




Flame Retardant Thermoplastics

Compliant, Cost Effective Solutions
Using Thermoplastic Technologies



Your Global Compounder of Custom Engineered Flame Retardant Thermoplastics

Helping You Deliver

As a manufacturer, you face a host of challenges when it comes to specifying the optimum materials for your products. You need to deliver consistent quality, cost-effective solutions, and stay on top of changing global flame retardant (FR) regulations. RTP Company can help. Our engineers are experts on constantly-changing FR regulations with the experience, and the approved materials solutions, to help you meet them.

Independent and Unbiased

Our portfolio of more than 60 resins and hundreds of modifiers allows us to custom engineer the most effective flame retardant solution for your needs, effectively incorporating properties such as strength, wear resistance, flexibility and more. And, while other companies might work in “*only nylon*” or “*only polypropylene*,” RTP Company’s extensive portfolio and expertise ensures you receive the right solution to meet your needs. Our tailored solutions offer superior value to off-the-shelf “*one size fits all*” commodity materials.

Unmatched Experience

RTP Company produces thousands of different custom engineered flame retardant thermoplastic compounds every year. Our customers include global manufacturers and OEMs in industries like electronics, automotive, appliances, electrical products, solar energy, military, aerospace, and more.

RTP Company at a Glance

- Privately-owned custom compounder
- Independent, unbiased product development
- Worldwide representation and distribution
- Short standard product lead times
- Global manufacturing sites
- ISO 9001 Registered facilities

The Bottom Line

RTP Company has the breadth and depth of plastics expertise to help you readily meet every demand of the marketplace while supporting you every step of the way. From meeting regulatory approvals, to achieving optimum moldability, to timely delivery and beyond, we make your entire materials sourcing process simpler, more effective, and more successful.

Flame Retardants Increase Product Safety

Slowing the Combustion Process

Using flame retardant technologies to reduce fire hazards is a basic element of product safety. Flame retardancy is achieved in plastics through chemical reactions that moderate one or more of the elements (*fuel, heat, or oxygen*) necessary for burning to take place.

There are a number of ambiguous terms used to describe plastics incorporating flame retardant systems, all of which have similar intent: fire retardant, ignition resistant, and self-extinguishing materials. Even with flame retardant treatment, no plastic can be rendered entirely fire proof. Flame retardant systems are meant to moderate, but not eliminate, eventual combustion.

Flame Retardants Mitigate Fire Danger

- Increase plastics ignition resistance
- Reduce the speed of flame spread
- Reduce heat release
- Reduce smoke generation

Elements of Successful Material Selection

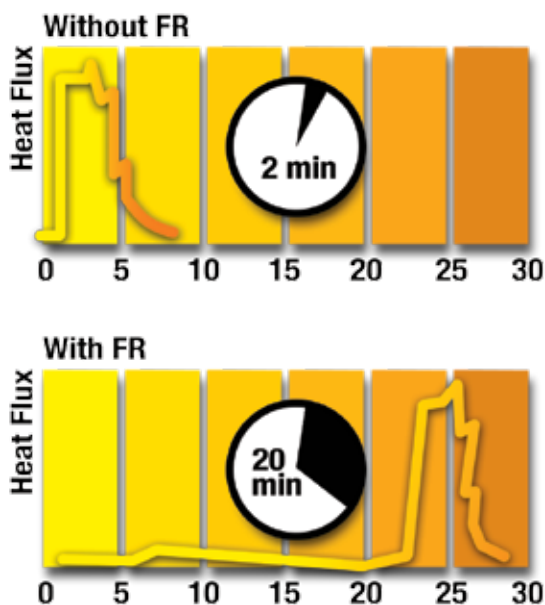
- Meet appropriate flammability specification
- Perform in end-use environment with temperature and chemical exposure
- Resin system with appropriate physical properties at a practical cost



