

NEW SILICONE RESIN BINDER ENABLES HEAT CLASS R COMPOUNDS FOR MOLDINGS

WACKER introduces a new silicone resin binder that makes it possible to compound silicone resins for moldings. In its peroxide-curing version, the new solvent-free, low-viscosity material can be used for formulating ready-to-use compounds. Alternatively, the mixtures can be catalyzed by adding a small amount of a standard silicone catalyst.

Thanks to the Si-O network, in which the bonding energy is high relative to the C-C backbone, the material is expected to exhibit advantageous macroscopic properties.

Resistance to elevated temperatures, to the effects of weathering and UV radiation, and to other oxidative stresses will likely be outstanding depending on the final formulation selected. As a result, the product is expected to be perfectly suitable for any applications subject to high thermal stress.

Moldings made from compounds with the new binder can exhibit ideal thermal behavior and enable products that are durable, sustainable and economical. We are happy to work in close cooperation with our valued partners and customers to develop new applications and expand existing ones for which binders used to date are rarely sufficient.

POWERSIL® silicone resin represents an ideal binder for manufacturing industrial cast parts and for use in electronics and in electrical insulation (T&D).

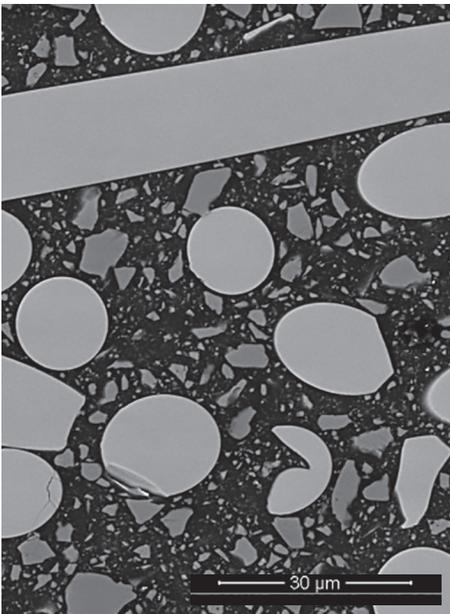




PRODUCT EXAMPLE – SILICONE RESIN FOR ELECTRICAL INSULATION, MOLDED PARTS

One of the first products to emerge so far is **POWERSIL® Resin 710**, a solvent-free, peroxide-curing silicone resin that is used to mold electrical insulating parts for thermally demanding applications.

The thermal stability of the cured materials is very high, yielding molded parts capable of withstanding the elements.



Electron beam micrograph of a silicone resin compound

Properties of a typical compound (POWERSIL® Resin 710)		
Property	Method	Value
Viscosity (at 1 s ⁻¹)	ISO 53019	330,000 mPas
Viscosity (at 10 s ⁻¹)	ISO 53019	70,000 mPas
Color		Opaque, addition of suitable colors possible
Gel time	ISO 16945	200 s at 160 °C
Density	ISO 1183-1	1.57 g cm ⁻³
Hardness	ISO 7919-1	90 Shore D
Tensile strength	ISO 527	25 N mm ⁻²
Flexural strength	ISO 178	50 MPa
Flexural modulus	ISO 178	1,500 MPa
Heat class	IEC 60085	220 (R)
CTE		< 100 10 ⁻⁶ K ⁻¹
Dielectric loss factor	IEC 60250	0.003
Dielectric permittivity	IEC 60250	3.5
Specific breakdown voltage	DIN EN 60455-2	22 kV/mm
Arc resistance	IEC 61621	210 s
Flammability	IEC 60695-11-10	V0

Typical properties of binder	
Appearance	Clear, transparent fluid
Viscosity [mPas]	1,000
Pot life of resin [months]	> 12
Mixing ratio with accelerator	99:1
Pot life of activated mixture at room temperature [min.]	> 120
Typical gel time at 120 °C [s]	150

For more information please contact:

Stefanie Stürner
Marketing Manager
stefanie.stuerner@wacker.com

Dr. Jens Lambrecht
Application Engineering
jens.lambrecht@wacker.com

Wacker Chemie AG, Gisela-Stein-Strasse 1, 81671 Munich, Germany
www.wacker.com/contact, www.wacker.com
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