

# Technical Data Sheet

Farapol Jam Chemical Indus. Co.

## FARAPOL M 603

**Product Description** Farapol M 603 is a Pure Maleic acid-based Unsaturated Polyester Resin and standard Glycols, dissolved in Unsaturated Monomer. The product is highly reactive, with good mechanical performance and high HDT. Pure maleic unsaturated polyester resin offers outstanding mechanical, thermal, and chemical properties, making it an ideal choice for SMC and BMC applications. Its high reactivity, excellent the outermost layer, and compatibility with reinforcement materials enable the production of high-quality, cost-effective components for various industries.

**Applications and Use** Pure maleic unsaturated polyester resin, formulated with maleic anhydride as its primary component, is a highly suitable option for Sheet Molding Compound (SMC) and Bulk Molding Compound (BMC) processes. This resin offers exceptional mechanical, thermal, and chemical properties due to its unique molecular structure, making it an ideal choice for industrial and engineering applications.

**High Reactivity:** The presence of pure maleic anhydride enhances the resin's curing rate, reducing molding cycle times, which is crucial for efficient SMC and BMC production.

**Superior Mechanical Strength:** The strong cross-linked molecular structure provides excellent resistance to mechanical stresses, such as tensile, flexural, and impact forces.

**Thermal and Chemical Resistance:** This resin exhibits high performance under elevated temperatures and resists exposure to solvents, oils, and mild acids, ensuring durability in demanding environments.

**Compatibility with Reinforcements:** It integrates well with fiberglass and other reinforcement materials, improving the physical and mechanical properties of the final products.

### Applications in SMC and BMC

**Automotive Components:** Used for engine covers, bumpers, and structural panels requiring mechanical strength and thermal stability.

**Electrical Products:** Ideal for electrical enclosures and insulators due to its excellent dielectric properties.

**Building and Construction:** Suitable for doors, windows, and wall panels that demand high durability and weather resistance.

### Certificates and Approvals

Farapol M 603 is synthesized from raw materials listed in FDA regulation Title 21 CFR 177.2420. Farapol Jam Chemical Industrial Company carries out the production, quality control, and distribution of this resin in compliance with ISO 9001, 14001, 45001, 10002, 10004, 10015, and 17065 standards.

### Typical Liquid Resin Properties

Property @ 25 °C	Unit	Specification	Method
Viscosity Brookfield <sup>1</sup>	cps	820 - 880	ISO 2555
Acid Value	mgKOH/g	Max 25	ASTM D 1639
Solid Content	%	64 - 66	ISO 3251
Color	Gardner	Max 2	ASTM D 1544
Specific Gravity	relative	1.11-1.14	ISO 2811
Gel Time <sup>1,2</sup>	minute	10 - 12	ASTM D 2471
Exothermic Peak Temperature	°C	180-210	ASTM D 2471

1) Gel Time and Viscosity can be adjusted as per customer requirements.

2) Mix ratio for measuring Gel Time: (Cobalt Octoate Farapol C 901 1%- 1.0 phr, Akperox A60 1.0 phr).

### Reactivity Result<sup>3</sup> @ 130 °C

<i>Property</i>	<i>Unit</i>	<i>Result</i>	<i>Method</i>
Gel Time (Time 140°C-Time 80 °C)	s	Max 155	ISO 14848
Curing Time(Time Peak-Time 80 °C)	s	Max 235	ISO 14848
Exothermic Peak Temperature	°C	250-280	ISO 14848

3) This test has been done with 1.0 % tert-Butyl Per Benzoate (TBPB-Trigonox C)

### Typical Casted Resin Properties<sup>4</sup>

<i>Property</i>	<i>Unit</i>	<i>Specification</i>	<i>Method</i>
Tensile Strength	MPa	Min 65	ISO 3268, ASTM D638, ISO 527-2&4
Elongation at Break	%	Min 2.5	ISO 3268, ASTM D638, ISO 527-2&4
Tensile Modulus	GPa	Min 3.2	ISO 3268, ASTM D638, ISO 527-2&4
Flexural Strength	MPa	Min 115	ISO 178/ASTM D 790
Flexural Modulus	GPa	Min 3.4	ISO 178/ASTM D 790
Heat Deflection Temperature (HDT)	°C	Min 90	ISO 75/ASTM D 648
Barcol Hardness	Barcol	Min 40	ASTM D 2583
Water Absorption	%	≈ 0.30	ISO 62- Test Method 3
Linear Shrinkage <sup>5</sup>	%	≈ 2.0	Internal method

4) Materials used for curing are: (Cobalt Octoate Farapol C 901 1%- 1.0 phr, Akperox A60 1.0 phr). Curing Time is 24 hrs at Room Temperature and 3 hrs at 80 °C and for HDT specimens 2 hrs at 140 °C.

5) This test has been done on the specimen with linear dimensions (1 cm × 1 cm × 100 cm).

### Handling, Storage and Stability

FARAPOL M 603 is a product that is sensitive to temperature, light, and oxidation. Hence, it should be stored indoors in a dry place at a temperature between 5 and 25°C. Keep always in the original, unopened, and undamaged containers. Avoid keeping material exposed to sunlight. On storage under the conditions mentioned above, the shelf life for FARAPOL M 603 is 6 months.

### Healthy and Safety

Avoid storing the resin along with Metallic Driers and Peroxides in the same area. Safety Datasheets of the product are available on demand. The user is fully responsible for reviewing the material's Safety Data Sheet (SDS) and understanding proper handling procedures prior to using the product.

### Packaging

FARAPOL M 603 is supplied in 200 Kg steel barrels, IBC and bulk road tankers.

### Notice

The information contained herein is provided in good faith and is with the best of our accurate knowledge, but we assume no liability for its accuracy or completeness. Therefore, the buyer is advised to determine the suitability of this product for the intended use. We retain the right to make any changes according to technological progress or further developments. Please note that variations in testing conditions across different laboratories may result in discrepancies, and a tolerance of up to 5% in test results should be expected.

Farapol Jam Company reserves the right to modify the information in this document at its discretion. The latest version available on the Farapol website is considered valid, and any previous versions are void.

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