



# CALIBRE 201-15

## Polycarbonate Resin

### Overview

CALIBRE\* 201-15 Polycarbonate resin complies with appropriate U.S. Food and Drug Administration (FDA) regulations for food contact applications. This resin provides excellent impact resistance, heat distortion resistance and optical clarity.

### Applications

- Small & large appliances
- Beverage containers/serviceware
- Water bottles

Physical Properties <sup>(1)</sup>	Test Method	English Units	SI Units
Specific Gravity	ASTM D 792	1.2	1.2
Melt Flow Rate, 300°C/1.2kg	ASTM D 1238	15 g/10 min	15 g/10 min
Mold Shrinkage, Flow	ASTM D 955	0.005-0.007 in/in	0.005-0.007 mm/mm
Water Absorption	ASTM 570		
73°F (23°C), 24 hrs.		0.15	0.15
73°F (23°C), 50% RH @ Equilibrium		0.32	0.32
Mechanical Properties <sup>(2)</sup>			
Tensile Strength at Yield, 50 mm/min	ASTM D 638	8,700 psi	60 MPa
Tensile Strength at Break, 50 mm/min	ASTM D 638	10,300 psi	71 MPa
Tensile Elongation at Break, 50 mm/min	ASTM D 638	150 %	150 %
Tensile Modulus, 50 mm/min	ASTM D 638	340,000 psi	2340 MPa
Flexural Strength, 3-points, 2 mm/min	ASTM D 790	14,000 psi	96 MPa
Flexural Modulus, 3-points, 2 mm/min	ASTM D 790	350,000 psi	2410 MPa
Tensile Impact Strength	ASTM D 1822	220 ft-lb/in	462 J/m
Notched Izod Impact	ASTM D 256		
73°F (23°C)		16 ft-lb/in	850 J/m
Notched Izod Impact	ASTM D 256		
73°F (23°C)		No break	No break
Instrumented Dart Impact	ASTM D 3763		
Total Energy, 73°F (23°C), 8000 ipm		770 in-lb	87 J
Taber Abrasion Resistance -Δ	ASTM D 1044	45 %	45 %
Rockwell Hardness, R Scale (M Scale)	ASTM D 785	118	72
Thermal Properties			
Deflection Temperature Under Load	ASTM D 648		
66 psi (0.45 MPa), annealed		291°F	145°C
264 psi (1.8 MPa), annealed		286°F	141°C
264 psi (1.8 MPa), unannealed		262°F	128°C
Vicat Softening Point	ASTM D 1525		
50°C/hr, 50N		298°F	148°C
CLTE, flow, -40 to 180°F (-40 to 80°C)	ASTM D 696	38 x 10 <sup>-6</sup> in/in/°F	68 x 10 <sup>-6</sup> mm/mm/°C
Electrical Properties			
Dielectric Strength	ASTM D 149	420 V/mil	17 kV/mm
Dielectric Constant, 60 Hz	ASTM D 150	3.0	3.0
1 MHz		3.0	3.0
Dissipation Factor, 50 Hz	ASTM D 150	0.001	0.001
1 MHz		0.002	0.002
Volume Resistivity	ASTM D 257	2.0 x 10 <sup>17</sup> ohm	2.0 x 10 <sup>17</sup> cm
Optical Properties			
Refractive Index	ASTM D 542	1.586 n <sub>g</sub>	1.586 n <sub>g</sub>
Haze	ASTM D 1003	1 %	1 %
Light Transmission	ASTM D 1003	89 %	89 %

\*Trademark of The Dow Chemical Company



Flammability <sup>(3)</sup>			
UL94 Classification at			
1.6 mm (0.0625 in)	UL 94	HB	HB
3.2 mm (0.125 in)	UL 94	HB	HB
Limiting Oxygen Index	ISO 4589-2	26 %	26 %
Average Extent of Burning	ASTM D 635	1 in	25 mm

Notes

1. Typical properties; not to be construed as sales specifications. Fabrication conditions, part design, additives, processing aids, finishing materials, and use conditions can all affect the integrity, performance, and regulatory status of finished goods.
2. Tests conducted on 0.125 inch (3.2 mm) injection molded specimen, unannealed, unless noted.
3. This rating not intended to reflect hazards presented by this or any other material under actual fire conditions.

## Safety and Handling Considerations

Material Safety Data (MSD) sheets are available for all resins from Dow Plastics, a business group of The Dow Chemical Company and its subsidiaries. MSD sheets are updated regularly and are available on [www.c9021.com](http://www.c9021.com) or can be requested through the Dow Customer Information Group. Always review the most current MSD sheet before handling or using any product. The following comments are general and apply only to all engineering plastics resins as supplied by Dow plastics. Various additives and processing aids used in fabrication and other materials used in finishing steps have their own safe use profile and must be investigated separately.

