The right material – the key to successful design engineering

Wide range of products
We are one of the world’s leading manufacturers of engineering thermoplastics. We want your molding to have a high degree of reliability, be fit for purpose and economical to manufacture. We offer you an extensive range of materials with high-quality basic and specialty grades customized to the requirements of each individual application. If you need a new grade of material for an innovative application, we will develop it with you.

Available worldwide
We manufacture in all the world’s major markets. Our materials are supplied to a consistently high standard of quality all over the world and our customer services are always close at hand. We provide assistance in selecting the material best suited to the application, in design engineering and tool construction, in material and component testing, in matters of logistics and ultimately in production start-up too.

In all colors
We offer our products in customized colors and provide an extensive range of coloring services. In our Color Competence and Design Centers (CCDC), which are spread across the world and linked together, we match shades for you and even produce colored granule samples in small quantities.
An overview of our product range

**Makrolon®**  
Polycarbonate  
04 – 09

**Apec®**  
Copolycarbonate  
10 – 11

**Bayblend®**  
Blends of polycarbonate and ABS or rubber modified SAN  
12 – 15

**Makroblend®**  
Blends of polycarbonate and PBT or PET  
16 – 17
Makrolon® is the brand name for our polycarbonate. Compared with other thermoplastics, this amorphous material has a unique set of properties. Its special features are its high transparency, heat resistance, toughness and dimensional stability, a high creep modulus and good electrical insulation properties. Glass fiber reinforced Makrolon® has particularly high stiffness and is therefore very dimensionally stable.

Products in the range
- General purpose grades
- Impact modified grades
- Flame retardant grades
- PC/PTFE grade
- Glass fiber (milled fiber) reinforced grades
- Glass fiber (normal fiber) reinforced grades
- Grades for special application

Characteristic features
Color
Clear and transparent like glass
Toughness
Without notching, no failure; high notched impact strength
Dimensional accuracy and stability
Exceptionally high, since it undergoes no change in dimensions due to water absorption and post shrinkage; high creep modulus, high heat resistance, isotropic behavior
Heat resistance
Glass transition temperature up to 148 °C
Flame retardance
Flammability classification up to UL 94V0/1.5 mm and UL 94-5VA/3.0 mm; maximum temperature in glow wire test up to 960 °C

Electrical insulation
Good volume resistivity $10^{14}$ Ohm·m, dielectric strength up to 36 kW/mm (1 mm wall thickness)

Processing and fabrication
Processing the raw material
Injection molding, extrusion, extrusion blow molding, injection blow molding and rotomolding
Secondary processing
Thermoforming, e.g. by bending and stamping; cold forming, e.g. by high-pressure molding and folding
Machining
Sawing, drilling, turning, milling, planing, filing, tapping, die-cutting and cutting
Joining
Screwing, bonding and welding
Finishing
Painting, printing, high-vacuum metallizing and laser marking

Main areas of application
Automotive
Construction
Electrical engineering/electronics
Domestic
Lighting engineering
Medical devices*
Optical
Optical storage media
Safety items
Packaging

* See disclaimer, page 19.
For more information: www.plastics.covestro.com
General purpose grades

Low viscosity

Makrolon® 2205
MVR (300 °C/1.2 kg) 34 cm³/10 min; general purpose; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2207
MVR (300 °C/1.2 kg) 35 cm³/10 min; general purpose; low viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2405
MVR (300 °C/1.2 kg) 19 cm³/10 min; general purpose; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2407
MVR (300 °C/1.2 kg) 19 cm³/10 min; general purpose; low viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Medium viscosity

Makrolon® 2605
MVR (300 °C/1.2 kg) 12 cm³/10 min; general purpose; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2607
MVR (300 °C/1.2 kg) 12 cm³/10 min; general purpose; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2805
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; general purpose; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2807
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; general purpose; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

High viscosity

Makrolon® 3105
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; general purpose; high viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 3107
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; general purpose; high viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Impact modified grades

Low viscosity

Makrolon® 1260
MVR (300 °C/1.2 kg) 34 cm³/10 min; impact modified; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in light colors only

Medium viscosity

Makrolon® 1248
MVR (300 °C/1.2 kg) 7.0 cm³/10 min; food contact quality; medium viscosity; impact modified; injection molding – melt temperature 280–320 °C; available in light colors only

Makrolon® 1837
MVR (300 °C/1.2 kg) 11 cm³/10 min; impact modified; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only
Flame retardant grades

Low viscosity

Makrolon® 2467
MVR (300 °C/1.2 kg) 19 cm³/10 min; flame retardant; UL 94V-2/1.5 mm and 3.0 mm; low viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 6165X
MVR (300 °C/1.2 kg) 28 cm³/10 min; flame retardant; UL 94V-0/1.2 mm; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only

Makrolon® 6266X
MVR (300 °C/1.2 kg) 19 cm³/10 min; flame retardant; UL 94V-0/1.5 mm; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only

Makrolon® 6267X
MVR (300 °C/1.2 kg) 19 cm³/10 min; flame retardant; UL 94V-0/1.5 mm; low viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only

