



Consumer Solutions

Dow Home and Personal Care

A Guide to Silicone Emulsifiers for Skin Care, Sun Care and Color Cosmetics



*Texture, feel and
performance*

Create Stable Water-in-Silicone, Water-in-Oil, and Oil-in-Water Emulsions

With a range of silicone emulsifiers and formulation support from Dow, you can formulate skin care, sun care and color cosmetic products that deliver the ideal combination of texture, feel and performance for your application.

Physical Properties of Silicone Emulsifiers¹ from Dow for Water-in-Oil and Water-in-Silicone Emulsions

	INCI Name	Type of Emulsion	Dispersed Material	Carrier	Viscosity at 25°C (77°F)	Closed-Cup Flash Point	Use Level	Processing Notes
DOWSIL™ 5200 Formulation Aid	Lauryl PEG/PPG18/18 Methicone	Water-in-silicone+oil Water-in-oil	No	NA	1,100-2,600 mm ² /s	93°C (199.4°F)	1-6%	High shear Cold or hot processing
DOWSIL™ 9011 Silicone Elastomer Blend	Cyclopentasiloxane (and) PEG-12 Dimethicone Crosspolymer	Water-in-silicone Water-in-silicone+oil	Yes (12.5%)	Cyclopentasiloxane <i>Volatile</i>	<100 mm ² /s	73°C (163.4°F)	6-24%	Low to high shear Cold or hot processing
DOWSIL™ 5225C Formulation Aid	Cyclopentasiloxane (and) PEG/PPG-18/18 Dimethicone	Water-in-silicone Water-in-silicone+oil	Yes (12.5%)	Cyclopentasiloxane <i>Volatile</i>	400-1,000 mm ² /s	>77°C (>170.6°F)	6-24%	High shear Cold or hot processing
DOWSIL™ BY 11-030	Cyclopentasiloxane (and) PEG/PPG-19/19 Dimethicone	Water-in-silicone Water-in-silicone+oil	Yes (50%)	Cyclopentasiloxane <i>Volatile</i>	15,000-60,000 mm ² /s	78°C (172.4°F)	2-8%	Low to high shear Cold or hot processing
DOWSIL™ BY 25-337	PEG/PPG-19/19 Dimethicone (and) C13-16 Isoparaffin (and) C10-13 Isoparaffin	Water-in-silicone+oil	Yes (50%)	C13-16 Isoparaffin (and) C10-13 Isoparaffin <i>Volatile</i>	1,500-9,000 mm ² /s	83°C (181.4°F)	2-8%	Low to high shear Cold or hot processing
DOWSIL™ ES-5612 Formulation Aid	PEG-10 Dimethicone	Water-in-silicone Water-in-silicone+oil	No	NA	500-1,200 mm ² /s	>100°C (>212°F)	2-8%	Low to high shear Cold or hot processing
DOWSIL™ FZ-2233	Bis-Isobutyl PEG/PPG-10/7/Dimethicone Copolymer	Water-in-silicone Water-in-silicone+oil	No	NA	2,500-7,500 mm ² /s	118°C (244.4°F)	1-6%	High shear Cold or hot processing
DOWSIL™ ES-5226 DM Formulation Aid	Dimethicone (and) PEG/PPG-18/18 Dimethicone	Water-in-silicone Water-in-silicone+oil	Yes (37.5%)	Dimethicone, 2 cSt <i>Volatile</i>	1,000-8,000 mm ² /s	78°C (172.4°F)	3-12%	High shear recommended Cold or hot processing
DOWSIL™ ES-5227 DM Formulation Aid	Dimethicone (and) PEG/PPG-18/18 Dimethicone	Water-in-silicone Water-in-silicone+oil	Yes (25%)	Dimethicone, 5 cSt <i>Non-volatile</i>	2,000-10,000 mm ² /s	>100°C (>212°F)	4-16%	High shear recommended Cold or hot processing
DOWSIL™ ES-5300 Formulation Aid	Lauryl PEG-10 Tris(trimethylsiloxy)silylethyl Dimethicone	Water-in-silicone Water-in-silicone+oil Water-in-oil	No	NA	1,800 mm ² /s	>100°C (>212°F)	1-6%	Low to high shear Cold or hot processing
DOWSIL™ ES-5600 Silicone Glycerol Emulsifier	Cetyl Diglyceryl Tris(trimethylsiloxy)silylethyl Dimethicone	Water-in-silicone Water-in-silicone+oil Water-in-oil	No	NA	2,000-5,000 mm ² /s	>100°C (>212°F)	1-8%	Low to high shear Cold or hot processing
DOWSIL™ OFX-5329 Fluid	PEG-12 Dimethicone	Silicone-in-water Silicone+oil-in-water Oil-in-water	No	NA	360 mm ² /s	76.6°C (169.9°F)	2-5% (optimal 4%)	Cold or hot processing
DOWSIL™ ES-5373 Formulation Aid Low Odor	PEG-12 Dimethicone	Silicone-in-water Silicone+oil-in-water Oil-in-water	No	NA	820 mm ² /s	>100°C (>212°F)	1.5-5%	Cold or hot processing

