

# KIMIA 760

## Unsaturated Polyester Resin

### ■ Isophthalic Grade (SMC / BMC)



#### PRODUCT DESCRIPTION

KIMIA 760 is an isophthalic acid based unsaturated polyester resin dissolved in styrene monomer, specifically designed for Sheet Molding Compound (SMC) and Bulk Molding Compound (BMC) manufacturing. The resin is formulated with a carboxyl (acid value) profile optimized for controlled, reproducible thickening with magnesium oxide (MgO) / magnesium hydroxide thickening systems. The isophthalic backbone provides high mechanical strength, good electrical insulation properties, and elevated heat deflection temperature, making this resin suitable for hot-press compression molding of structural and electrical components.

#### KEY FEATURES & BENEFITS

- **Optimized Acid Value for MgO Thickening:** Predictable, reproducible maturation curve for consistent SMC/BMC compound viscosity build-up.
- **High Mechanical Strength:** Isophthalic backbone delivers superior tensile and flexural performance in filled/reinforced compounds.
- **Elevated HDT:** Retains mechanical and dimensional stability at elevated service and molding temperatures.
- **Good Electrical Insulation:** Suitable for electrical housings, switchgear, and insulator components.
- **Low-Profile Additive Compatibility:** Compatible with PVAc/PE low profile /low-shrink additives for Class-A surface finish parts.
- **Fast Hot-Press Cure:** Short cure cycle under compression molding conditions for high production throughput.

#### LIQUID RESIN PROPERTIES

| PROPERTY                     | VALUE / RANGE            | UNIT              | TEST METHOD |
|------------------------------|--------------------------|-------------------|-------------|
| Appearance                   | Pale Yellow Clear Liquid | –                 | Visual      |
| Viscosity                    | 900–1400                 | cP                | ISO 255     |
| Acid Value                   | 18–24                    | mg KOH/g          | ISO 2114    |
| Non-Volatile Content         | 62–66                    | %                 | ISO 3251    |
| Styrene Monomer Content      | 36–42                    | %                 | Internal    |
| Density (Specific Gravity)   | 1.11–1.14                | g/cm <sup>3</sup> | ISO 2811    |
| Color (Gardner Scale)        | Max 3                    | –                 | ISO 4630    |
| Flash Point (Closed Cup)     | >32                      | °C                | ISO 3679    |
| Water Content                | Max 0.1                  | %                 | ISO 760     |
| Shelf-Life Stability at 25°C | Minimum 6                | Months            | Internal    |

#### APPLICATIONS

- **Thickener System:** MgO or Mg(OH)<sub>2</sub> paste recommended; thickening rate can be tuned by adjusting resin acid value and paste dosage.
- **Filler Loading:** Compatible with calcium carbonate and other standard SMC/BMC mineral fillers at high loading ratios.
- **Low-Profile Additives:** Compatible with PVAc or PE-based low-profile additives for Class-A surface finish requirements.
- **Reinforcement:** Suitable for use with chopped glass fiber roving (typically 6–25 mm) at standard SMC/BMC loading levels.



### THICKENING (MATURATION) CHARACTERISTICS

Test System: Resin + 3–4 phr MgO/Mg(OH) thickening paste, monitored by Brookfield viscosity build-up at room temperature.

| PROPERTY                         | UNIT       | STANDARD SPECIFICATION |
|----------------------------------|------------|------------------------|
| Initial Viscosity Rise (24h)     | mPa.s (cP) | 10,000–30,000          |
| Molding–Ready Viscosity (72–96h) | mPa.s (cP) | >20,000,000            |
| Maturation Time to Molding–Ready | Days       | 3–5                    |

### HOT-PRESS CURING CHARACTERISTICS

Test System: Compound cured with TBPB/TBPEH peroxide system under compression molding.

| PROPERTY                     | UNIT    | STANDARD SPECIFICATION |
|------------------------------|---------|------------------------|
| Mold Temperature             | °C      | 140–155                |
| Cure Time (per mm thickness) | Seconds | 20–30                  |
| Peak Exotherm (Mold Cavity)  | °C      | 165–180                |

### CURED RESIN – MECHANICAL & PHYSICAL PROPERTIES

Values below are typical for a clear, post-cured casting and are provided as a general performance guide; final SMC/BMC compound properties depend on glass fiber content, filler type/loading, and molding parameters.

| PROPERTY                | VALUE     | UNIT | TEST METHOD |
|-------------------------|-----------|------|-------------|
| Barcol Hardness         | 45–50     | –    | ASTM D2583  |
| Tensile Strength        | 60–75     | M Pa | ISO 527     |
| Elongation at Break     | 1.5–2.2   | %    | ISO 527     |
| Flexural Strength       | 110–135   | M Pa | ISO 178     |
| Flexural Modulus        | 3600–4000 | M Pa | ISO 178     |
| HDT (Heat Deflection)   | 100–120   | °C   | ISO 75      |
| Water Absorption (24 h) | Max 0.20  | %    | ISO 62      |
| Volumetric Shrinkage    | 6–8       | %    | Internal    |

### RECOMMENDED APPLICATIONS

- **Automotive SMC Panels:** Exterior and structural body panels, spoilers, and under-hood components.
- **Electrical & Switchgear:** BMC housings, junction boxes, insulators, and circuit breaker components requiring good dielectric strength.
- **Appliance Housings:** Washing machine tubs, cookware handles, and other heat/chemical-resistant molded parts.
- **Water Meter & Utility Boxes:** Outdoor enclosures requiring dimensional stability and weather resistance.
- **General Compression–Molded Parts:** Any high-volume, hot–press molded component requiring good mechanical and thermal performance.

### STORAGE & HANDLING

- **Shelf Life:** 12 months from the date of manufacturing when stored in original unopened containers.
- **Storage Temperature:** Store in a cool, dry place below 25°C. Keep away from direct sunlight, heat sources, and open flames.
- **Container Handling:** Keep containers tightly closed when not in use to prevent styrene loss and premature gelation.

### HEALTH & SAFETY

Contains styrene monomer — flammable, with irritant vapors. Use only in well-ventilated areas, away from open flames and sources of ignition. Wear appropriate personal protective equipment (gloves, goggles, respiratory protection) during handling. Refer to the Safety Data Sheet (SDS) for complete handling, storage, and disposal information.