Makrolon® FR6002
MVR (300 °C/1.2 kg) 17 cm³/10 min; flame retardant; low viscosity; easy release; injection molding – melt temperature 280 °C

Medium viscosity

Makrolon® 2665
MVR (300 °C/1.2 kg) 12 cm³/10 min; flame retardant; UL 94V-2/1.5 mm and 3.0 mm; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2865
MVR (300 °C/1.2 kg) 10 cm³/10 min; flame retardant; UL 94V-2/1.5 mm and 3.0 mm; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 6485
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only

Makrolon® 6487
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in opaque colors only

Makrolon® 6555
MVR (300 °C/1.2 kg) 10 cm³/10 min; flame retardant; UL 94V-0/3.0 mm; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 6557
MVR (300 °C/1.2 kg) 10 cm³/10 min; flame retardant; UL 94V-0/3.0 mm; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; extrusion; available in transparent, translucent and opaque colors

High viscosity, branched

Makrolon® 6717
MVR (300 °C/1.2 kg) 3.0 cm³/10 min; flame retardant; UL 94V-0/2.0 mm; high viscosity; branched; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; extrusion; available in transparent, translucent and opaque colors

PC/PTFE grade

Makrolon® 1954
MVR (300 °C/1.2 kg) 18 cm³/10 min; low viscosity; UV stabilized; improved friction characteristics; injection molding – melt temperature 280–320 °C; available in opaque colors only; housing- and operating parts; sliding elements

Glass fiber (milled fiber) reinforced grades

20 % glass fiber reinforced

Makrolon® 8025
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; 20 % glass fiber reinforced; milled fiber; high viscosity; easy release; injection molding – melt temperature 310–330 °C; extrusion; available in opaque colors only; precision parts

30 % glass fiber reinforced

Makrolon® 8035
MVR (300 °C/1.2 kg) 4.0 cm³/10 min; 30 % glass fiber reinforced; milled fiber; high viscosity; easy release; injection molding – melt temperature 310–330 °C; extrusion; available in opaque colors only; precision parts
Glass fiber (normal fiber) reinforced grades

10 % Glass fiber reinforced

Makrolon® 9415
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; 10 % glass fiber reinforced; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; high viscosity; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only

Makrolon® 9417
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; 10 % glass fiber reinforced; flame retardant; UL 94V-0/1.2 mm; high viscosity; UV stabilized; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only

Makrolon® GF9002
MVR (300 °C/1.2 kg) 15 cm³/10 min; 10 % glass fiber reinforced; flame retardant; UL 94V-0/1.2 mm; medium viscosity; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only; electrical/electronic; housing parts with low wall thickness

15 % Glass fiber reinforced

Makrolon® GF8002
MVR (300 °C/1.2 kg) 10 cm³/10 min; 15 % glass fiber reinforced; medium viscosity; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only

Makrolon® 1095
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; 15 % glass fiber reinforced; UL 94V-0/1.5 mm and 5VA/3.0 mm; high viscosity; easy release; injection molding – melt temperature 310–330 °C; extrusion; available in opaque colors only; housings for power tools

Makrolon® 9125
MVR (300 °C/1.2 kg) 8.0 cm³/10 min; 20 % glass fiber reinforced; flame retardant; UL 94V-0/1.5 mm; medium viscosity; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only; housing parts

Makrolon® 9425
MVR (300 °C/1.2 kg) 5.0 cm³/10 min; 20 % glass fiber reinforced; flame retardant; UL 94V-0/1.5 mm and 5VA/3.0 mm; high viscosity; easy release; injection molding – melt temperature 310–330 °C; extrusion; available in opaque colors only

Makrolon® 8345
MVR (300 °C/1.2 kg) 3.0 cm³/10 min; 35 % glass fiber reinforced; high viscosity; easy release; injection molding – melt temperature 310–330 °C; extrusion; available in opaque colors only

20 % Glass fiber reinforced

Makrolon® GF8001
MVR (300 °C/1.2 kg) 16 cm³/10 min; 20 % glass fiber reinforced; low viscosity; easy release; injection molding – melt temperature 310–330 °C; available in opaque colors only

Makrolon® LED2245
MVR (300 °C/1.2 kg) 34 cm³/10 min; light guides; PC with highest transmission; low viscosity; easy release; injection molding – melt temperature 280–320 °C

Makrolon® LED2247
MVR (300 °C/1.2 kg) 35 cm³/10 min; low viscosity; UV stabilized; easy release; LED Lighting, optics and lenses; injection molding – melt temperature 280–320 °C

Makrolon® LED2643
MVR (300 °C/1.2 kg) 13 cm³/10 min; LED Lighting, optics and lenses; PC with highest transmission; medium viscosity; UV stabilized; injection molding – melt temperature 280–320 °C; available in color code 551053 only

Diffuse reflectors

Makrolon® RW2405
MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; easy release; up to 96 % total reflectance; injection molding

Makrolon® RW2407
MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; easy release; UV stabilized; up to 96 % total reflectance; injection molding

Makrolon® RW6265 X
MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; easy release; flame retardant; UL 94V-0/1.5 mm; up to 96 % total reflectance; injection molding

