



Conductive Thermoplastics

Reliable and Safe Solutions
for Static, Thermal, and EMI Control



Advantages of working with RTP Company

RTP Company is an expert at solving design challenges with specialty thermoplastic compounds. By combining our in-depth knowledge of plastic technologies with imagination, we imagineer custom compounds ideally matched to end-use requirements. Private ownership enables us to independently select from over 60 engineering resins to create a formulation specifically for your application.

We Offer:

- Innovative thermoplastic solutions that optimize your design and cut processing costs
- Consistent quality you can rely on... anywhere in the world
- Responsive and personalized service

Providing Protection... with Conductive Compounds

RTP Company has an extensive history of imagineering breakthrough solutions for static control and remains at the forefront in the development of conductive technologies. Conductive compounds from RTP Company effectively mitigate electrostatic discharge (ESD) problems before they affect safety, productivity, and ultimately, profitability. RTP Company products reduce the cost of ESD through reliability, innovation, and value.

The Danger of ESD

Touching a metal doorknob and receiving a mild shock is a common everyday occurrence caused by static. In certain situations, static is a serious event. In fact, ESD can damage or destroy sensitive electronic components, erase or alter magnetic media, or set off explosions or fires in flammable environments. Each year, billions of dollars in losses due to ESD damage occur in the electronics industry alone.

Controlling ESD can be achieved with materials that do not generate high levels of charge but instead dissipate charges before they can accumulate to dangerous levels. RTP Company's Conductive compounds control ESD while maintaining other performance requirements – often more economically than other material choices.

Portfolio of Possibilities

RTP Company offers hundreds of custom conductive compounds with a precise combination of desired properties, including:

- Colorability
- Wear resistance
- Flame retardance
- Impact strength
- High purity
- Extrusion

(case study)

Wafer Reticle Carriers

Combines Color, High Purity and Protection

Valuable wafer reticles need to be transported within semi-conductor fabrication plants while being protected from ESD, ionic contamination, and damage.

Solution:

PermaStat® 600 Series ABS

- Challenging property requirements include clarity, permanent static dissipation, color, and dimensional stability
- High purity is crucial - the carrier must protect while not contaminating reticles
- Amber reticle carrier only allows passage of certain UV wavelengths

Wafer reticle carriers – Pozzetta



(case study)

Vacuum Hose

Low Density Polyethylene (LLDPE) Conductive Compound in Extrusion Application

Extrusion applications require static control and flexibility.

Solution:

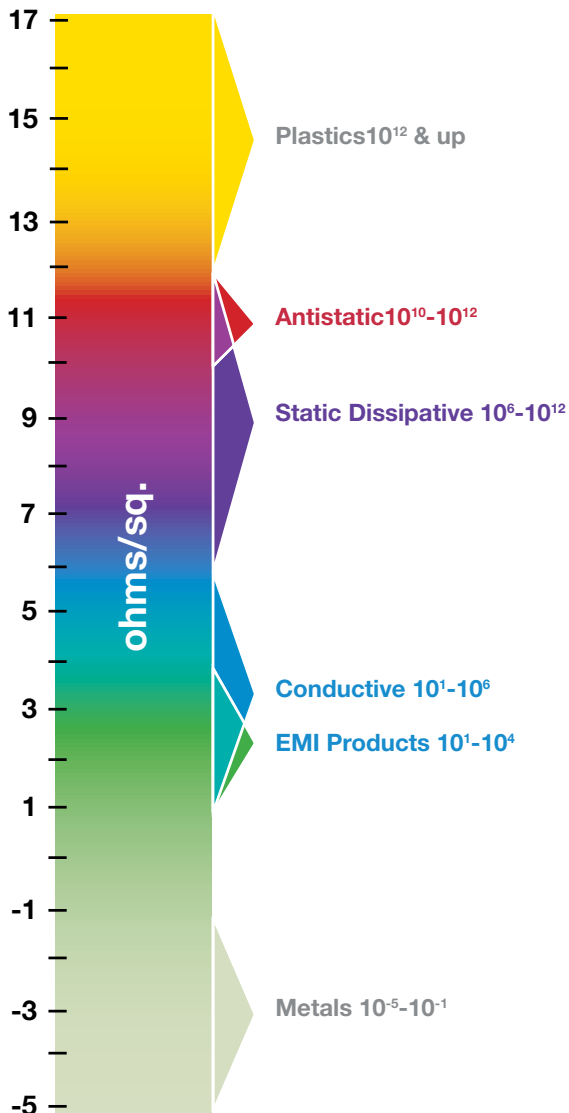
RTP 2600 Series Low Density Polyethylene (LLDPE) Compound with Carbon Black