### Hazards and Handling Precautions

Engineering plastics resins have a very low degree of toxicity and under normal conditions of use should pose no unusual problems from ingestion, eye, or skin contact. However, caution is advised when handling, storing, using, or disposing these resins. Good housekeeping and controlling of dust are necessary for safe handling. Workers should be protected from the possibility of contact with molten resin.

Handling of engineering plastic resins can result in the generation of vapors and dust including small particles of glass fibers when dealing with glass filled resins. Dust resulting from sawing, filing, and sanding in post-molding operations may cause irritation of eyes and upper respiratory tract. Use an approved dust respirator in dusty atmospheres. Slight itching and irritation may result from skin contact of glass filled resins. Repeated exposure to particles generated by grinding glass fiber-reinforced materials may result in implantation of particles in the skin.

Processing may release fumes which can be irritating. Good general ventilation should be sufficient for most conditions. In addition, local exhaust ventilation may be necessary for some operations. For high heat ABS resins, local exhaust ventilation above the dies and vent ports of processing equipment such as injection molding and extrusion machines is necessary to keep airborne dust levels below the exposure guidelines.

Use safety glasses. If there is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles. If vapor exposure causes eye discomfort, use a full-face respirator. Use gloves with insulation for thermal protection, when needed. Processing fumes will condense in the air extraction system and can deposit on equipment surfaces close to the emission points. Fume deposits of high heat ABS resins can cause skin irritation and skin damage. Wear chemical resistant gloves when in contact with surfaces contaminated with these deposits and when cleaning the deposits.

To accelerate cooling of large polymer masses of ignition resistant resins, RETAIN\* post consumer recycle content plastic resins and high heat ABS resins, quench purge patties in water. If quenching is not possible, move the purge patties from the working area to a well-ventilated area to cool. Do not purge the processing equipment with these materials

### Combustibility

Although engineering plastics resins may contain ignition resistant chemical additives, they will, once ignited, burn rapidly under the right conditions. Do not permit dust to accumulate. Dust layers can be ignited by spontaneous combustion or other ignition sources. When suspended in air, dust can also pose an explosion hazard. Dense black smoke and toxic fumes are produced when product burns. Water fog or fine spray is the preferred extinguishing media. Carbon dioxide or dry chemicals may also be used.

### Disposal

Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in compliance with Federal, State/Provincial, and local laws and regulations. The Dow Customer Information Group can provide lists of companies, which recycle, reprocess, or manage plastics waste.

### Environment

Generally speaking, pellets lost in the environment are not a problem since they are inert and benign in terms of their physical environmental impact. However, when they enter the marine environment and are ingested by waterfowl or aquatic life, they may mechanically cause adverse effects. Spills should be minimized and they should be cleaned up when they happen.

## Medical Applications Policy

DOW PLASTICS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, CONCERNING THE SUITABILITY OF ANY DOW PLASTICS PRODUCT FOR USE IN MEDICAL APPLICATIONS. It is the responsibility of the medical device or pharmaceutical manufacturer to determine that the Dow Plastics product is safe, lawful, and technically suitable for the intended use.

Dow Engineering Plastics will not knowingly sell or sample any products into any commercial or developmental application intended for:

- Long term contact with internal body fluids or internal body tissues. (Long term is a use which exceeds 72 continuous hours, or 30 days for PELLETHANE\* thermoplastic polyurethane elastomers);
- Use in cardiac prosthetic devices regardless of the length of time involved (Cardiac prosthetic devices include, but are not limited to, pacemaker leads and devices, artificial hearts, heart valves, intra-aortic balloons and control systems, and ventricular bypass assisted devices);
- Use as a critical component in medical devices that support or sustain human life;
- Use specifically by pregnant women or in applications designed to promote or interfere with human reproduction.

In addition, new business opportunities require a business assessment prior to sale or sampling.

This engineering plastics medical policy applies to all engineering plastics resins from Dow Plastics. Authorized distributors and resellers will also adhere to this policy.

NOTICE: No freedom from any patent owned by Seller or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other governmental enactments. Seller assumes no obligation or liability for the information in this document. **NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.**

For additional information contact the Dow Customer Information Group:  
Asia/Pacific: 800-7776-7776  
China: 10-800-600-0015  
Brazil: 55-11-5188-9373  
Europe: 32-3-450-2240  
Mexico: 95-800-441-4369  
U.S./Canada: 1-800-441-4DOW (4369)



\*Trademark of The Dow Chemical Company