Makrolon® RW6267 X
MVR (300 °C/1.2 kg) 19 cm³/10 min; low viscosity; easy release; UV stabilized; flame retardant; UL 94V-0/1.5 mm; up to 96 % total reflectance; injection molding

Diffusers

Special grades with different levels of light diffusion properties and viscosities, for example Makrolon 2407 021173 or Makrolon 2407 021180. Optical data and more settings on request

Heat sinks

Makrolon® TC8010
Polycarbonate (PC), injection molding, thermally conductive, 10 W/mK (ISO 22007-2), for metal replacement in LED lamps, thermal heat management

Makrolon® TC8030
Polycarbonate (PC), injection molding, high thermal conductivity, 22 W/mK (ISO 22007-2), for metal replacement in LED lamps; components for heat dissipation

For more information: www.plastics.covestro.com
Optical lenses
Makrolon® LQ2647
MVR (300 °C/1.2 kg) 12 cm³/10 min; optical lens; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in clear tints only; safety glasses

Makrolon® LQ3187
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; optical lens; high viscosity; UV stabilized; UV 400 cut off; easy release; injection molding – melt temperature 280–320 °C; safety glasses; sun glasses

Automotive lighting
Makrolon® AL2447
MVR (300 °C/1.2 kg) 19 cm³/10 min; automotive lighting; low viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent colors and in various signal colors; headlamp lenses for automotive forward lighting

Makrolon® AL2647
MVR (300 °C/1.2 kg) 12 cm³/10 min; automotive lighting; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent colors and in various signal colors; headlamp lenses for automotive forward lighting

Automotive glazing
Makrolon® AG2677
MVR (300 °C/1.2 kg) 12 cm³/10 min; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent colors only; automotive glazing; roof modules

Blow molding
Makrolon® WB1239
MVR (300 °C/1.2 kg) 2.0 cm³/10 min; blow molding; high viscosity; branched; food contact quality; extrusion blow molding; injection stretch blow molding; available in transparent colors only; water bottles

Furniture application
Makrolon® 2807
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; general purpose; medium viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 3107
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; general purpose; high viscosity; UV stabilized; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Extrusion
Makrolon® ET2613
MVR (300 °C/1.2 kg) 12 cm³/10 min; extrusion; medium viscosity; UV stabilized; available in color code 550060 only; solid sheet

Makrolon® ET3113
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; extrusion; high viscosity; UV stabilized; available in transparent colors only; solid sheet; corrugated sheet

Makrolon® ET3117
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; extrusion; high viscosity; UV stabilized; easy release; available in color code 550115 only; multi wall sheets/profiles; corrugated sheet

Makrolon® ET3137
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; extrusion; high viscosity; branched; UV stabilized; easy release; multi wall sheets/profiles; panels

Makrolon® ET3227
MVR (300 °C/1.2 kg) 3.0 cm³/10 min; extrusion; high viscosity; branched; UV stabilized; easy release; multi wall sheets/profiles

Makrolon® ET UV110
PC/UV absorber concentrate; high viscosity; easy release; special grade for the coextrusion of Makrolon® ET base resins; available in color code 550054 only; solid sheet; multi wall sheets/profiles

Makrolon® ET UV120
PC/UV absorber concentrate; high viscosity; easy release; special grade for the coextrusion of Makrolon® ET base resins; available in color code 451105 only; solid sheet; multi wall sheets/profiles

Makrolon® ET UV130
PC/UV absorber concentrate; high viscosity; easy release; special grade for the coextrusion of Makrolon® ET base resins; available in color code 550054 only; solid sheet; multi wall sheets/profiles

Makrolon® ET UV510
PC/UV absorber concentrate; high viscosity; easy release; very low plate-out; special grade for the coextrusion of Makrolon® ET base resins; available in color code 550054 only; solid sheet; multi wall sheets/profiles

Makrolon® ET UV530
PC/UV absorber concentrate; high viscosity; easy release; very low plate-out; special grade for the coextrusion of Makrolon® ET base resins; available in color code 550054 only; solid sheet; multi wall sheets/profiles

Makrolon® ET UV540
PC/UV absorber concentrate; high viscosity; easy release; very low plate-out; special grade for the coextrusion of Makrolon® ET base resins; available in color code 551307 only; solid sheet; multi wall sheets/profiles
Structural foam
Makrolon® SF800
MVR (300 °C/1.2 kg) 5.0 cm³/10 min; structural foam; 5 % glass fiber reinforced; flame retardant; high viscosity; easy release; in combination with an appropriate blowing agent for the production of structural foam moldings

Makrolon® SF800 Z MAS148
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; structural foam; 5 % glass fiber reinforced; milled fiber; flame retardant; medium viscosity; easy release; injection molding; available in natural (opaque) and opaque colors; in combination with an appropriate blowing agent for the production of structural foam moldings

Food contact grades
Low viscosity
Makrolon® 2256
MVR (300 °C/1.2 kg) 34 cm³/10 min; food contact quality; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2456
MVR (300 °C/1.2 kg) 19 cm³/10 min; food contact quality; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Medium viscosity
Makrolon® 2656
MVR (300 °C/1.2 kg) 12 cm³/10 min; food contact quality; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 2856
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; food contact quality; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

