



## DOWSIL™ 2080 Resin

Silicone resin with optimized structure to reduce self-condensation tendency. Suitable to modify powder form polyester resin.

### Features & Benefits

- Low tendency of self-condensation.
- Adapt to solventless process of powder from resin modification.
- High compatibility with polyester.
- Impart heat resistance and weatherability to powder polyester.
- Solventless and liquid resin.

### Composition

- Ethoxy functional phenyl and methyl silicone resin.

### Applications

- DOWSIL™ 2080 Resin is suitable to make powder form silicone modified polyester resin, thus improving heat resistance performance, film appearance and durability of powder coating.

### Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
Appearance		Colorless liquid
Nonvolatile content	%	> 93
Viscosity (25°C)	mPa.s	800–1600
Functionality		Ethoxy
Ethoxy content <sup>1</sup>	%	15

1. Ethoxy content is theoretical weight percent, obtained by calculation of resin formulation.

### Description

DOWSIL™ 2080 Resin is an ethoxy-functional, solventless liquid silicone resin. It is able to chemically react with organic resins that contain active hydroxyl groups to form silicone-organic copolymers. Due to its unique structure and low tendency of self-condensation, it adapts to solventless process during the reaction to form solid silicone organic copolymers, which can be used as binder of heat resistant powder coatings with high quality appearance.

## Description (Cont.)

Traditional heat resistant powder coating is made by cold blending flake silicone resin and solid organic resin. Because of the incompatibility between silicone and organic resin, it is not able to make powder coating with good leveling and high gloss. The silicone organic copolymers made by DOWSIL™ 2080 Resin overcome the incompatibility. When it is used as the binder of heat resistant powder coatings, the final coating film with high quality appearance is achievable, meanwhile the heat resistant performance can be maintained.

## How to Use

### For Powder Form Silicone Polyester Copolymers

The modification of polyester resins with DOWSIL™ 2080 Resin improves its thermal stability for applications such as heat resistant powder coatings. Table 1 provides starting formulation for 40% silicone-modified polyesters with hydroxyl function and its making process.

**Table 1.** Powder form silicone polyester copolymer formulation

Components	Weight %
Isophthalic acid (IPA)	30.85
Neopentyl glycol (NPG)	29.1
DOWSIL™ 2080 Resin	40
Monobutyltin oxide (MBTO)	0.05
<b>Total</b>	<b>100</b>

Remark: Theoretical OH value = 40 mg KOH/g. The functionality on DOWSIL™ 2080 Resin is counted as acid group.

Process:

1. Charge NPG, DOWSIL™ 2080 Resin and half amount of MBTO into kettle.
2. Purge with nitrogen.
3. Heat slowly until agitation is started.
4. Increase temperature to 190°C and hold for 1.5 hours.
5. Collect the condensation product ethanol.
6. Add IPA and rest of MBTO.
7. Increase temperature to 240°C.
8. Hold for 6 hours until the final resin become clear.
9. Decrease temperature to 220°C and vacuum for 30 mins.
10. Check OH value and melting viscosity.

## Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

**Usable Life and Storage**

The product should be stored in its original packaging with the cover tightly attached to avoid any contamination. Store in accordance with any special instructions listed on the product labels. When stored in original, unopened containers at or below 25°C (77°F), DOWSIL™ 2080 Resin has a shelf life of 24 months from date of manufacture. Opened containers should be tightly closed after use to prevent contaminants and water vapor from entering the product.

**Packaging Information**

DOWSIL™ 2080 Resin is available in 0.5 kg bottle, 20 kg pails and 200 kg drums.

**Limitations**

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

**Health and Environmental Information**

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, [dow.com](http://dow.com) or consult your local Dow representative.

**Disposal Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

**Product Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

**Customer Notice**

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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