consistent surface resistivity of 10^{10} to 10^{11} ohm/square and have been successfully used in applications requiring biocompatibility, drug interaction, and extraction testing. PermaStat compounds from RTP Company are available in more than 20 different thermoplastic resin systems with transparent options that are available in polypropylene, acrylic, COC, and ABS.

PermaStat compounds for drug delivery... another innovation from RTP Company: your global compounder of custom engineered thermoplastics.

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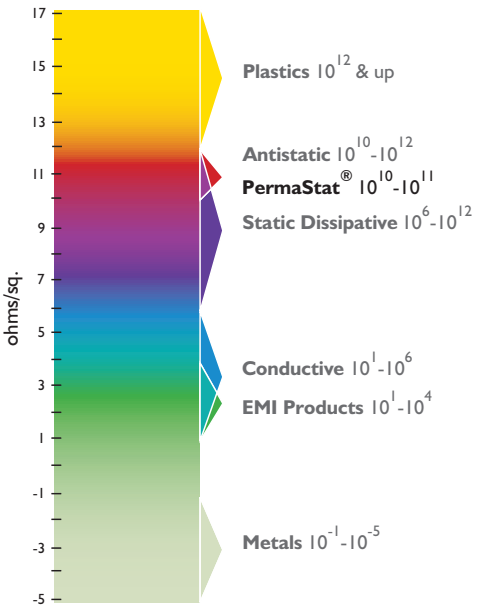
Statement Of Biocompatibility

An independent laboratory has performed ISO 10993 biocompatibility testing for cytotoxicity (part 5), irritation and delayed type hypersensitivity (part 10), and systemic toxicity (part 11) on three of our clear PermaStat products. A full statement of biocompatibility is available upon request. PermaStat compounds are available in additional resin systems and with color options.

RTP Company's PermaStat technology imparts antistatic electrical conductivity without compromising the mechanical properties of the host resin.

PermaStat® 100 MD	Polypropylene (PP) Best chemical resistance
PermaStat® 1800 MD	Acrylic (PMMA) Best clarity
PermaStat® 600 MD	Acrylonitrile butadiene styrene (ABS) Best combination of chemical resistance and clarity



PermaStat® ABS Physical Property Data Comparison Chart

Property	Neat Transparent ABS	PermaStat® 600 NAT/CLR ABS	PermaStat® 100 MD PP	PermaStat® 600 MD ABS	PermaStat® 1800 MD PMMA	Method
Tensile strength, psi (MPa)	5950 (41)	5200 (36)	3000 (21)	5100 (35)	5500 (38)	ASTM D 638
Tensile modulus, 10^6 psi (MPa)	.27 (1861)	.25 (1724)	.10 (690)	.24 (1655)	.20 (1379)	ASTM D 638
Elongation, (%)	10+	10+	10+	10+	10+	ASTM D 638
Flexural strength, psi (MPa)	9000 (62)	8800 (61)	4000 (28)	8500 (59)	8500 (59)	ASTM D 790
Flexural modulus, 10^6 psi (MPa)	.26 (1792)	.25 (1724)	.10 (160)	.25 (1724)	.25 (1724)	ASTM D 790
Notched impact, ft-lb/in (J/m)	3 (160)	4 (214)	3 (160)	3.5 (187)	1 (53)	ASTM D 256
Unnotched impact, ft-lb/in (J/m)	24 (1281)	No Break	No Break	No Break	15 (801)	ASTM D 4812
Volume resistivity (ohm-cm)	> 1E14	1E9-1E11	1E9-1E11	1E9-1E11	1E9-1E11	ASTM D 257 ESD STM11.11 IEC 60093
Surface resistivity (ohm-sq)	> 1E14	1E10-1E12	1E10-1E12	1E10-1E12	1E10-1E12	ASTM D 257 ESD STM11.11 IEC 60093
Static decay (s)	> 99.9	< 2	< 2	< 2	< 2	MIL-PRF-81705D, 5kV to 50 V, 12% RH

SI units given in parentheses

Visit www.rtpcompany.com/info/papers to request a copy of our technical paper titled "Effects of Static on Plastics Used in Drug Delivery Devices."

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