DOW CORNING

Paints & Inks
Solutions

Dow Corning® 2405 Resin for High-Temperature-Resistant, Room-Temperature-Curing Coatings

Improve Coating Flexibility and Impact Resistance

Power Up YOUR COATINGS

Features of *Dow Corning*® 2405 Resin

- Room temperature curing without tin catalyst
- High heat resistance (650°C with black and aluminum pigments)
- Improved flexibility and impact resistance
- Solventless delivery
- Low smoke generation on initial heating
- Compatible with pure methyl methoxy and traditional phenyl silicone resins

Produce More-Sustainable Coatings Without Sacrificing Performance

Paint formulators are under pressure to deliver more-sustainable coatings. This is reflected in the demand for lower-temperature – and hence lower-energy – curing systems. This is especially relevant to formulators of high-temperature-resistant coatings, which usually require high curing temperatures.

Traditional solutions have been methyl methoxy resins, but these suffer from stress due to their high-crosslink-density curing, which limits flexibility and film build.

With *Dow Corning*® 2405 Resin, formulators have an option to significantly extend the formulating space for room-temperature-curing, high-temperature-resistant coatings.

Room Temperature Cure

When catalyzed with TnBT or other catalysts, *Dow Corning* 2405 Resin cures within 60 minutes at ambient temperature (20°C) to form a medium-hard and solvent-resistant coating.

Some traditional phenyl resins, such as *Dow Corning*® RSN-0806 Resin, physically dry to provide high hardness (Figure 1). However, they do not exhibit good cure, and they have little or no solvent resistance.

In contrast, methyl methoxy resins, such as *Dow Corning*® US-CF 2403 Resin and *Dow Corning* 2405 Resin, provide medium hardness but very good solvent resistance.

Figure 1. Methyl methoxy resins: high-temperature resistance and room temperature cure

Resin	Catalyst	Pendulum	Drying	MEK Double Rubs
Dow Corning® RSN-0806 Resin	None	110-120	Dry touch – physical dry	0
Dow Corning® RSN-0805 Resin	None	10-15	Slightly sticky – physical dry	0
Dow Corning® US-CF 2403 Resin	0.5% TnBT	60-70	Dry touch – reacted	>20
Dow Corning® 2405 Resin	0.5% TnBT	50-60	Dry touch – reacted	>20

Cure time: 60 minutes at 20°C.

Improved Flexibility/Impact Resistance

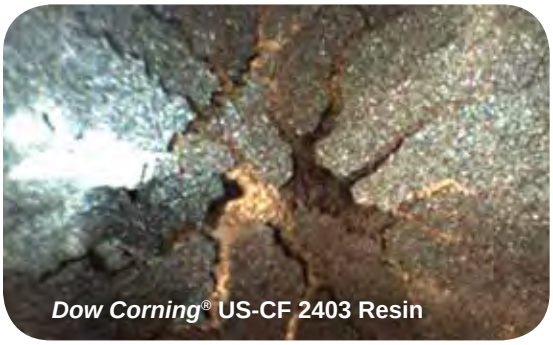
For selected substrates and where film thickness can be controlled, formulators can create very fast-curing systems using methyl methoxy resins such as *Dow Corning* US-CF 2403 Resin. However, the high crosslink density associated with these resins can result in films that are brittle and have poor impact resistance, causing many formulators to avoid using them.

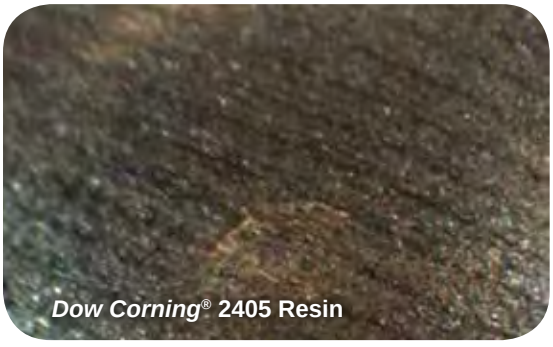
With *Dow Corning* 2405 Resin, the cure rate is reduced slightly, but the flexibility and impact resistance are significantly improved (Figure 2).

Figure 2. Flexibility limitations of room-temperature-curing resins

Formulations	Impact Test: Visual Aspect (DFT ~50 µm)			
	5 cm	10 cm	20 cm	35 cm
Dow Corning® US-CF 2403 Resin	8-9	5	4	3
Dow Corning® RSN-0805 Resin	10	10	10	10
Dow Corning® 2405 Resin	10	10	10	10

All samples incorporating 1% TnBT and 10% aluminum flake.
10 = excellent; 1 = very bad (cracked/shattered)





Solventless Delivery With Good Build/Viscosity

The very low molecular weight of methyl methoxy resins can lead to difficulties in the formulation of easy-to-spray products with good build per coat. However, with the slight increase in molecular weight of *Dow Corning* 2405 Resin, formulators have more formulation options to achieve good build with less risk of sags/runs.

Plus, with its solventless delivery, *Dow Corning* 2405 Resin is free of Benzene/Toluene/Xylene (BTX).

Tin-Free Curing

Dow Corning 2405 Resin is catalyzed by titanium compounds, such as TnBT, and does not require the use of tin catalysts.

More Than Heat Resistance

Our innovative, silicon-based enabling technologies can help you infuse your products with high-value performance attributes that can give you a competitive advantage in the marketplace. As a leader and innovator with a long history of success in the industry, Dow Corning's performance-enhancing coatings technology platforms are well-aligned to the needs of the increasingly competitive global coatings market.

For More Information

To learn how Dow Corning's innovative coatings technology platforms can help you power up your product line, visit **dowcorning.com/powerup** or email us at **coatings@dowcorning.com**.

Photo: AV24664

AGP14462

Form No. 26-2143-01

DOW CORNING

We help you invent the future.™