Makrolon® 1248
MVR (300 °C/1.2 kg) 7.0 cm³/10 min; food contact quality; medium viscosity; impact modified; injection molding – melt temperature 280–320 °C; available in transparent, translucent and opaque colors

High viscosity
Makrolon® 3156
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; food contact quality; high viscosity; easy release; injection molding – melt temperature 280–320 °C; extrusion; available in transparent, translucent and opaque colors

High viscosity, branched
Makrolon® WB1239
MVR (300 °C/1.2 kg) 2.0 cm³/10 min; blow molding; high viscosity; branched; food contact quality; extrusion blow molding; injection stretch blow molding; available in transparent colors only; water bottles

Medical devices*
Makrolon® 2258
MVR (300 °C/1.2 kg) 34 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent and opaque colors

Makrolon® 2458
MVR (300 °C/1.2 kg) 19 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; low viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent and opaque colors

Makrolon® 2558
MVR (300 °C/1.2 kg) 14 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent and opaque colors

Makrolon® 2658
MVR (300 °C/1.2 kg) 12 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; medium viscosity; easy release; injection molding – melt temperature 280–320 °C; available in transparent and opaque colors

Makrolon® 2858
MVR (300 °C/1.2 kg) 9.0 cm³/10 min; medical devices; suitable for ETO and steam sterilization at 121 °C; biocompatible according to many ISO 10993-1 test requirements; high viscosity; injection molding – melt temperature 280–320 °C; available in transparent and opaque colors

Makrolon® Rx2430
MVR (300 °C/1.2 kg) 19 cm³/10 min; medical devices; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; low viscosity; injection molding – melt temperature 280–320 °C; transparent parts for medical devices

Makrolon® Rx2435
MVR (300 °C/1.2 kg) 23 cm³/10 min; medical devices; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; low viscosity; easy release; injection molding – melt temperature 280–320 °C; transparent parts for medical devices

Makrolon® Rx2530
MVR (300 °C/1.2 kg) 15 cm³/10 min; medical devices; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; medium viscosity; injection molding – melt temperature 280–320 °C; transparent parts for medical devices

Makrolon® Rx1805
MVR (300 °C/1.2 kg) 6.0 cm³/10 min; medical devices; high lipid resistance; suitable for sterilization with high-energy radiation; biocompatible according to many ISO 10993-1 test requirements; high viscosity; injection molding – melt temperature 280–320 °C; transparent parts for medical devices

* See disclaimer, page 19.
For more information: www.plastics.covestro.com
Apec® is the brand name for an advanced copolycarbonate based on Makrolon® polycarbonate. With its unique combination of high heat resistance, toughness, transparency, light stability and flowability, it is unlike any other engineering thermoplastic. Worthy of note is the high heat resistance, which, depending on the grade, can be as high as 203 °C. This makes Apec® particularly suitable for moldings subject to such a high level of thermal stress that standard polycarbonate can no longer be used.

Products in the range

- **Easy flow grades**
- Grades with elevated viscosity
- **Medical grade***
- Flame retardant grades
- Grades for diffuse reflectors

Characteristic features

**Color**
Naturally transparent, almost colorless, available in many colors, both opaque and transparent

**Surface finish**
High gloss or textured (depending on mold surface)

**Stiffness**
Tensile modulus: 2,400 MPa

**Impact and break resistance**
Charpy-impact strength (ISO 179-1eU): no failure

**Heat resistance**
158–203 °C (Vicat-softening temperature according to VST/B 120)

**Service temperature**
Short term temperature peaks for parts not subjected to high mechanical loads can be up to approx. 15 °C below the Vicat softening temperature. In case of long-term exposure to high temperatures, the Relative Temperature Index (RTI) to UL746 must be taken into account.

**Dimensional accuracy and stability**
Very high, isotropic behavior, high heat resistance, no change in dimensions due to water absorption, slight change in dimensions due to post shrinkage.

**Electrical insulation**
Dielectric strength up to 35 kV/mm; specific volume resistivity: $10^{16}$ Ohm · m

Processing and fabrication

**Processing the raw material**
Injection molding, extrusion, compression molding, extrusion blow molding

**Secondary processing**
Thermoforming, e.g. by vacuum forming

**Machining**
Sawing, drilling, turning, milling, tapping and die-cutting

**Jointing**
Screwing, clamping, bonding, welding and riveting

**Finishing**
Painting, printing, metallizing, embossing and polishing

Main areas of application

**Automotive**
Headlight bezels and frames, reflectors for indicators and headlights, lenses for fog lights

**Medical technology**
Boxes for scalpels, filters for breathing masks, secretion collectors

**Electrical engineering and electronics, lighting**
Lamp housings, light diffusers, fuse boxes

**Domestic appliances**
Hairdryer housings with diffuser attachments

**Easy flow grades**

- **Apec® 1695**
  MVR (330 °C/2.16 kg) 45 cm³/10 min; easy release; softening temperature (VST/B 120) = 158 °C; injection molding – melt temperature 320–340 °C; covers for brake lights and indicator lights; headlamp reflectors/bezels

