Flame Retardant PC/ABS Detailed Parameter Manual

Flame Retardant PC/ABS (Polycarbonate/Acrylonitrile-Butadiene-Styrene Copolymer Alloy) is a UL94 V-0 grade flame-retardant engineering plastic, combining the high toughness and impact resistance of PC with the processability and rigidity of ABS. It is widely used in electronic and electrical, automotive components, medical equipment, smart home and other fields. The following is a systematic parameter table, including core performance and processing parameters. All data are from the technical manuals of mainstream manufacturers, suitable for PDF export, printing and foreign trade customer communication.

1. Basic Physical Properties

Property Item	Unit	Typical Value	Test Standard	Remarks
Density	g/cm^3	1.18-1.22	ISO 1183/ASTM D792	Halogen-free type is slightly higher
Melt Volume Rate (MVR)	$cm^3/10min$	15-30 (240°C/5kg)	ISO 1133/ASTM D1238	Flowability is adjustable
Molding Shrinkage	%	0.5-0.7	ISO 294-4/ASTM D955	Flow direction
Water Absorption	%	≤0.3	ISO 62/ASTM D570	24h/23°C

2. Core Mechanical Properties (Key Indicators)

Performance Indicator	Unit	Typical Value	Test Standard	Remarks
Tensile Strength	MPa	45-60	ISO 527/ASTM D638	Yield strength
Elongation at Break	%	50-80	ISO 527/ASTM D638	-

Flexural Strength	MPa	70-90	ISO 178/ASTM D790	23°C
Flexural Modulus	MPa	2100-2800	ISO 178/ASTM D790	-
Izod Notched Impact Strength	kJ/m^2	25-50 (23°C, 3.2mm)	ISO 180/ASTM D256	⩾15 at low temperature (-30°C)
Shore Hardness	D	80-85	ISO 868/ASTM D2240	-

3. Thermal Properties

Thermal Performance Indicator	Unit	Typical Value	Test Standard	Remarks
Heat Deflection Temperature (HDT)	°C	97-110 (1.82MPa)	ISO 75-2/ASTM D648	-
Vicat Softening Point	°C	103-112	ISO 306/ASTM D1525	50N
Continuous Service Temperature	°C	-20~100	-	Up to 120°C for short term
Melting Temperature	°C	230-250	-	Processing temperature

4. Flame Retardant Properties

Flame Retardant Indicator	Unit	Typical Value	Test Standard	Remarks
Flame Retardant Rating	-	UL94 V-0 (1.5mm) / 5VA (3.0mm)	UL 94	Key indicator
Limiting Oxygen Index (LOI)	%	⩾28	ISO 4589-2/ASTM D2863	-

Glow Wire Ignition Temperature	°C	⩾960	IEC 60695-2-12	-
Smoke Density	Ds	⩽150	ASTM E662	NBS method

5. Electrical Properties

Electrical Performance Indicator	Unit	Typical Value	Test Standard	Remarks
Volume Resistivity	Ω·cm	⩾10^{16}	IEC 60093/ASTM D257	-
Dielectric Strength	kV/mm	⩾18	IEC 60243/ASTM D149	1mm thickness
Dielectric Constant	-	3.0-3.5 (1MHz)	IEC 60250/ASTM D150	-
Arc Resistance	s	⩾120	IEC 60112/ASTM D495	-

6. Processing Properties (Injection Molding Application)

Processing Parameter	Unit	Typical Value	Remarks
Injection Molding Temperature	°C	230-280	Sectional control
Mold Temperature	°C	60-90	Improve surface quality
Drying Temperature/Time	°C/h	80-100/2-4	Moisture <0.05%
Injection Pressure	MPa	80-120	Adjust according to product thickness

7. Key Quality Indicators (Purchase Standard)

- Flame Retardant Stability: Consistent flame retardant performance, no degradation after long-term processing, meeting UL94 V-0/5VA requirements

- Mechanical Consistency: Batch-to-batch performance fluctuation <5%, ensuring stable product quality
- Processing Stability: Good fluidity, no obvious shrinkage, warpage or silver streaks after molding
- Environmental Compliance: Meet RoHS, REACH, UL certification requirements; halogen-free models meet environmental protection standards
- Impurity Control: Ash content <0.2%, no obvious black spots, ensuring product appearance

8. Product Features & Typical Applications

8.1 Core Features

- Excellent Flame Retardancy: UL94 V-0 grade (1.5mm), 5VA grade optional, low smoke and low toxicity, meeting international environmental standards
- Balanced Performance: High impact resistance (excellent low-temperature toughness) and good rigidity, suitable for complex structural parts
- Easy Processing: Good fluidity, short molding cycle, suitable for large-scale production
- Dimensional Stability: Low shrinkage, small deformation, ensuring precision of products
- Good Compatibility: Can be further modified (toughened, reinforced) according to customer needs

8.2 Typical Applications

- Electronic & Electrical: Laptop casings, power adapters, charger shells, switch panels, connector housings
- Automotive Industry: EV charging pile casings, automotive interior parts, sensor shells, wire harness brackets
- Medical Equipment: Diagnostic instrument casings, medical device accessories (meet medical grade certification)
- Smart Home: Smart speaker casings, sweeping robot shells, home appliance control panels

Important Notes

1. Material Selection: Select the corresponding flame retardant grade (1.0mm/1.5mm/3.0mm) according to the product thickness and application requirements.
2. Processing Tips: Strictly control the drying conditions (moisture <0.05%) to avoid silver streaks, bubbles and other defects during molding.

3. Flame Retardant System: Halogen-containing and halogen-free models are available; please confirm the environmental requirements before purchase.
4. Storage Conditions: Store in a dry, cool and ventilated warehouse, avoid moisture and direct sunlight, shelf life is 12 months.
5. Compliance Tips: For export products, please confirm the relevant certification requirements of the target market (such as UL, FDA, CE).