



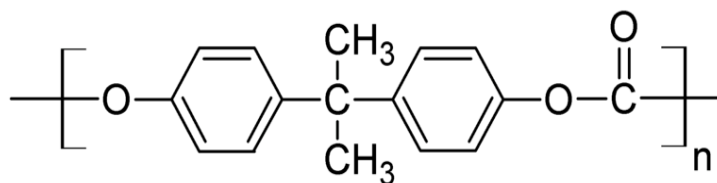
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POLY(BISPHENOL A CARBONATE) (PC resins)

Polycarbonates are thermoplastic linear polymers (molecular weight ranging 35,000–70,000) that are characterized by very high impact strength (250–500 kilojoules per sq m, or kilograms-force per cm per sq cm [kgf.cm/cm²]), yield strength (strength in flexure, 77–120 meganewtons per sq m [MN/m²], or 770–1,200 kgf/cm²), and very good dielectric properties (dissipation factor, 0.0009 at 50 hertz). Polycarbonates are optically transparent, cold-resistant (stable at temperatures slightly below – 100°C), and self-extinguishing; they dissolve in most organic solvents such as methylene chloride and chloroform, and are resistant to acids, salt solutions, and oxidizing agents.

CAS N	80-05-7
Molecular formula	C ₁₅ H ₁₆ O ₂
Molecular weight	35,000–70,000



Chemical and Physical Properties of PC

- PC features high-strength making it impact- and fracture-resistant
- It is non-toxic, can be colored easily, and transparent up to 2 in. in width.
- PC features high heat and electrical resistance
- It is inert biologically
- Can be recycled
- Features good resistance to dilute acids, alcohols, mineral oils and vegetable oils
- Reacts easily with bases, concentrated acids, esters, aromatic and aliphatic hydrocarbons, ketones, halogenated hydrocarbons and oxidizing agents
- Can be solvent bonded, joined mechanically and welded

Manufacturing Process

It is produced under polycondensation in Diphenylcarbonate and Bisphenol-A melt, using a non-phosgene COCl₂ Asahi Kasei Chemicals Corporation technology method.

Technical specification :

TU 2226-173-00203335-2007, rev. 1-5

No.	Parameter	Brand assortment of high viscosity polycarbonates								
		PC-003			PC-005			PC-007		
		superior quality	1st quality	2d quality	superior quality	1st quality	2d quality	superior quality	1st quality	2d quality
1	Melt flow index, g/10 min, at 1.2 kgf, @ temperature 300 °C	2,5±1,0	2,5±1,0	2,5±1,0	5,0±1,0	5,0±1,0	5,0±1,0	6,5±1,0	6,5±1,0	6,5±1,0
2	Spread of melt flow index within one batch, %, max	All spot samples shall correspond to item no. 1	42	50	All spot samples shall correspond to item no. 1	25	30	All spot samples shall correspond to item no. 1	20	25
3	Number of visible contaminations (impurities) pcs./100 g, max	—	—	—	5	10	n/a	5	10	n/a
4	Haze, %, max	1,0	1,0	n/a	0,8	0,8	1,0	0,8	0,8	1,0
5	Transmission factor, %, min	86	86	82	89	89	85	89	89	85
6	Refraction index at 20 °C, within	—	—	—	—	—	—	—	—	—
7	Tensile stress at yield, MPa, min	60	58	55	60	58	55	60	58	55
8	Elongation at break, %, min	90	90	75	100	100	80	120	100	80
9	Bending stress at max. sample load, MPa, min	90	90	80	90	90	80	90	80	70
10	Modulus of elasticity in flexure, MPa, min	2250	2250	2000	2250	2250	2000	2250	2250	2000
11	Isode impact strength, kJ/m ² , min	66	66	60	66	66	60	75	66	60
12	Compressive stress at yield, MPa, min	74	68	68	76	70	70	76	70	70
13	Vicat softening temperature °C, min	147	147	147	147	147	147	150	147	147
14	Blue and yellowness index for PC-L	1,0-2,5 —	n/a —	n/a —	1,6-2,2 1,35-1,65	1,0-3,5 —	n/a —	1,6-2,2 1,35-1,65	1,0-3,5 —	n/a —
15	Transparency and brightness index, min	89	89	n/a	90	90	n/a	90	90	n/a
16	Dielectric capacitivy at frequency of 106 Hz, max	—	—	—	3,1	n/a	n/a	3,1	n/a	n/a
17	Dielectric loss tangent, 106 Hz, max	—	—	—	0,009	n/a	n/a	0,009	n/a	n/a
18	Electrical strength kV/mm, min	—	—	—	20	n/a	n/a	20	n/a	n/a

Brand assortment of high viscosity polycarbonates

PC-003	PC-003R					
PC-005	PC-005R	PC-005L	PC-005U	PC-005UL	PC-005RL	PC-005UR
PC-007	PC-007R	PC-007L	PC-007U	PC-007UL	PC-007RL	PC-007UR