- Reduces static
- Demonstrates excellent bending strength

Hitting the Mark... with Tunable Compounds

Conductive compounds from RTP Company are tailored to span the surface resistivity spectrum from 10^1 to 10^{12} ohms/square and can be formulated for injection molding or extrusion processes. Multiple technologies are available to impart conductive properties into thermoplastic resins that are otherwise insulative in nature. Your compound will be tuned to provide the conductivity required for your application, whether it is antistatic, static dissipative, conductive, or EMI/RFI shielding performance. These customized compounds use additive technologies ranging from carbon and metal particulates and/or fibers that form a conductive network throughout the base polymer to Inherently Dissipative Polymers (IDPs) that alloy with various host resins.

A Spectrum of Solutions



Anti-static Compounds (10^{10} to 10^{12}) provide a relatively slow decay of static charge – from just hundredths to several seconds – thus preventing accumulations that may discharge or initiate other nearby electrical events. With our all-polymeric PermaStat® line of compounds, these decay properties are inherent to the material and are not humidity-dependent or limited by the fragility of anti-static coatings.

Static Dissipative Compounds (10^6 to 10^{12}) allow for dissipation or decay of static charges at a faster rate than anti-static materials – generally within milliseconds. Materials that offer the “optimal” ESD protection (10^6 to 10^9) are at the stronger end of the static dissipative range. Compounds available include carbon particulate filled grades in our ESD-A product line.

Our **PermaStat PLUS®** line further expands the usefulness of PermaStat® materials with surface resistivity as strong as 10^8 ohms/square and excellent capabilities in meeting static protective requirements of ATEX Directive.

Conductive Compounds (10^1 to 10^6) with decay/dissipation rates measured in nanoseconds provide a ground pathway and bleed off strong static charges. These levels of conductivity are achieved by incorporating carbon fiber, high levels of carbon powder, or other conductive additives and are available in our ESD-C product line.

EMI/RFI Shielding Compounds (10^1 to 10^4) compounds are typically qualified by means other than electrical conductivity, as their true function is in blocking electromagnetic and radio frequency energy. These shielding compounds absorb and/or reflect electromagnetic energy, and thus provide shielding against electromagnetic interference while maintaining the design freedoms inherent in thermoplastic molding compounds.

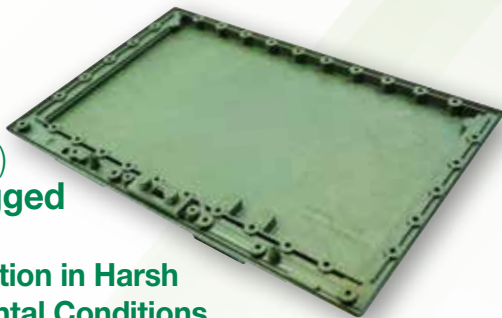
Use Conductive Compounds Instead of Coatings, Metals, or Unfilled Resins

Compared to coatings or unfilled resins, Conductive compounds from RTP Company offer cost savings, increased design freedom, and reliability. These compounds deliver consistent surface resistivity without the danger of lost performance due to scratching, peeling, or flaking of conductive surface treatments while maintaining physical properties of host resin.

Advantages of Thermoplastic Compounds

Instead of offering just a few standard products, we routinely develop custom conductive compounds with a precise combination of properties, including:

- Increased performance
- Technology/performance combinations
[see page 3]
- Retention of transparency in select resins
- Colorability for aesthetics and brand recognition
- Part design consolidation
- Lighter weight parts
- Easier and less expensive processing



(case study)
**Ultra-Rugged
Keyboard
EMI Protection in Harsh
Environmental Conditions**

Because this product is exposed to harsh environmental conditions, a material was required that not only protected the unit but also provided EMI Shielding for electrical components.

Solution:

PC/PBT Blend with EMI Protection

- High impact resistance
- Reinforced for strength
- EMI Shielding
- Excellent dimensional stability

(case study)
**Storage Systems
Static Dissipative
Compounds for
Electronic Part Bins**

Storage bins need to be designed to bleed static away from sensitive contents.