- **Apec® 1697**
  MVR (330 °C/2.16 kg) 45 cm³/10 min; low viscosity; easy-release; UV stabilized; softening temperature (VST/B 120) = 157 °C; injection molding – melt temperature 320–340 °C
Apec® 1795
MVR (330 °C/2.16 kg) 30 cm³/10 min; easy release; low viscosity; softening temperature (VST/B 120) = 173 °C; injection molding – melt temperature 320–340 °C; covers for brake lights and indicator lights; headlamp reflectors/bezels

Apec® 1797
MVR (330 °C/2.16 kg) 30 cm³/10 min; low viscosity; easy release; UV stabilized; softening temperature (VST/B 120) = 172 °C; injection molding – melt temperature 320–340 °C

Apec® 1895
MVR (330 °C/2.16 kg) 18 cm³/10 min; easy release; softening temperature (VST/B 120) = 183 °C; injection molding – melt temperature 330–340 °C; covers for brake lights and indicator lights; recessed light fixtures/reflectors; raised brake lights; headlamp reflectors/bezels

Apec® 1897
MVR (330 °C/2.16 kg) 18 cm³/10 min; easy release; UV stabilized; softening temperature (VST/B 120) = 182 °C; injection molding – melt temperature 330–340 °C; lamp covers; headlamp lenses

Apec® 1803
MVR (330 °C/2.16 kg) 10 cm³/10 min; high viscosity; UV stabilized; softening temperature (VST/B 120) = 184 °C; injection molding – melt temperature 330–340 °C; covers for brake lights and indicator lights; car interior light covers; domestic lamp covers; headlamp lenses; covers for ships’ lights; connector pieces for halogen systems

Apec® 1745
MVR (330 °C/2.16 kg) 17 cm³/10 min; easy release; UV stabilized; softening temperature (VST/B 120) = 171 °C; injection molding – melt temperature 320–340 °C; films for medical packaging; contact lens holders; medical vessels; safety valve for respiration aids; syringe tops

Apec® 1703
MVR (330 °C/2.16 kg) 17 cm³/10 min; UV stabilized; softening temperature (VST/B 120) = 171 °C; injection molding – melt temperature 320–340 °C; covers for brake lights and indicator lights; covers for domestic/industrial lamps; car interior light covers; headlamp lenses

Apec® FR 1892
MVR (330 °C/2.16 kg) 18 cm³/10 min; easy release; softening temperature (VST/B 120) = 183 °C; easy-flowing; injection molding – melt temperature 330–340 °C; visors for firemen’s helmets

Apec® DP1-9354
MVR (330 °C/2.16 kg) 12 cm³/10 min; flame retardant; high viscosity; only opaque colors available; V-0/1.5 mm (UL 94); V-0/3.0 mm (UL 94); 5VA/3.0 mm (UL 94); softening temperature (VST/B 120) = 185 °C; injection molding – melt temperature 330–340 °C

Apec® RW1697
MVR (330 °C/2.16 kg) 45 cm³/10 min; low viscosity; easy release; UV stabilized; high reflectance; injection molding – melt temperature 320–340 °C; extrusion; automotive lighting

Apec® RW1795
MVR (330 °C/2.16 kg) 28 cm³/10 min; low viscosity; easy release; high reflectance; injection molding – melt temperature 320–340 °C; extrusion; automotive lighting

Apec® RW1895
MVR (330 °C/2.16 kg) 18 cm³/10 min; low viscosity; easy release; high reflectance; injection molding – melt temperature 320–340 °C; extrusion; automotive lighting

* See disclaimer, page 19.
For more information: www.plastics.covestro.com
Bayblend® is the trade name used by Covestro AG for its product line of amorphous, thermoplastic polymer blends based on polycarbonate (PC) and acrylonitrile butadiene styrene copolymer (ABS) as well as the rubber-modified polycarbonate (PC) and styrene-acrylonitrile copolymer (SAN) blends. Their property profiles can be customized by varying the composition of the blends. The particular strengths of Bayblend® are its balanced combination of heat resistance, toughness and stiffness and its excellent processing characteristics.

Products in the range

- Non-reinforced general purpose grades
- Mineral filled general purpose grades
- Glass fiber reinforced general purpose grades
- General purpose grades with improved weatherability
- General purpose grades for medical application*
- Non-reinforced flame retardant grades
- Mineral-filled flame retardant grades
- Flame retardant grades for TV application

Characteristic features

<table>
<thead>
<tr>
<th>Color</th>
<th>Opaque, available in many opaque colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat resistance</td>
<td>Vicat VST/B 120: standard grades: 112–142 °C, FR grades 93 – 136 °C</td>
</tr>
<tr>
<td>Tensile modulus</td>
<td>2,000–2,800 MPa, mineral filled grades: 3,300–4,900 MPa, glass fiber-reinforced grades: 4,800–10,000 MPa</td>
</tr>
<tr>
<td>Toughness</td>
<td>High impact and notched impact strength even at low temperatures</td>
</tr>
</tbody>
</table>