Physical Properties of Silicone Emulsifiers¹ from Dow for Oil-in-Water Emulsions

	INCI Name	Type of Emulsion	Dispersed Material	Carrier	Viscosity at 25°C (77°F)	Closed-Cup Flash Point	Use Level	Processing Notes
DOWSIL™ OFX-5329 Fluid	PEG-12 Dimethicone	Silicone-in-water Silicone+oil-in-water Oil-in-water	No	NA	360 mm ² /s	76.6°C (169.9°F)	2-5% (optimal 4%)	Cold or hot processing
DOWSIL™ ES-5373 Formulation Aid Low Odor	PEG-12 Dimethicone	Silicone-in-water Silicone+oil-in-water Oil-in-water	No	NA	820 mm ² /s	>100°C (>212°F)	1.5-5%	Cold or hot processing

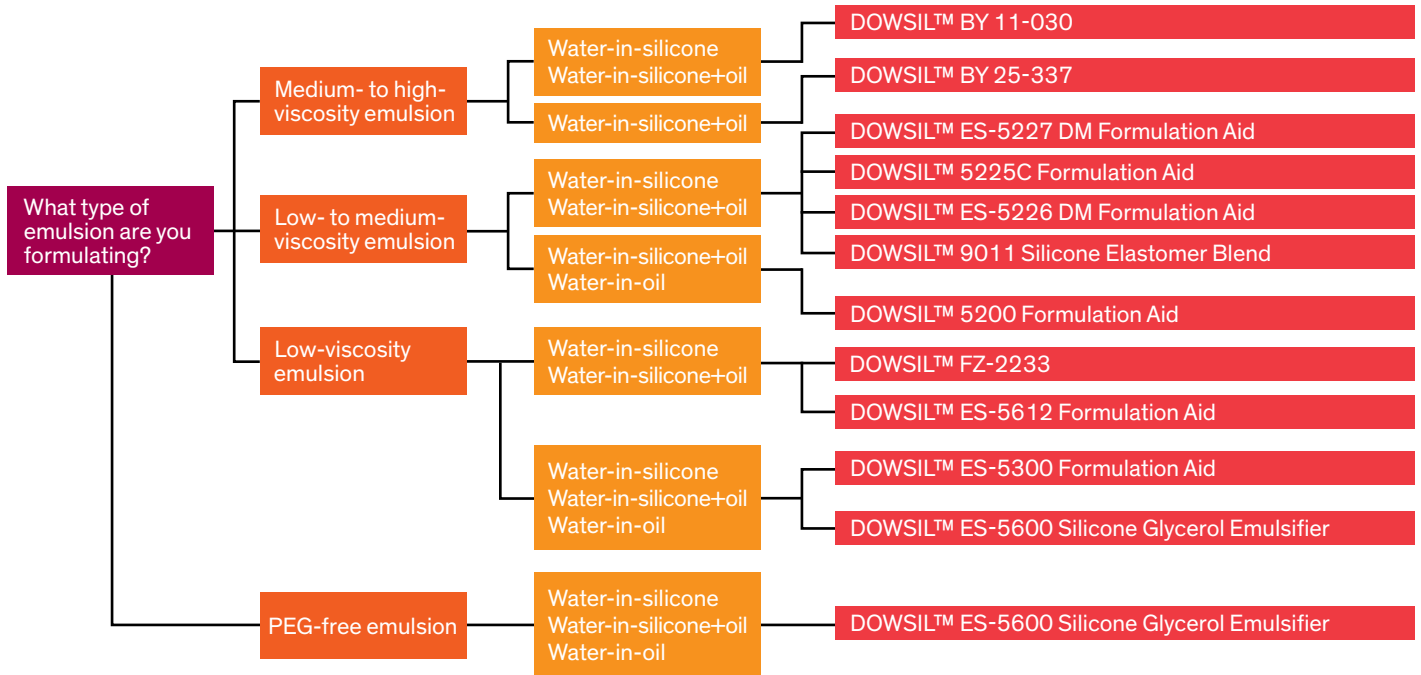
¹These values are not intended for use in preparing specifications.

²Use levels are simply suggested starting points and will need to be adjusted based on other formulation ingredients.