Solution:

RTP 100 Series Polyolefin-based compound

- Offers a consistent surface resistivity in the range of 10^6 to 10^9 ohms/square
- Provides ideal ESD protection

AkroBins Storage System - Akro-Mils



(case study)
**ESD Trays
Anti-static Permastat Compound
for Electronic Packaging**

Packaging Products for highly sensitive electronics require transparent ESD Compounds.

Solution:

Clear PermaStat® 600 Series ABS

- PermaStat® delivers effective ESD control, high purity, and impact resistance
- Maintains a surface resistivity of 10^{10} to 10^{11} ohms/square and static decay rate of less than 2.0 seconds
- Transparency of compound allows critical aesthetics to be achieved



Choosing the Correct Conductive Compound

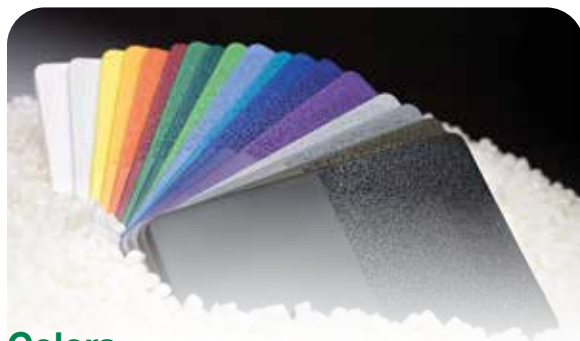
There are many factors that go into the selection of the compound. The first step is to determine if the application requires anti-static, static-dissipative, high conductivity or electromagnetic shielding and to identify the component's specific end use. Defining material specifications and processing parameters are additional steps in the selection process.



Base Resin and Material Requirements

RTP Company offers help in specifying a base resin to create a custom formulation for you from over 60 different engineering resin systems. Selection is determined by material requirements, which may include:

- Chemical resistance
- Color
- Conductivity
- Cost
- Dimensional stability
- Flame retardancy
- High temperature
- Impact resistance
- Low outgassing
- Mold shrinkage
- Moldability
- Non-corrosive
- Non-sloughing
- Part weight
- Stiffness
- Wear resistance



Colors

Conductive thermoplastics are not always black. RTP Company offers a wide range of colored conductive compounds formulated by color specialists that expertly combine colorants and conductive additives to achieve the right balance for your application.



(case study)

Clean Room Scanner Housing Nanotube Compounds Eliminate Hotspots

Nanotube compounds eliminate uneven surface charge distribution. These hot spots were a major issue when developing a new image scanner for Class 100 clean room environments.

Solution:

RTP 300 Series Conductive Carbon Nanotube Polycarbonate compound

- Created a more uniform surface, eliminating hot-spots
- Delivered ESD conductive properties at low loadings
- Provided low particulation and excellent impact properties

Cleanroom Scanner – Codestar Electronics

Additives & Modifiers

Various levels of additives are available to provide the additional properties not present in the resin system itself to produce a unique compound for your application.

CARBON POWDER

- Isotropic shrinkage (similar to unfilled)
- Strength/stiffness (similar to unfilled)
- Moderate elongation
- Low cost

CARBON FIBER

- Increased stiffness and strength
- Color options
- Low ionic contaminants
- Low outgassing

CARBON NANOTUBES

- Nanoscale sized hollow carbon tubes
- Extremely high aspect ratio at low loadings
- Reduced “hot spots”
- Low specific gravity
- High purity and low particulate generation
- Resists tribocharging

