



STRUCTURAL PRODUCTS TECHNOLOGY EXAMINER

FOR INTERNAL USE ONLY

Structural and Flame Retardant PBT Compounds

PRODUCTS:

- Unfilled, IM, GF, MF and FR PBT
- Expanded portfolio on page 2

DESCRIPTION:

- Full portfolio of PBT Compounds
- Available in Americas, Europe, and Asia

THE STORY:

The Structural and FR teams have collaborated to update our PBT offerings to match the common offerings of industry leaders such as BASF, Celanese, and SABIC, allowing for quick recommendations on share-shift opportunities. As always, RTP Company offerings can be modified through X-numbers when a unique formula is necessary. After reviewing the information below and the expanded portfolio on page 2, please feel free to direct product questions to R&D, and any market questions to Jason Kafader.

YOUR R&D EXPERTS:

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PRODUCT BENEFITS:

- Good stiffness, toughness, surface appearance, and moldability
- Excellent electrical insulation properties
- HB and V-0 ratings for 0-30% GF PBT available today!
- UL746C f1 rating achievable
- Cost effective option that can outperform some thermosets
- FR PBT has lower density than FR PA
- Hydrolysis & UV resistant grades available

TYPICAL APPLICATION REQUIREMENTS:

- Electrical, Automotive, Extrusion and others (expanded list on reverse side)
- Replacing FR Nylon or thermosets
- Functional alternates to Valox™, Celenex® and Ultradur™

COMPETITION:

- BASF Ultradur™
- Celanese Celenex®
- SABIC Valox™

APPLICATION EXAMPLE:

DESCRIPTION:

30 and 50 amp industrial plugs used in marine settings

MANUFACTURER:

Smart Plug Systems

WHY SUCCESSFUL:

- UL 94 V-0 rating
- UL746C f1 rating
- Strength and mechanicals
- Color matching



Ultradur™ is a trademark of BASF SE

Celenex® is a trademark of Celanese Corporation

Valox™ is a trademark of SABIC

Please see full portfolio and expanded applications on page 2 >>>>>



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|------------|---------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|--------------------------------------|-------------------------|
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|------------|---------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|--------------------------------------|-------------------------|



ELECTRICAL/ELECTRONICS:

- Enclosures, Housings, Encapsulations
 - Transformer insulation
 - Actuators, relays and sensors
 - Solenoids
 - Compressor housings
 - High and low voltage enclosures
 - Distribution boxes
- Power Management
 - Switches and breakers
 - Plugs, connectors, and sockets
 - Bobbins
 - Relays
- Electrical boards
- Electric vehicle charging components
- Electrical insulation

AUTOMOTIVE:

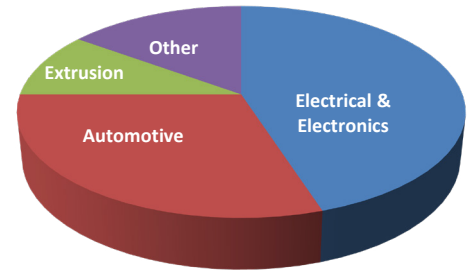
- Under hood electrical components
- Lighting bezels and housings
- Actuator
- Windshield wiper arm
- Mirror arm and housing

EXTRUSION:

- Fiber optic cable jackets
- Boards

OTHER APPLICATIONS:

- Appliances
 - Oven handles
 - Ice makers
 - Vacuum parts
- Handhelds
 - Housings
 - Irons
 - Spray guns
 - Drills
 - Edge trimmers
- Industrial
 - Pump parts
- Cosmetic packaging
- Furniture
- Photovoltaic panels and parts
- Sporting goods
- Mechanical gears
- Medical devices

**PBT Compound Markets****STRUCTURAL PRODUCT DATA COMPARISON:**

| Material | Technology | Tensile Strength (psi) | Flexural Modulus (E ⁶ psi) | Notched Izod (ft-lb/in) | Specific Gravity | Alternate Grades |
|---------------------|-------------------|------------------------|---------------------------------------|-------------------------|------------------|---------------------------|
| RTP 1000 HF | Unfilled | 8,500 | 0.37 | 0.7 | 1.31 | Valox 325, Celanex 1401A |
| RTP 1000 HI | Impact Modified | 5,300 | 0.25 | 18.0 | 1.22 | Celanex 4002 |
| RTP 1002 HF | 15% GF | 15,000 | 0.85 | 1.0 | 1.42 | Valox DR 51, Celanex 3200 |
| RTP 1005 HF | 30% GF | 20,000 | 1.35 | 1.6 | 1.53 | Valox 4031, Celanex 3300 |
| RTP 1099 X 146946 A | 30% GF and MF Mix | 12,000 | 1.30 | 0.7 | 1.55 | |
| RTP 1099 X 146947 A | 40% GF and MF Mix | 13,000 | 1.65 | 0.7 | 1.65 | |

FLAME RETARDANT V-0 LISTINGS @ .75mm:

| Material | Technology | Tensile Strength (psi) | Flexural Modulus (E ⁶ psi) | Notched Izod (ft-lb/in) | Specific Gravity | Alternate Grades |
|---------------------|-------------------|------------------------|---------------------------------------|-------------------------|------------------|-----------------------------|
| RTP 1000 FR A | Unfilled | 9,000 | 0.43 | 0.6 | 1.43 | Valox 310 SE0, Celanex 2016 |
| RTP 1099 X 135113 J | Impact Modified | 5,500 | 0.28 | 16.0 | 1.35 | Valox 357, Celanex 4016 |
| RTP 1002 FR A | 15% GF | 15,000 | 0.80 | 0.8 | 1.53 | Valox DR48, Celanex 3216 |
| RTP 1005 FR A | 30% GF | 20,000 | 1.40 | 1.8 | 1.63 | Valox 420, Celanex 3316 |
| RTP 1099 X 52742 H | 35% GF and MF Mix | 15,000 | 1.50 | 1.0 | 1.68 | Valox 771, Celanex 7715 |

Valox™ is a trademark of SABIC; Celanex® is a trademark of Celanese Corporation



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