Dimensional accuracy

- High, low shrinkage, minimal warping

Flame retardance

- Flame retardant grades with flammability classification to UL 94 V-0 as from 0.75 mm

Electrical insulation

- Good, specific volume resistivity: $10^{14}$ Ohm · m, specific surface resistivity: $10^{16}$ Ohm

Processing and fabrication

- Processing the raw material
  - Injection molding, extrusion, extrusion blow molding
- Secondary processing
  - Thermoforming, e.g. by bending and stamping; cold forming, e.g. by high-pressure molding
- Machining
  - Sawing, drilling, turning, milling, planing, grinding, tapping and die-cutting
- Jointing
  - Screwing, bonding, welding and riveting
- Finishing
  - Painting, printing, metallizing and laser marking

Main areas of application

- Automotive
  - Instrument panels and ventilation nozzles, instrument panel supports with add-on components, post finishers, airbag covers, metallized trim and emblems, consoles, door handles, rear spoilers
- Data technology
  - housings for computers, monitors, printers, photocopiers, laptops, televisions, DVD players and mobile phones
- Electrical engineering and electronics
  - Connectors, housings for switches and battery chargers, cable ducts
- Domestic, leisure, sports
  - Panels for dishwashers, washing machines, housings for kitchen appliances

* See disclaimer, page 19.
Non-reinforced general purpose grades

**Bayblend® T45 PG**
(ABS+PC)-blend; Vicat/B 120 temperature = 112 °C; for electroplating applications

**Bayblend® T50 XF**
(ABS+PC)-blend; Vicat/B 120 temperature = 112 °C; excellent flow; good low temperature impact strength

**Bayblend® T65 AT**
(ABS+PC)-blend; Vicat/B 120 temperature = 121 °C; improved antistatic behavior

**Bayblend® T65 HG**
(ABS+PC)-blend; Vicat/B 120 temperature = 120 °C; easy flowing; high gloss; brilliant colors

**Bayblend® T65 HI**
(ABS+PC)-blend; Vicat/B 120 temperature = 120 °C; grade with improved low-temperature impact strength and chemical resistance for automotive parts; also suitable for extrusion/extrusion blow molding and electroplating applications

**Bayblend® T65 PG**
(ABS+PC)-blend; Vicat/B 120 temperature = 120 °C; easy flowing; good heat resistance; for electroplating applications

**Bayblend® T65 XF**
(ABS+PC)-blend; Vicat/B 120 temperature = 120 °C; improved flow compared with T65

**Bayblend® T80 XG**
(ABS+PC)-blend; Vicat/B 120 temperature = 130 °C; excellent flow; optimized surface quality for metallization (steam treatment)

**Bayblend® T85 HG**
(ABS+PC)-blend; Vicat/B 120 temperature = 130 °C; easy flowing; high gloss; brilliant colors

**Bayblend® T85 SG**
(ABS+PC)-blend; Vicat/B 120 temperature = 130 °C; very good flow; suitable for DirectCoating/Direct-Skinning

**Bayblend® T85 XF**
(ABS+PC)-blend; Vicat/B 120 temperature = 130 °C; improved flow compared with T85

**Bayblend® T90 HT**
(ABS+PC)-blend; high heat resistance; Vicat/B 120 temperature = 135 °C; easy flowing; ball indentation temperature >= 125 °C; suitable as supporting material for energized parts

**Bayblend® T90 XF**
(ABS+PC)-blend; Vicat/B 120 temperature = 132 °C; good balance of melt flow, impact strength and stress cracking resistance

**Bayblend® T90 XG**
(ABS+PC)-blend; Vicat/B 120 temperature = 135 °C; easy flowing; optimized surface quality for metallization (steam treatment)

Mineral filled general purpose grades

**Bayblend® T95 MF**
(ABS+PC)-blend; 9 % mineral filled; Vicat/B 120 temperature = 142 °C; very good heat resistance; reduced coefficient of thermal expansion; tensile modulus = 3,350 MPa

**Bayblend® T90 MF-20**
Rubber modified (PC+SAN)-blend; 20 % mineral filled; Vicat/B 120 temperature = 130 °C; very good flow; reduced coefficient of thermal expansion; tensile modulus = 4,900 MPa; good heat resistance

For more information: www.plastics.covestro.com
Glass fiber reinforced general purpose grades

Bayblend® T88 GF-10
Rubber modified (PC+SAN)-blend; 10 % glass fiber reinforced; Vicat/B 120 temperature = 134 °C; optimized heat ageing- and UV-stability; very good flow; tensile modulus = 4,800 MPa; good heat resistance

Bayblend® T88 GF-20
Rubber modified (PC+SAN)-blend; 20 % glass fiber filled; Vicat/B 120 temperature = 130 °C; optimized heat ageing- and UV-stability; very good flow; tensile modulus = 7,200 MPa; good heat resistance

Bayblend® T88 GF-30
Rubber modified (PC+SAN)-blend; 31 % glass fiber filled; Vicat/B 120 temperature = 134 °C; optimized heat ageing- and UV-stability; very good flow; tensile modulus = 10,000 MPa; good heat resistance