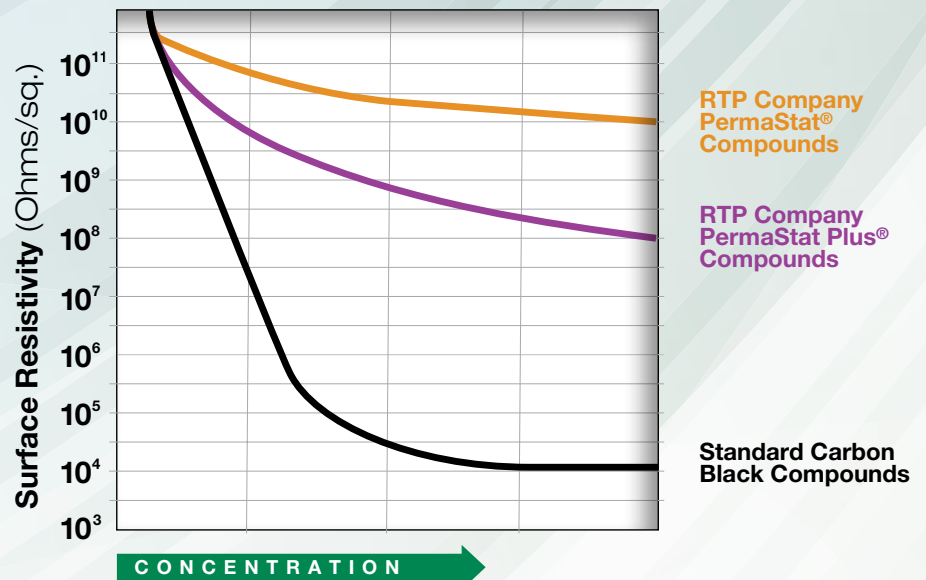
STAINLESS STEEL FIBER

- EMI shielding capabilities
- Isotropic shrinkage (similar to unfilled)
- Non-sloughing
- FDA compliant
- Minimal effect on mechanical properties
- Non-sloughing

Carbon Nanotubes

Carbon nanotubes (CNTs) are the most common building blocks of nanotechnology, an emerging science expected to touch almost every aspect of our lives. CNTs are hollow structures consisting of graphene cylinders of carbon atoms capped at both ends. This hollow multi-layer cylinder structure itself is very durable and has an amazing array of electrical conductivity properties.

Typical Resistivity Behavior



NICKEL-COATED GRAPHITE

- Increased stiffness and strength
- High conductivity
- EMI shielding capabilities

PERMASTAT® & PERMASTAT PLUS®

- All-polymeric
- Isotropic shrinkage (similar to unfilled)
- Permanent performance
- High impact
- Fully colorable
- Transparent grades
- Non-sloughing

A Complete Portfolio of Conductive Solutions

Our expertise in plastic conductive technologies began decades ago when RTP Company established its leadership by developing compounds that solved specific challenges in products affected by static buildup. Throughout the years, RTP Company continued to keep pace with the rapid evolution of product innovation with ground breaking conductive compounds. Today, we are known worldwide for constant breakthroughs in emerging technologies.

Advanced Conductive Technologies

PermaStat®

Fully colorable with permanent static dissipative properties

PermaStat PLUS®

Consistent surface resistivity of 10^8 to 10^9 ohm/sq

Carbon Based Compounds

Provides strong and effective resolution to static issues

Nanotube Compounds

Delivers conductive properties at very low loadings

Highly Conductive Compounds

For demanding conductive requirements

PermaStat®

RTP Company's unique PermaStat® product line offers permanent static dissipation properties without additives that require high humidity or the need to bloom to the surface of the part. Because they are non-sloughing, these inherently dissipative polymer (IDP) modified materials are ideal for applications requiring either dust-free or static-free environments. The compounds feature a consistent surface resistivity of 10^{10} to 10^{11} ohm/square and are available in a wide range of resin systems. Each is formulated to meet MIL-PRF-81705D static decay requirements and many products have UL 94 V-0 flammability recognition. These all-polymeric compounds are fully colorable and readily meet particulation requirements for environments that must remain dust-free.



(case study)

Computer-Aided Engineering (CAE)

Particularly helpful to Iomega Corporation when developing their REV™ drive was the analysis provided by RTP Company's CAE Support Services. CAE Support Services assists customers with technical design issues utilizing state-of-the-art CAE tools for composite materials in both structural and moldability analysis.



PermaStat PLUS®

These compounds have similar physical properties to PermaStat®, but with improved electrical properties. The compounds feature a consistent surface resistivity of 10^8 to 10^9 ohm/sq and have a static decay rate of less than 0.5 seconds. These compounds have been proven highly effective in meeting the surface resistance and physical property requirements mandated by ATEX 2014/34/EU.

Nanotube Compounds

Due to the high aspect ratio of carbon nanotubes, these compounds are capable of delivering conductive properties at very low loadings. An extremely uniform distribution of carbon nanotubes within the plastic provides an excellent means to eliminate high residual voltage “hot spots.” The excellent melt flow properties of nanotube compounds enable thin-wall molds to fill at lower temperatures. They also have low particulate generation, making them ideal for applications requiring strict cleanliness.

(case study)

Personal Dust Monitor PermaStat PLUS® Meets Strict ATEX Requirements

Personal dust monitor housing that warns of conditions that could cause black lung disease must pass difficult coal mine explosion certification tests and meet strict ATEX standards.