For recommended use levels, see page 4.

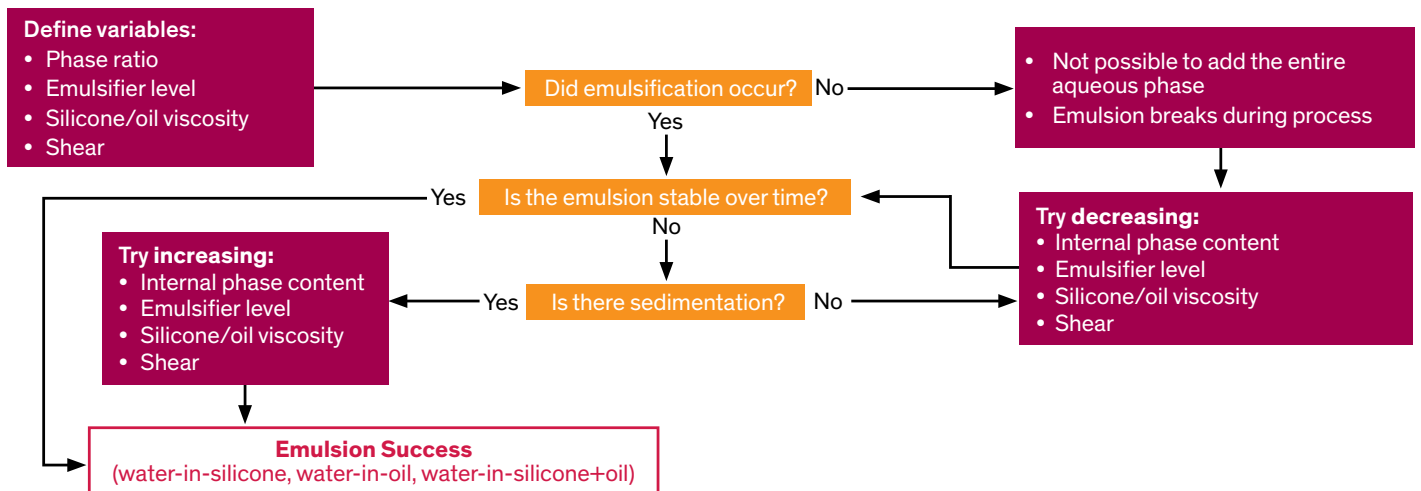
Silicone Emulsifier Decision Tree

Answer the questions below to determine which silicone emulsifiers are best suited for your water-in-oil and water-in-silicone emulsions.



Emulsion Success Tips

Emulsification success is both an art and a science. It may be necessary to adjust key variables, individually or in combination. Here are some tips to help you formulate with silicone emulsifiers from Dow. For specific formulating advice, please contact your Dow representative.





Recommended Use Level, %³

	Water/Silicone Oil Ratio		
	80/20	70/30	60/40
DOWSIL™ 5200 Formulation Aid	1-2	2-4	3-6
DOWSIL™ 901 1 Silicone Elastomer Blend	6-10	10-16	10-24
DOWSIL™ 5225C Formulation Aid	6-10	10-16	10-24
DOWSIL™ BY 11-030	2-4	2-6	6-8
DOWSIL™ BY 25-337	2-4	2-6	6-8
DOWSIL™ ES-56 12 Formulation Aid	2-3	3-5	5-8
DOWSIL™ FZ-2233	1-2	2-4	3-6
DOWSIL™ ES-5226 DM Formulation Aid	3-5	5-8	5-12
DOWSIL™ ES-5227 DM Formulation Aid	4-8	8-12	8-16
DOWSIL™ ES-5300 Formulation Aid	1-3	2-5	2-6
DOWSIL™ ES-5600 Silicone Glycerol Emulsifier	1-3	3-6	5-8

³Use levels are simply suggested starting points and will need to be adjusted based on other formulation ingredients.

About Dow Home and Personal Care Solutions

Through its Home and Personal Care business, part of the Dow Consumer Solutions Portfolio, Dow offers unique innovations that empower brand owners around the world to create products with exceptional performance and exciting new benefits consumers can see and feel. Our expansive portfolio serves a wide range of applications across home and personal care markets from skin and hair care to fabric care and beyond. Our novel solutions help enable products that are unique and memorable, and meet the growing demands of today's consumers. We continue to bring forward innovative technologies and formulation solutions that differentiate our customers' products, enhance the consumer experience and sustain the environment. With business centers, research and development (R&D), manufacturing plants and customer applications centers around the globe, Dow has the expertise and foundation to foster global and local innovations.

Please visit consumer.dow.com for more information.

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