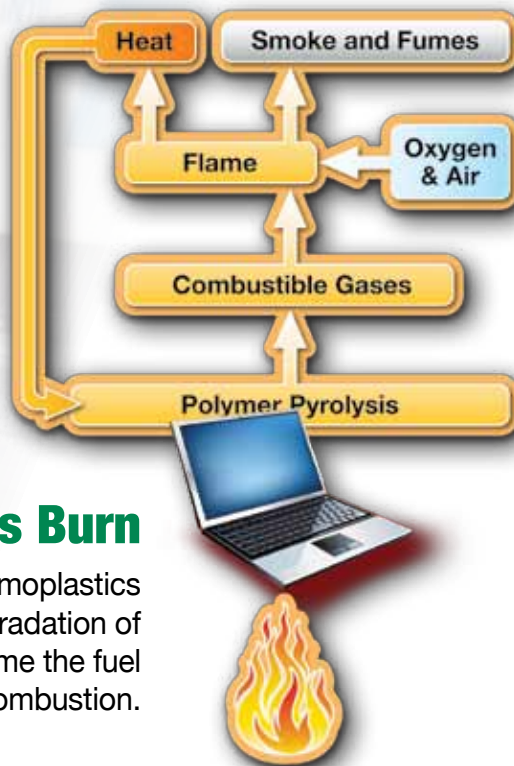
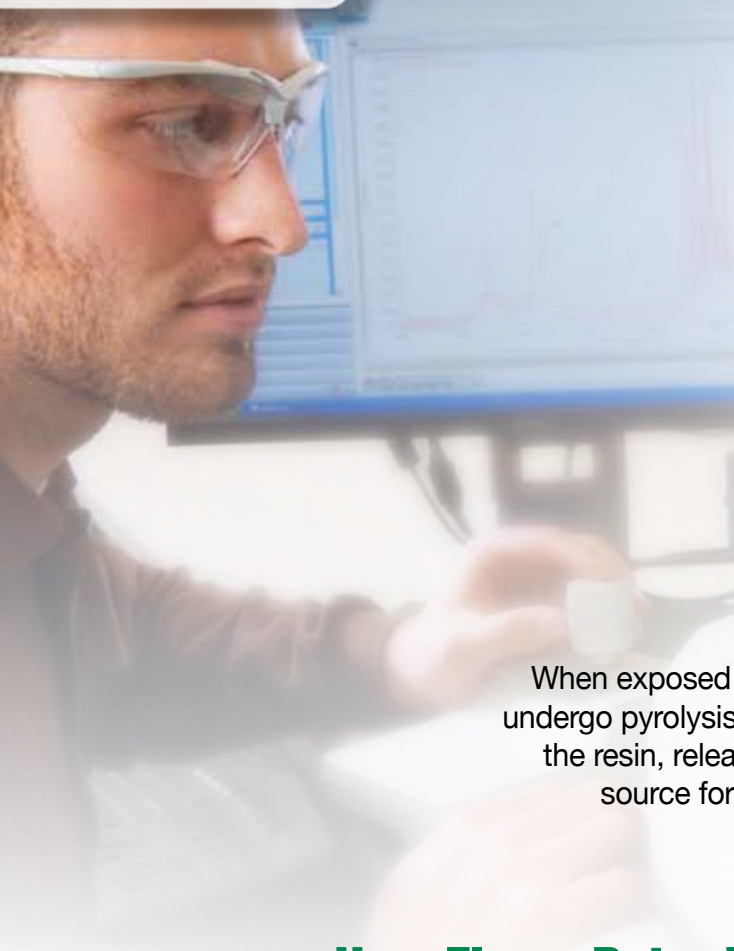
The goal of flame retardant technology is to disrupt one or more of the fire triangle elements necessary for combustion

Why Flame Retardants?

Flame retardant systems are designed to delay ignition and fire spread as a way to increase escape time.



Burning behavior of plastics is not just a material characteristic. Part design and nominal wall thickness are key factors in flammability certification.



How Plastics Burn

When exposed to heat or flame, thermoplastics undergo pyrolysis, which results in degradation of the resin, releasing gases that become the fuel source for the propagation of combustion.

How Flame Retardants Function



Vapor Phase Inhibition Mechanism

During combustion, flame retardant additives react with the burning polymer in the vapor phase to disrupt the production of free radicals at a molecular level, thereby shutting down the combustion process. This mechanism is commonly used with halogenated flame retardant systems.