Solution:

PermaStat PLUS® 2500 Series permanently Anti-static Polycarbonate/ABS alloy

- Features consistent surface resistance of $<10^9$ per IEC 60079-0 and static decay of less than 0.5 seconds
- Meets strict performance criteria mandated by ATEX, as well as the U.S. Mine Safety and Health Administration
- Robust material passes drop tests from one meter height without compromising seal integrity

Personal Dust Monitor - Rupperecht & Patashnick Co., Inc.

(case study)

Anti-static Storage Containers Compounds provide Tight Tolerances for Surface Resistivity

Stat-Cons™ containers provide electrostatic discharge (ESD) protection when transferring sensitive components such as electronic parts, automotive airbag detonators, and highly explosive materials. Materials used for this product needed to meet extremely tight tolerances for surface resistivity.

Solution:

RTP 100 Series Conductive Polypropylene Compound

- Consistent surface resistivity of 10^3 to 10^5 ohms/sq
- Excellent moldability

Stat-Cons™ containers - L&A Plastics Molding



Specialty Conductive Products

Our highly trained engineers draw upon a vast portfolio of conductive technologies when customizing compounds for specific end uses, resulting in thousands of unique products for a myriad of applications. Several hybrid technologies include:

Thermally Conductive Compounds

By transferring heat away from sensitive electronic components, these compounds reduce “hot spots” by absorbing and redistributing heat more evenly than unfilled resin. Thermally Conductive compounds consolidate parts and reduce weight versus metals and have good chemical resistance, offering an excellent alternative to parts that have failed due to corrosion.

Electrostatic Paintable (EPP) Compounds

The conductivity of Electrostatic Paintable (EPP) compounds allows plastic parts to be electrostatically charged to attract paint, allowing part to be painted without a conductive primer. These Electrostatic Paintable (EPP) compounds save money by eliminating cost of applying conductive primers and reducing volatile organic compound (VOC) emissions during painting. In addition, many EPP compounds can be pre-matched to the final part’s painted color, eliminating many rejects caused by scratches and nicks of the paint coat.

Conductive Compounds for Extrusion Applications

Conductive extrusion compounds from RTP Company are specially formulated to provide consistent electrical conductivity and ESD protection, even in thin walled extrusions. Furthermore, these compounds are manufactured on dedicated equipment in the United States and Europe which is designed to maximize both carbon dispersion and physical properties. The products featured in this line are available in a wide variety of elastomeric and rigid base polymers including PE, PP, PS, TPU, ABS, and TPE are also formulated for RoHS compliance.

Conductive Thermoplastic Sheet

Available through our sheet division, Engineered Sheet Products™ (ESP™)*, these products offer surface resistivity levels ranging from $<10^4$ through 10^{11} ohms/sq and can include other properties such as high purity, flame retardancy, wear resistance, and color. As a packaging material, they can offer transparency as well as static protection. Conductive thermoplastics are available in both thin and thick gauge sheets. The thin gauge sheets are ideal for applications such as anti-static labels, bags, and other ESD packaging products. Thick gauge sheets are ideal for the thermoforming of ESD or anti-static containers and totes.



*For more information on ESP™, visit www.engineeredsheetproducts.com

Carbon-Based Compounds

These compounds are the “workhorses” of thermoplastic conductive materials. Carbon powder and carbon fiber compounds give strong and effective resolution to static issues. They provide almost instantaneous dissipation of static charges by allowing easy migration of electrons, both over the surface and through the bulk (volume) of molded parts, thus preventing static from accumulating and arcing to ground.



(case study)

Surgical Battery Thermally Conductive Compound Improves Sterilization

A thermoplastic was selected to replace aluminum in the cases to address moisture problems during sterilization.

Solution:

RTP 1400 Series Polyethersulfone
Thermally Conductive Compound

- Maintains electrical insulating properties
- Doubled the through-plane thermal conductivity value of the base polymer
- Holds dimensions and reduces moisture build-up
- Consistently reduces recharge time

Surgical Battery – Linvatec Corporation

Highly Conductive Compounds

These compounds meet the most demanding requirements for mechanical strengths and electrical conductivity, particularly in parts that need to carry electrical current or provide EMI Shielding. Typical conductive additives are carbon fibers – both Polyacrylonitrile (PAN) and pitchbased - and also metal-coated carbon fibers and stainless steel fibers. The superior mechanical properties are accompanied with low ionic contamination and low outgassing.