No.	Parameter	Standard								
		PC-010			PC-015			PC-022		
		superior quality	1st quality	2d quality	superior quality	1st quality	2d quality	superior quality	1st quality	2d quality
1	Melt flow index, g/10 min, at 1.2 kgf, @ temperature 300 °C	10,0±1,5	10,0±1,5	10,0±1,5	15,0±1,5	15,0±1,5	15,0±1,5	22,0±2,0	22,0±2,0	22,0±2,0
2	Spread of melt flow index within one batch, %, max	All spot samples shall correspond to item no. 1	15	20	All spot samples shall correspond to item no. 1	12	20	All spot samples shall correspond to item no. 1	10	15
3	Number of visible contaminations (impurities) pcs./100 g, max	5	10	n/a	5	10	n/a	5	10	n/a
4	Haze, %, max	0,8	0,8	1,0	0,8	0,8	1,0	0,8	0,8	1,0
5	Transmission factor, %, min	89	89	85	89	89	85	89	89	85
6	Refraction index at 20 °C, within	—	—	—	—	—	—	—	—	—
7	Tensile stress at yield, MPa, min	60	58	55	60	58	55	60	58	55
8	Elongation at break, %, min	120	100	80	100	100	80	60	60	50
9	Bending stress at max. sample load, MPa, min	90	80	70	—	—	—	—	—	—
10	Modulus of elasticity in flexure, MPa, min	2250	2250	2000	—	—	—	—	—	—
11	Isode impact strength, kJ/m ² , min	75	66	66	66	66	66	63	57	57
12	Compressive stress at yield, MPa, min	76	70	70	—	—	—	—	—	—
13	Vicat softening temperature °C, min	150	147	147	147	147	147	147	147	147
14	Blue and yellowness index for PC-L	1,6-2,2 1,35-1,65	1,0-3,5 —	n/a —	1,6-2,2 1,35-1,65	1,0-3,5 —	n/a —	1,6-2,2 1,35-1,65	1,0-3,5 —	n/a —
15	Transparency and brightness index, min	90	90	n/a	90	90	n/a	90	90	n/a
16	Dielectric capacitivity at frequency of 106 Hz, max	3,1	n/a	n/a	3,1	n/a	n/a	3,1	n/a	n/a
17	Dielectric loss tangent, 106 Hz, max	0,009	n/a	n/a	0,009	n/a	n/a	0,009	n/a	n/a
18	Electrical strength kV/mm, min	20	n/a	n/a	20	n/a	n/a	20	n/a	n/a
<i>Brand assortment of high viscosity polycarbonates</i>										
PC-010	PC-010R	PC-010L	PC-010U	PC-010UL	PC-010RL	PC-010UR				
PC-015	PC-015R	PC-015L	PC-015U	PC-015UL	PC-015RL	PC-015UR				
PC-022	PC-022R	PC-022L	PC-022U	PC-022UL	PC-022RL	PC-022UR				

Note:

Description of additional letter symbols to base grades as follows:

U – ultraviolet stabilizer;

R – improved antistick properties;

L – increased content of blue colorant.

Norms and requirements for PC quality parameters with additives are the same as for additives-free PC.

Application: for production by injection molding;

- PC-075, PC-075D – polycarbonates, intended for optical articles production by injection molding (incl. CD, DVD and other disks) as well as manufacture of mixed composites with other plastics;
- PC-075A, PC-075DA - polycarbonates, intended for production of articles by injection molding and manufacture of mixed composites with other plastics.

Physical and chemical parameters:					
No.	Parameter	PC-075	Standard for PC-075 grade varieties		
			PC-075A	PC-075D	PC-075DA
1	Melt flow index, g/10 min, at 1.2 kgf, @ temperature 300 °C	10,3±0,5	10,3±2,5	7,8±0,5	7,8 ± 2,5
2	Spread of melt flow index within one batch, %, max	All spot samples shall correspond to item no. 1			
3	Number of visible contaminations (impurities) pcs./100 g, max	—	—	—	—
4	Haze, %, max	0,8	0,8	0,8	0,8
5	Transmission factor, %, min	89	89	89	89
6	Refraction index at 20 °C, within	1,584-1,586	—	1,584-1,586	—
7	Tensile stress at yield, MPa, min	60	60	60	60
8	Elongation at break, %, min	50	50	50	50
9	Bending stress at max. sample load, MPa, min	90	90	90	90
10	Modulus of elasticity in flexure, MPa, min	2250	2250	2250	2250
11	Isode impact strength, kJ/m ² , min	—	—	—	—
12	Compressive stress at yield, MPa, min	—	—	—	—
13	Vicat softening temperature °C, min	—	—	—	—
14	Blue and yellowness index for	3,5 max			
15	PC-L	91	90	91	90
16	Transparency and brightness index, min	—	—	—	—
17	Dielectric capacitivy at frequency of 106 Hz, max	—	—	—	—
18	Dielectric loss tangent, 106 Hz, max	—	—	—	—
	Electrical strength kV/mm, min				

Packaging: the Polycarbonates are packaged in bags as per GOST 17811 or in similar polymer bags as per technical documentation approved under the appropriate procedure and related to import as well. The bags neck should be sealed in. Polycarbonates are also packaged in sealed soft special containers for bulk solids as per technical documentation approved under the appropriate procedure and related to import as well. Packages should be tightly sewed. Polycarbonate weight in bag should be (25±0.25) kg, in big-bag (750±3.75) kg, (850±4.25) kg, (1000±5.0) kg.

Handling and storage: transportation by any modes of roofed transport in accordance with transport regulations valid for the related mode of transport. To be stored indoors excluding direct sun and at least 1 m away from heating devices at temperature not exceeding 35 °C.

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