Solid Phase Char-Formation Mechanism

Char-forming flame retardant additives react to form a carbonaceous layer on the material's surface. This layer insulates the polymer, slowing pyrolysis, and creates a barrier that hinders the release of additional gases that would otherwise fuel combustion. This method is commonly deployed by non-halogen systems using phosphorous and nitrogen chemistries.



Quench and Cool Mechanism

Hydrated minerals make up a class of halogen-free flame retardant systems commonly used for extruded applications like wire and cable. These systems use an endothermic reaction in the presence of fire to release water molecules that cool the polymer and dilute the combustion process.

Global Standards for Flammability

UL94

The UL94 standard, popularized by Underwriters Laboratories (*UL*) as an element to obtain a UL Listing for end devices, classifies plastics by how different thicknesses of material burn in various orientations.

For example, to achieve the minimum standard UL94 HB, a horizontal specimen less than 3 mm thick must burn at a rate of less than 76 mm/min.

The more typical V-0, V-1, and V-2 classification use samples of varying thicknesses, which is an element of the classification. They require a vertical specimen stop burning within a period ranging from 10-30 seconds. The effect of dripped particles is also monitored.

Glow Wire

In Europe, the flammability of plastics is often measured using the glow wire test according to IEC 60695-2-10 following the Glow Wire Flammability Index (*GWFI*) or Glow Wire Ignition Temperature (*GWIT*) methods. To pass glow wire tests, a specimen must either have no flame or glowing for more than 5 seconds while the glow wire is applied for GWIT, or have flame or glowing that extinguish within 30 seconds after removal of the glow wire for GWFI.

(CASE STUDY)

SmartPlug Marine Electrical Connection

Obtaining multiple properties in a single material is why custom compounds are often chosen. SmartPlug Systems needed flame retardancy, impact resistance, and vibrant orange color in a material for their marine shore power inlet.

Heat, Smoke and Flame Spread

Many other standards can be attributed to factors that are focused on confined space safety and increasing escape time in the event of a fire. The building, transportation, and material handling industries have adopted various test standards that address these concerns, including:

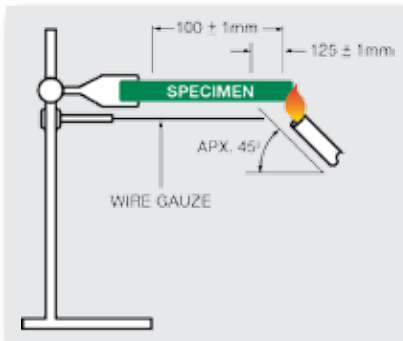
- Aerospace: FAR 25.853
- Mass Transit: ASTM E162/662 (49 CFR 238)
- Building: ASTM E84/1354, UL2043
- Material Handling: UL2335/FM4996

RTP Company compounds specialized thermoplastics that can reduce heat, smoke and the spread of flames to meet or exceed the ratings required by these industries.

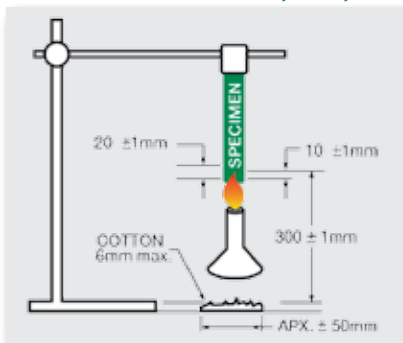


RTP Company has the knowledge and experience, plus the approved and proven material solutions to meet regulatory requirements

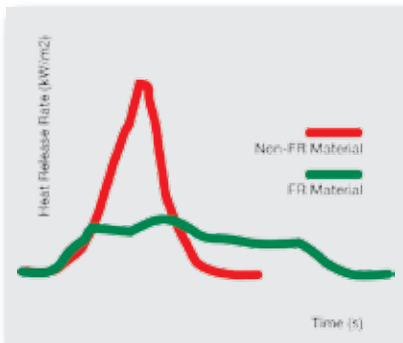
UL 94 Horizontal Burn Test for HB



UL 94 Vertical Burn Test for V-0, V-1, V-2



Heat Release



Testing and Approvals

In-house Lab Expedites Development

RTP Company has in-house laboratory testing expertise, with the ability to perform tests including UL94-HB, V-0, V-1, V-2, 5-V, and VTM; glow wire ignition; FMVSS 302; and FAR 25.853.