(case study)

LED Lighting Samples Conductive Compound in Metal Replacement Application

Traditional metal heat sinks are heavy, hard to work with, and limit design options.

Solution:

Thermally Conductive PA 6/6 Compound

- Thermal conductivities up to 35 W/mK
- Injection molding supports unlimited design, creativity, and freedom
- Electrically isolating compounds
- Color options eliminated need for painting
- Operating conditions



(case study)

Electronics Cover Permastat Plus® Sheet for Circuit Board

ESD protection was required for printed circuit board insulation covers to prevent system failure.

Solution:

EXT 600 Series ABS PermaStat PLUS®

- Permanent static dissipative properties for ESD protection
- Meets flammability standards
- Economically manufactured through thermoforming from sheet product



Helping You Meet Strict Requirements

Compounds for ATEX Compliance

Using extensive knowledge and experience with conductive modifiers, thermoplastic resins, and additives, RTP Company is able to provide compounds that meet the strict requirements outlined in the ATEX Directive. PermaStat PLUS® compounds have been proven to be highly effective in meeting the Surface Resistance and Physical Property requirements mandated by ATEX 2014/34/EU.

To be compliant, plastic components of equipment and protective systems which may be used in hazardous and potentially explosive atmospheres must meet demanding requirements pertaining to surface resistance, UV stability, thermal endurance, impact properties, chemical resistance, and flammability.

High-Flow Compounds for Thin-Wall Molding

Thin-wall parts have a restrictive flow path leading to narrower processing windows. High-flow, conductive compounds from RTP Company offers a viable solution without the need to modify tooling or part design. The easy-to-mold, conductive polypropylene (PP) materials achieve typical melt flows of 20 grams/10 minutes (2160 grams at 230 °C), which compare favorably to existing conductive PP materials (melt flows ranging from 1 to 3). Applications include containers, totes, bins, pipette tips, and explosives handling products.

Compounds for High Purity

These compounds reduce ionic contamination and minimize outgassing to protect sensitive electronic components in clean-room environments. Each custom formulation is developed from pre-tested resins, additives, and fillers, then processed and handled under carefully controlled environments to meet your definition of cleanliness and performance. High purity characteristics are achievable in a broad range of polymer and additive types.



(case study)

Industrial Flashlight

Application That Meets ATEX

Flashlight used in hazardous sites must comply with strict ATEX requirements.



Solution:

RTP 100 Series Polypropylene

- High impact compound meets ATEX directive for dissipating static charges
- Provides ESD protection without sacrificing easy processing
- Achieved an ideal conductive balance preventing battery drain while still complying with regulatory standards

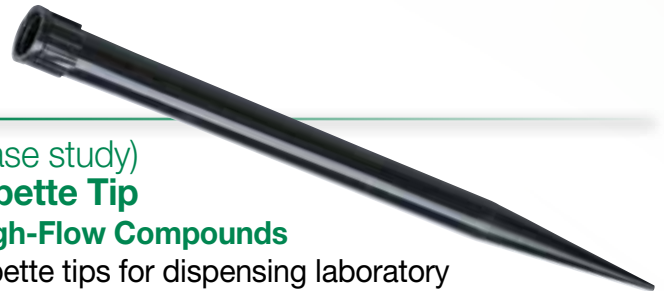
Koehler - Bright Star Flashlight

(case study)

Pipette Tip

High-Flow Compounds

Pipette tips for dispensing laboratory solutions require a very consistent conductive material for automated systems.



Solution:

RTP 100 Series High Flow Polypropylene

- High melt flow of 20 g/10 min. ideal for cylindrical, thin wall part
- Retains robust physical properties with a “no break” unnotched IZOD impact strength
- Offers surface resistivity of 10⁴ ohms/sq. (max.)

Pipette Tip - Capitol Vial

Passing the Test

Conductive Standards, Specifications, and Tests

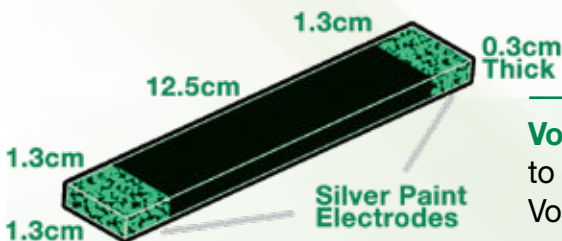
Three performance characteristics are evaluated in qualifying RTP Company's Conductive thermoplastic compounds: **1** Surface Resistance **2** Resistivity – Volume and/or Surface Resistivity **3** Static Decay Rate.