Non-reinforced flame retardant grades

Bayblend® FR3000
(PC+ABS)-blend; flame retardant; easy flowing; Vicat/B 120 temperature = 97 °C; UL recognition 94 V-0 at 1.5 mm; glow wire test: 960 °C at 2.0 mm; no juicing; good light stability

Bayblend® FR3000 HI
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 97 °C; compared to FR3000 improved chemical resistance and stress cracking behavior; UL recognition 94 V-0 at 1.5 mm

Bayblend® FR3005 HF
(PC+ABS)-blend; flame retardant; easy flowing; Vicat/B 120 temperature = 96 °C; UL recognition 94 V-0 at 1.5 mm

Bayblend® FR3008 HR
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 103 °C; improved chemical and very good hydrolysis resistance; HDT/A >= 85 °C; UL recognition 94 V-0 at 1.5 mm; glow wire test: 960 °C at 2.0 mm; good light stability

Bayblend® FR3010
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 110 °C; increased heat resistance; UL recognition 94 V-0 at 1.5 mm; glow wire temperature (GWFI): 960 °C at 2.0 mm; improved chemical resistance and stress cracking behavior; successor to FR2010

Bayblend® FR3010 HF
(PC+ABS)-blend; flame retardant; easy flowing; Vicat/B 120 temperature = 108 °C; UL recognition 94 V-0 at 1.5 mm; glow wire temperature (GWFI): 960 °C at 2.0 mm; optimized processability; good light stability

Bayblend® FR3010 IF
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 108 °C; increased heat resistance; UL recognition 94 V-0 at 1.5 mm; glow wire temperature (GWFI): 960 °C at 2.0 mm

Bayblend® FR3011
(PC+ABS)-blend; flame retardant; easy flowing; Vicat/B 120 temperature = 118 °C; good heat resistance; UL recognition 94 V-0 at 1.5 mm; glow wire temperature (GWFI): 960 °C at 2.0 mm; good light stability

General purpose grades with improved weatherability

Bayblend® W85 HI
(PC+ASA)-blend; Vicat/B 120 temperature = 132 °C; easy flowing; improved weather resistance; excellent low temperature ductility; good heat resistance

Bayblend® W85 XF
(PC+ASA)-blend; Vicat/B 120 temperature = 134 °C; improved weather resistance; excellent low temperature ductility; good heat resistance

General purpose grades for medical application*

Bayblend® M850 XF
(PC+ABS)-blend; easy flowing; Vicat/B 120 temperature = 131 °C; meet certain requirements of ISO Standard 10993-1; for further information please contact plastics@covestro.com

* See disclaimer, page 19.
Bayblend® FR3015 BBS910
(PC+ABS)-blend; flame retardant; UV stabilized for improved light stability; Vicat/B 120 = 118 °C; UL recognition 94 V-0 at 1.5 mm

Bayblend® FR3030
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 115 °C; extrusion grade; good extrusion and vacuum-forming behavior; UL recognition 94 V-0 at 1.5 mm; halogen-free according to DIN VDE 0472,815; glow wire temperature (GWFI): 960 °C at 1.0 mm

Bayblend® FR3040
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 108 °C; HDT/A >= 85 °C; for thin-wall applications; very good burning behavior in small wall thicknesses (UL recognition 94 V-0 at 0.75 mm and above and V-1 at 0.6 mm)

Bayblend® FR1514
(PC+ABS)-blend; flame retardant; high heat resistance; Vicat/B 120 temperature = 136 °C; ball indentation temperature >= 125 °C; UL recognition 94 V-0 at 1.5 mm; suitable as supporting material for energized parts

Bayblend® FR1514 BBS073
(PC+ABS)-blend; flame retardant; Vicat/B 120 temperature = 136 °C; improved chemical resistance and stress cracking behavior compared to KU2-1514; ball indentation temperature >= 125 °C; UL recognition 94 V-0 at 1.5 mm; suitable as supporting material for energized parts

Flame retardant grades for TV application

Bayblend® FR3110 TV
(PC+ABS)-blend; flame retardant; easy flow; Vicat/B 120 temperature = 110 °C; increased heat resistance; UL recognition 94 V-0 at 1.5 mm

Bayblend® FR3200 TV
(PC+ABS)-blend; flame retardant; easy flow; for high gloss applications; RHCM process etc.; Vicat/B 120 temperature = 96 °C; UL recognition 94 V-0 at 1.2 mm

Bayblend® FR3210 TV
(PC+ABS)-blend; flame retardant; easy flow; Vicat/B 120 temperature = 93 °C; improved surface quality; UL recognition 94 V-0 at 1.2 mm

Bayblend® FR3306 TV
(PC+ABS)-blend, 10 % glass fiber reinforced; flame retardant; easy flow; Vicat/B 120 temperature = 97 °C

Bayblend® FR3311 TV
(PC+ABS)-blend; 15 % glass fiber reinforced; flame retardant; easy flow; Vicat/B 120 temperature = 96 °C; UL recognition 94 V-1 at 1.2 mm and V- at 1.5 mm

For more information: www.plastics.covestro.com
Makroblend® is the brand name of our polycarbonate blends based on polyethylene terephthalate or polybutylene terephthalate (PET or PBT). The benefits of Makroblend® include its high strength, even at low temperatures, its good resistance to chemicals and its reduced tendency to stress cracking. In addition, it is easily painted and absorbs only a minimal amount of moisture.