Our test facilities are audited and have been qualified by UL under their Client Test Data Program for more than a decade. RTP Company has a longstanding working relationship with UL, receiving our first recognition in 1977. Our engineers are well versed in managing UL projects and adapting material technologies to evolving UL standards, such as UL1703 for photovoltaic connectors.

Using independent labs, RTP Company can obtain data for Limiting Oxygen Index (LOI), smoke density, smoke toxicity, flame spread, and heat release when needed.

UL Yellow Cards

RTP Company has over 500 compounds in 30+ polymers with “yellow cards” that are already UL-Recognized. UL certification of new materials can be expedited with in-house testing as part of UL’s Client Test Data Program.

View RTP Company compounds with UL yellow cards at: www.rtpcompany.com/technical-info/ul-recognition-and-flammability-ratings

(CASE STUDY)

Portable Submersible Utility Pump

The housing of the WaterBUG™ pump from Wayne Water Systems required flame retardant properties, impact and UV-resistance, and a perfect color match. RTP Company delivered all of these properties with an RTP 100 Series compound, ensuring durability and performance for this highly effective and eye-catching water pump.



REACH

Registration,
Evaluation, Authorization &
Restriction of Chemicals

WEEE

Waste of Electrical &
Electronic Equipment

EPEAT

Electronic
Product Environmental
Assessment Tool

LEED

Leadership in Energy &
Environmental Design

Compliance With Environmental Regulations

RoHS and Halogen Restrictions

There are two general regulatory challenges when it comes to developing flame resistant products. One is avoidance of materials banned or being phased out for environmental reasons. The other is meeting flammability specifications by undergoing and passing specific testing requirements

(see pages 8 and 9).

On the environmental side, the key regulation significantly impacting flame retardants is the European Union's Restriction of Hazardous Substances (*RoHS*) Directive. Along with heavy metals, this directive bans chemicals containing PBDE (including *DecaBDE* or *decabrom*) used in some brominated flame retardant additives.

Many other countries are following the EU's lead. China, Korea, and Japan have their own versions of RoHS, and in the U.S., the Environmental Protection Agency has negotiated an agreement with producers of the chemical DBDE (*decabromodiphenyl ether*) to end its sale in 2012.

Formulating for Compliance

RTP Company has experience in formulating materials to meet the requirements of RoHS, without compromising FR protection or other desired properties. Likewise, we can assist in meeting the demand of other regulations that may impact products incorporating flame retardant protection, including REACH, WEEE, WPEAT, and LEED.



Compliance With Environmental Regulations cont.

Halogen-Free

Halogenated systems using bromine or chlorine have long been the “go to” chemistries because they are an effective solution that can easily be incorporated into thermoplastics at relatively low cost.

Because of increased targeting of halogens by environmental campaigns, RTP Company has developed halogen-free flame retardant compounds for most major resin systems. These offer comparable flammability performance at similar cost.

Certifications

We can provide certification for RoHS and REACH compliance, as well as for other regulations and organizations. For example, Letters of Compliance can be supplied *(along with supporting data such as chemical analysis, spectrography results, or other evidence)* to document that regulated substances are not present in your compound.

(CASE STUDY)

Networking Switch

F5 Network’s switch attracts consumer attention with its use of color, translucency, and surface textures. A precolored RTP 300 Series high flow flame retardant polycarbonate compound eliminates secondary painting processes in addition to achieving a UL94 V-0 rating.



(CASE STUDY)

Lithium-Ion Battery Case

RTP Company formulated a glass reinforced Polypropylene (PP) compound modified with a flame retardant additive package for a unique battery case used in extreme conditions. The material needed to be highly moldable, strong, impact resistant and flame retardant to provide optimum stability for the 56 cells encased within. This material meets the safety requirements of United Nations section 38.3.



Popular Resins for FR Applications

RTP Company develops flame retardant compounds in over 40 different engineering resins. These are some of the more popular polymers used for flame retardant applications:

Common FR Compounds

POLYPROPYLENE (PP)

RTP 100 FR Series — Excellent fatigue endurance and outstanding chemical resistance. Performs well at operating temperatures up to 225 °F (105 °C).

