

NEW SILICONE RESIN BINDER ENABLES HEAT CLASS R MOLDING COMPOUNDS

WACKER presents a new silicone resin binder for producing silicone resin molding compounds. The peroxide-curing version of this solvent-free, low-viscosity material allows one-component, ready-to-use compounds to be formulated that are heat resistant up to 220 °C. The compounds can also be cured by a platinum catalyst-inhibitor mixture.

Thanks to the Si-O network, in which the bonding energy is high compared to the C-C-backbone of other polymers, compounds made with the new binder are expected to exhibit advantageous macroscopic properties.

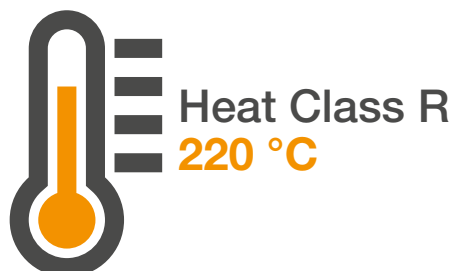
Resistance to elevated temperatures, weathering and UV radiation, as well as other oxidative stresses will likely be outstanding depending on the chosen final formulation. As a result, the product is expected to be perfectly suitable for any application subject to high thermal stress.

Products made with the new binder are durable, sustainable and economical.



Loop reactor in WACKER's Technical Center for resins

We are happy to work closely with our valued partners and customers to develop new applications and enhance existing ones where the solutions available with conventional binders are unsatisfactory.



Special Features

- Pure silicone resin
- Extremely low volatility
- Low viscosity
- Curing through catalyzed addition crosslinking without the formation of byproducts
- Rapid peroxide curing possible

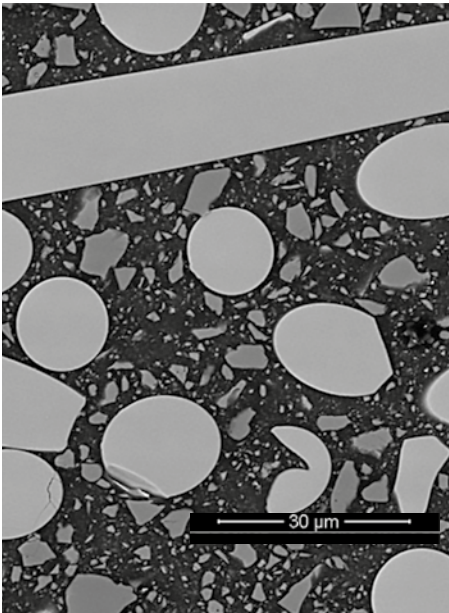
PRODUCT EXAMPLE

SILICONE RESIN FOR ELECTRICALLY INSULATING 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 electrically insulating parts for thermally demanding applications.

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

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	EN 60455-2	22 kV/mm
Arc resistance	IEC 61621	210 s
Flammability	IEC 60695-11-10	V0



Electron-beam micrograph of a silicone resin compound



Press molded compound specimens

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

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