Surface resistance and static decay rate are directly measured, while resistivity – either volume or surface – is derived from the measured surface resistance.

ASTM D257 and ESD STM11.11 are the methods utilized in measuring surface resistance of plastic materials; the former was developed for testing insulative materials and the latter specifically for static dissipative planar materials.

Surface Resistance is the ratio of DC voltage to the current flowing between the two electrodes and is expressed in ohms, without dimensional units.

Surface Resistivity is the surface resistance measured between two electrodes that form opposite sides of a square and is independent of the size of the square or its dimensional units. Therefore, surface resistivity is expressed in ohms/square to distinguish this value from surface resistance.



Volume Resistivity is the ratio of DC voltage per unit thickness to amount of current per unit area passing through a material. Volume resistivity is usually expressed in ohm-cm.

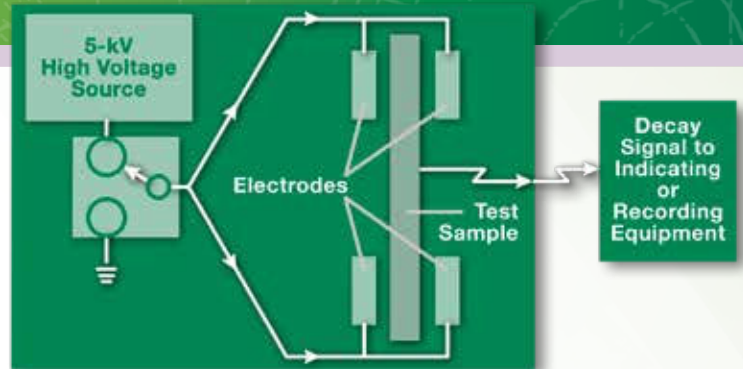
Tribo-charging, Tribo-electrification, and Tribo-generation are terms describing the characteristic of statically charging through contact with other materials. Examples of such charging include walking on carpeting, fuel flowing through pipes, and aircraft flights. All forms of material –solids, liquids, and gases – are capable of tribo-charging as these examples show:



Neutrality
No static attraction

During Contact
Electronic charge segregation

Rapid Separation
Isolated electronic charges



Static Decay Rate is a measure of a highly resistive material's ability to dissipate static charge under controlled conditions. FTMS 101C/4046.1 describes the protocol for static decay rate testing and MIL PRF 81705D specifies the performance requirements for plastic materials used in packaging of static-sensitive electronic devices. Materials are conditioned at 12 percent relative humidity for 24 hours prior to testing and must first accept a 5000 volt charge, then must dissipate that charge in less than two seconds.

Residual Voltage (or Residual Charge) describes static charge that remains on a material following grounding or dissipation actions. Since every grounding or dissipation mechanism has an inherent resistance – may be low or high, but none are at zero resistance – not all static can be removed. The level of voltage that can cause damage becomes the limit for residual voltage in a particular application. This limit provides guidance to the plastic formulator in selection of additives.

Conductive Data of Selected RTP Company Products

Materials	Technology	Volume Resistivity (<i>Ohm-om</i>)	Surface Resistivity (<i>Ohm/sq</i>)	Static Decay (<i>second</i>)
Polypropylene (RTP 100 Series)				
RTP 199 X 134426 F	Carbon Black	<10 ³	<10 ⁶	<.01
PermaStat® 100	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
RTP 199 X 128613 B (<i>High Flow</i>)	Carbon Black	<10 ³	<10 ⁶	<.01
Polycarbonate (RTP 300 Series)				
EMI 330 E FR	Stainless Steel	<10 ¹	<10 ⁶	<1.0
ESD 300 EM	Carbon Black	10 ³ - 10 ⁵	10 ⁵ - 10 ⁹	<1.0
ESD 300 EM FR A	Carbon Black	<10 ⁴	10 ⁶ - 10 ⁹	<1.0
ESD C 380	Carbon Fiber	<10 ³	<10 ⁶	<.01
PermaStat® 300 A	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
RTP 399 X 140555 E	Carbon Nanotube	10 ³ - 10 ⁴	10 ⁴ - 10 ⁶	<.01
ABS (RTP 600 Series)				
ESD 681	Carbon Fiber	<10 ³	10 ⁶	<1.0
PermaStat® 600	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
PermaStat® 600 Natural/Clear	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
Acrylic (RTP 1800 Series)				
PermaStat® 1800 Natural/Clear	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
PEEK (RTP 2200 Series)				
ESD C 2280	Carbon Fiber	<10 ³	<10 ⁶	<.01
RTP 2299 X 140582 A	Carbon Nanotube	10 ³ - 10 ⁴	10 ⁴ - 10 ⁶	<.01
PC/ABS Alloy (RTP 2500 Series)				
EMI 2561 FR	Stainless Steel	<10 ²	<10 ⁵	<1.0
PermaStat® 2500 A	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
PermaStat® 2500 FR A	IDP	10 ⁹ - 10 ¹⁰	10 ¹⁰ - 10 ¹¹	<2.0
RTP 2581 HEC	Nickel Coated CF	<10 ³	<10 ⁶	<.01
LLDPE (RTP 2600 A Series)				
RTP 2600 PL90025501	Carbon Black	<10 ³	<10 ⁶	<1.0
PPA (RTP 4000 Series)				
RTP 4099 X 84560 H NAT/BLK	Carbon Fiber	<10 ⁴	<10 ⁶	<.01