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 104 CC FR A 25% Glass Fiber – Homopolymer	1.47	2.0 ft-lbs/in 107 J/m	10,000 psi 69 MPa	V-0 @	1/32 in 0.8 mm	300 °F 149 °C
RTP 151 A Halogen-Free – Homopolymer	1.05	0.5 ft-lbs/in 27 J/m	3,000 psi 21 MPa	V-0 @	1/16 in 1.5 mm	135 °F 57 °C
RTP 199 X 134951 A 20% Mineral - UV	1.35	1.2 ft-lbs/in 10 J/m	3800 psi 26 MPa	V-0 @	1/16 in 1.5 mm	50 °F 66 °C
RTP 152 Homopolymer – Low Density	0.93	0.7 ft-lbs/in 37 J/m	4,400 psi 30 MPa	V-2 @	1/32 in 0.8 mm	130 °F 54 °C
RTP 154 Homopolymer – Low Density	1.03	0.5 ft-lbs/in 27 J/m	4,100 psi 28 MPa	V-0 @	1/32 in 0.8 mm	125 °F 52 °C
RTP 199 X 127145 F Glass Fiber – Halogen-free – Homopolymer	1.32	2.0 ft-lbs/in 107 J/m	8,000 psi 55 MPa	V-0 @	1/16 in 1.5 mm	275 °F 135 °C

We have a complete line of UL listed products, from 0 - 20% mineral filled and 0 - 30% glass fiber filled materials, available for customization.

NYLON OR POLYAMIDE (PA) - NYLON 6/6 (PA)

RTP 200 FR Series — Superb mechanical properties up to 275 °F (135 °C) in continuous use. Molds easily in thin wall sections; good resistance to chemicals.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 200 FR NH Unfilled – Halogen-Free	1.18	0.8 ft-lbs/in 43 J/m	11,000 psi 76 MPa	V-0 @	1/32 in 0.8 mm	160 °F 71 °C
RTP 205 FR 30% Glass Fiber	1.66	2.0 ft-lbs/in 107 J/m	21,000 psi 145 MPa	V-0 @	0.020 in 0.5 mm	450 °F 232 °C
RTP 200 H FR Impact Modified	1.26	5.0 ft-lbs/in 267 J/m	6700 psi 46 MPa	V-0 @	1/16 in 1.5 mm	160 °F 71 °C
RTP 299 X 119106 H 30% Glass Fiber – Halogen-Free	1.41	1.8 ft-lbs/in 96 J/m	17500 psi 121 MPa	V-0 @	1/32 in 0.8 mm	470 °F 243 °C

NYLON OR POLYAMIDE (PA) - NYLON 6 (PA)

RTP 200 FR Series — Superb mechanical properties up to 275 °F (135 °C) in continuous use. Molds easily in thin wall sections; good resistance to chemicals.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 205 A FR 30% Glass Fiber	1.65	2.0 ft-lbs/in 107 J/m	20,000 psi 138 MPa	V-0 @	1/16 in 1.5 mm	390 °F 199 °C
RTP 0299 A X 134517 B Unfilled – Halogen-Free	1.18	0.8 ft-lbs/in 43 J/m	10,000 psi 69 MPa	V-0 @	1/16 in 1.5 mm	150 °F 66 °C
RTP 299 A X 117575 30% Glass Fiber – Halogen-free	1.44	2.3 ft-lbs/in 123 J/m	16,000 psi 110 MPa	V-0 @	1/16 in 1.5 mm	400 °F 204 °C

Common FR Compounds cont.

POLYCARBONATE (PC)

RTP 300 FR Series — Superior impact strength, high heat resistance, good electrical properties, excellent mechanical properties up to 250 °F (120 °C). Controlled shrinkage, dimensional stability, thermal stability, good flow, and good surface finish.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 300 FR A Unfilled	1.21	12.0 ft-lbs/in 641 J/m	8,400 psi 58 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	260 °F 127 °C
RTP 301-500 10% Glass Fiber	1.27	2.5 ft-lbs/in 133 J/m	9,500 psi 88 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	290 °F 143 °C
RTP 399 X 141651U Unfilled - Transparent - UV	1.21	3.5 ft-lbs/in 187 J/m	9000 psi 62 MPa	V-0 @ 1/8 in 3.0 mm	960 °C @ 1/16 in 1.5 mm	260 °F 127 °C
RTP 305 FR 30% Glass Fiber	1.43	3.0 ft-lbs/in 160 J/m	18,000 psi 124 MPa	V-2 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	295 °F 146 °C