Products in the range
- Unreinforced grades
- Reinforced grades
- Medical grade*

Characteristic features

<table>
<thead>
<tr>
<th>Color</th>
<th>Naturally light ivory in color, available in many opaque colors, light stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface finish</td>
<td>Gloss or matt</td>
</tr>
<tr>
<td>Stiffness</td>
<td>High, tensile modulus: 1,800 to 6,500 MPa, depending on the grade</td>
</tr>
<tr>
<td>Toughness</td>
<td>High impact strength, good strength, even at low temperatures</td>
</tr>
<tr>
<td>Heat resistance</td>
<td>High; depending on the grade</td>
</tr>
<tr>
<td>Dimensional accuracy and stability</td>
<td>Good, significantly better than partially crystalline thermoplastics, absorbs only a minimum amount of moisture</td>
</tr>
<tr>
<td>Resistance to chemicals</td>
<td>Good, especially resistant to fuels, greases, solvents and cleaning agents</td>
</tr>
<tr>
<td>Electrical insulation</td>
<td>Good</td>
</tr>
<tr>
<td>Machining</td>
<td>Sawing, drilling, turning, milling, planing, grinding, tapping, die-cutting and cutting</td>
</tr>
<tr>
<td>Jointing</td>
<td>Screwing, bonding, welding and riveting</td>
</tr>
<tr>
<td>Finishing</td>
<td>Painting, printing, metallizing and laser marking</td>
</tr>
</tbody>
</table>

Main areas of application

Automotive
- Bumpers, radiator grilles, external components, bodywork components
Electrical engineering and electronics
- Housings of electrical tools
Domestic, leisure, sports
- Toecaps of safety shoes

Unreinforced grades

(RO+PET)-blends

Makroblend® AR205  
(RO+PET)-blend, easy flow, impact modified; application: automotive body panels

Makroblend® DP7645  
(RO+PET)-blend, impact modified, injection molding grade

Makroblend® UT250  
(RO+PET)-blend, impact modified, easy release, injection molding. Makroblend® UT250 offers high heat resistance, good chemical resistance and flowability. Additionally, molded parts from UT250 have exceptional dimensional stability

Makroblend® UT305  
(RO+PET)-blend, easy release, injection molding. Makroblend® UT305 offers high heat resistance, good chemical resistance and flowability. Molded parts from UT305 provide a good surface appearance and exceptional dimensional stability, even in high moisture environments
Unreinforced grades
(PC+PBT)-blends

Makroblend® KU2-7912
(PC+PBT)-blend, impact modified, injection molding grade, medium flow, high toughness at low temperatures, ideal for painted applications

Makroblend® KU2-7912/4
(PC+PBT)-blend, impact modified, injection molding grade, high toughness at low temperatures, ideal for painted applications

Makroblend® KU2-7915
(PC+PBT)-blend, impact modified, injection molding grade, excellent toughness at low temperatures, ideal for painted applications

Makroblend® UT3907
(PC+PBT)-blend, high flow, impact modified, easy release, UV-stabilized, injection molding grade. Makroblend® DP UT3907 offers superior flowability, good impact strength and excellent chemical resistance

Makroblend® UT6007
(PC+PBT)-blend, impact modified, easy release, UV-stabilized, injection molding grade. Makroblend® UT6007 offers an exceptional low-temperature impact strength, good flowability and excellent chemical resistance

Makroblend® S7916
(PBT+PC)-blend, impact modified, injection molding grade, excellent chemical resistance, high toughness at low temperatures, ideal for painted applications

Reinforced grades
(PC+PBT)-blends

Makroblend® UT235M
(PC+PET)-blend, mineral filled, easy flow, low coefficient of linear thermal expansion, easy release, injection molding. Molded parts from UT235M having exceptional dimensional stability

Reinforced grades
(PC+PBT)-blends

Makroblend® KU2-7609
(PC+PBT)-blend, impact modified, injection molding grade, 20% mineral filled

Makroblend® UT4045G
(PC+PBT)-blend, 20% glass fiber reinforced, easy release, injection molding. Makroblend® UT4045G offers a high stiffness, excellent chemical resistance, good flowability and exceptional dimensional stability

Medical grade*

Makroblend® M525
(PC+PBT)-blend, impact modified, easy release, injection molding grade. Makroblend® M525 offers an exceptional low-temperature impact strength, good flowability and excellent chemical resistance. Manufactured according to GMP, tested only according to ISO 10993-5 and ISO 10993-10 for contact with uncompromised skin only; for questions regarding biocompatibility we ask for an email inquiry under plastics@covestro.com

* See disclaimer, page 19.
For more information: www.plastics.covestro.com
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Typical value
These values are typical values only. Unless explicitly agreed in written form, they do not constitute a binding material specification or warranted values. Values may be affected by the design of the mold/die, the processing conditions and coloring/pigmentation of the product. Unless specified to the contrary, the property values given have been established on standardized test specimens at room temperature.