PermaStat® is a registered trademark of RTP Company. Please contact our conductive materials engineers by emailing www.rtp@rtpcompany.com for product recommendations tailored to your unique application.

RTP Company's Conductive Compounds Provide Protection from Static in a Variety of Markets and Applications



Automotive



Data Storage



Electronic
Packaging



Industrial



Medical

Please contact your local RTP Company Sales Engineer
by calling **1-507-454-6900** or **1-800-433-4787** (U.S. only),
E-mail rtp@rtpcompany.com or visit

www.rtpcompany.com



Your Global Compounder of
Custom Engineered Thermoplastics

RTP COMPANY THERMOPLASTIC TECHNOLOGIES



COLOR

We offer precolored resins, UniColor[®], Masterbatches (including Color Conduit), and cube blends for plastic parts ranging from automotive to rocket components and medical devices to toothbrush handles. Our Hueforia color experts provide color selection advice and precise custom color matching services.



CONDUCTIVE

We offer compounds for electrostatic discharge (ESD) protection, thermal management, EMI shielding, or PermaStat[®] permanent anti-static protection. Available in particulate and all polymeric-based materials, these compounds can be colored as well.



FLAME RETARDANT

Whether you are developing a new product or need to reformulate due to ever-changing regulations, we can custom engineer a flame retardant material with the exact properties you require.



HIGH TEMPERATURE

We formulate our high temperature compounds precisely to retain their performance properties, provide better dimensional stability, and offer excellent electrical characteristics in continuous-use high temperatures.



LONG GLASS FIBER

As pioneers in developing a proprietary pultrusion process, we've perfected the manufacturing of our Long Glass Fiber (LGF) Compounds. These pellets encapsulate long fibers for superior strength, stiffness and impact resistance, making them ideal for metal replacement.



STRUCTURAL

Our reinforced Structural Compounds are formulated to increase strength and stiffness, and provide resistance to impact, creep, and/or fatigue. These materials can be customized to meet cost and performance targets.



TPE

Our thermoplastic elastomers provide rubber-like performance with the processing benefits of thermoplastic resin. Our portfolio ranges from standard, in-stock resins to custom compounds designed to meet your specifications.



TPO

For stiff, lightweight, and impact resistant material, our Thermoplastic Polyolefins are your solution, providing excellent low temperature ductility, as well as UV- and scratch/mar-resistance.



WEAR RESISTANT

Our wear resistant thermoplastic compounds can incorporate internal lubricants to reduce wear and friction, thereby lengthening the service life of your application and reducing your processing costs.



ENGINEERED SHEET

We're your one-stop-shop for thermoplastic sheet. We can offer you a unique material, designed with these technologies and extruded to meet your exact sizing requirements.



FILM – WIMAN

Through our sister company, Wiman Corporation, we can provide you with polymer film in a variety of resins, and customized with additives to provide specific properties.

No information supplied by RTP Company constitutes a warranty regarding product performance or use. Any information regarding performance or use is only offered as a suggestion for investigation for use, based upon RTP Company or other customer experience.

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Please contact your local RTP Company Sales Engineer by calling **1-507-454-6900** or **1-800-433-4787** (U.S. only), by email at rtp@rtppcompany.com, or visit www.rtpcompany.com



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