STYRENICS: HIGH IMPACT POLYSTYRENE (HIPS) AND ACRYLONITRILE BUTADINE STYRENE (ABS)

RTP 600 FR Series — Continuous use temperatures up to 175 °F (80 °C). Easy processing, chemical resistance, increased surface hardness, good impact strength, and overall toughness. Good for plating.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 499 X 146733 C Unfilled	1.18	1.7 ft-lbs/in 91 J/m	3000 psi 21 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	167 °F 75 °C
RTP 699 X 143582 A Unreinforced - UV	1.19	4.0 ft-lbs/in 214 J/m	6200 psi 43 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	190 °F 88 °C
RTP 605 FR A 30% Glass-Filled	1.44	1.2 ft-lbs/in 64 J/m	12,000 psi 83 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	220 °F 104 °C

POLYBUTYLENE TEREPHTHALATE (PBT)

RTP 1000 FR Series — High heat resistance, chemical resistance. Good flow in thin-wall sections, rapid crystallization, low mold temperatures, and fast cycle times make this material economical to mold.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 1000 FR A Unfilled	1.43	0.6 ft-lbs/in 641 J/m	9,000 psi 62 MPa	V-0 @ 1/32 in 0.8 mm	960 °C @ 1/32 in 0.8 mm	160 °F 71 °C
RTP 1005 FR A 30% Glass Fiber	1.63	1.5 ft-lbs/in 80 J/m	19,000 psi 131 MPa	V-0 @ 1/32 in 0.8 mm	960 °C @ 1/32 in 0.8 mm	400 °F 204 °C
RTP 1099 X 117578 A 30% Glass Fiber – Halogen-free	1.56	1.8 ft-lbs/in 96 J/m	16,000 psi 110 MPa	V-0 @ 1/32 in 0.8 mm	960 °C @ 1/32 in 0.8 mm	400 °F 204 °C
RTP 1099 X 52742 H 35% Glass-Mineral	1.68	1.0 ft-lbs/in 53 J/m	15,000 psi 103 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/32 in 0.8 mm	400 °F 204 °C

All the Properties You Need in One Material

FR and Enhanced Performance

Although flame retardance is perhaps the most challenging property to achieve in thermoplastic materials, it is often only one of a host of properties necessary to make your application successful.

At RTP Company, our expertise extends beyond vital flame retardant characteristics to including the precise combination of engineering properties you need in a single material.

Compounding Enhancements

- Increased stiffness/toughness
- Wear resistance
- Tunable elastomeric hardness
- Static charge control
- Visually appealing color
- Bondable TPE

POLYCARBONATE/ACRYLONITRILE BUTADIENE STYRENE ALLOY (PC/ABS)

RTP 2500 FR Series — Higher heat deflection temperature than ABS with better low-temperature impact resistance than PC. Good dimensionally stable, easily colored.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 2500 FR A Unfilled	1.21	12.0 ft-lbs/ in 641 J/m	9,000 psi 62 MPa	V-0 @ 1/16 in 1.5mm	960 °C @ 1/16 in 1.5 mm	210°F 99 °C

POLYSULFONE (PSU) AND ALLOYS

RTP 900 Series — Developed for long term service beyond 300 °F (149 °C). Continuous use temperature, according to UL Method 746, is 302 °F (150 °C) for 40% glass reinforced polysulfone. The addition of glass fibers to polysulfone results in nearly a twofold increase in tensile, flexural and compressive strengths and threefold increases in modulus values. Glass reinforcement lowers mold shrinkage. Inherent properties make it ideal for electrical and electronic applications.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 900 P-1720 Unfilled	1.27	1.5 ft-lbs/in 80 J/m	10,500 psi 72 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	345 °F 174 °C
RTP 999 X 137767 30% Glass	1.54	1.2 ft-lbs/in 64 J/m	15,500 psi 107 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 0.040 in 1.0 mm	355 °F 179 °C
RTP 2000 B-430 30% Glass – PSU Alloy	1.52	1.8 ft-lbs/in 96 J/m	21,000 psi 145 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 0.040 in 1.0 mm	340 °F 171 °C

POLYCARBONATE / POLYESTER ALLOY

RTP 2000 series — Optimum for applications that require high impact resistance in addition to UV resistance and chemical resistance. Good aesthetics, good flow in thin-wall sections.

RTP Product	Specific Gravity ASTM D 792	Notched Impact ASTM D 256	Tensile Strength ASTM D 638	Flammability UL94	Glow Wire GWFI IEC 60695-2-12	HDT @ 264 psi @ 1,82 MPa ASTM D 648
RTP 2099 X 143976 D Unfilled	1.29	13.0 ft-lbs/in 694 J/m	7000 psi 48 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	190 °F 88 °C
RTP 2099 X 70612 20% Glass	1.43	2.0 ft-lbs/in 107 J/m	13,000 psi 90 MPa	V-0 @ 1/16 in 1.5 mm	960 °C @ 1/16 in 1.5 mm	235 °F 113 °C

THERMOPLASTIC VULCANIZATE ELASTOMERS (TPV)

RTP 2800 FR Series — Offers a broad range of elastomeric properties in addition to superior heat resistance. Can incorporate with both RoHS-compliant and halogen-free FR systems.

RTP Product	Specific Gravity ASTM D 792	Hardness ASTM D 2240	Tensile Strength ASTM D 412	Tensile Elongation ASTM D 412	Flammability UL94
RTP 2800 B-45A FR A	1.24	45 A	500 psi 3 MPa	450%	V-0
RTP 2800 B-55A FR A	1.26	55 A	550 psi 4 MPa	550%	V-0
RTP 2800 B-65A FR A	1.24	65 A	650 psi 4 MPa	500%	V-0
RTP 2800 B-75A FR A	1.24	75 A	800 psi 6 MPa	500%	V-0
RTP 2800 B-85A FR A	1.24	85 A	1000 psi 7 MPa	550%	V-0

*All FR Compounds featured in this document are RoHS compliant. Product Data sheets for additional RTP Company flame retardant compounds at:
web.rtpcompany.com/info/data

Custom Color/Color Match

Matching color in materials built for FR properties is especially challenging, since many additives can impact the appearance of pigments and dyes in thermoplastics. Over the years, we have earned a reputation for having an outstanding color organization, achieving successful color matches that others cannot.

More Than Formulations

After specification, RTP Company continues to work closely with you, ensuring you get the best results from your custom compound. We can provide on-site trouble shooting during molding or help optimize your design with computer-aided engineering services where we model how our material flows through your mold.



**STRUCTURAL • ELASTOMERS • WEAR • COLOR
CONDUCTIVE • FLAME RETARDANT • FILM/SHEET**

Your Global Compounder of Custom Engineered Thermoplastics

RTP COMPANY is committed to providing you with solutions, customization, and service for all of your thermoplastic needs. We offer a wide range of technologies available in pellet, sheet, and film that are designed to meet even your most challenging application requirements.

COLOR

Color inspires, energizes, and builds brand recognition, and choosing the right supplier is as important as selecting the right color. We offer color technology options in standard precolored resins or custom compounds, UniColor™ Masterbatches, or cube blends.

CONDUCTIVE

We offer compounds for electrostatic discharge (ESD) protection, 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.

STRUCTURAL

Our reinforced structural compounds can increase strength, stiffness, and provide resistance to impact, creep and fatigue. Ideal for metal or other material replacement, our formulas can be customized to meet cost and performance targets.

TPE

Our thermoplastic elastomers provide rubber-like performance with the processing benefits of thermoplastic resin. We offer a wide range of options, from standard, in-stock resins to custom compounds designed to meet your specifications.

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.

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

RTP Company makes no warranties, expressed or implied, concerning the suitability or fitness of any of its products for any particular purpose. It is the responsibility of the customer to determine that the product is safe, lawful and technically suitable for the intended use. The disclosure of information herein is not a license to operate under, or a recommendation to infringe any patents.

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Please contact your local RTP Company Sales Engineer by calling **1-507-454-6900**
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