

# XIAMETER™ products for fabric conditioning

## Product selection guide

Dow offers a wide variety of silicone fabric conditioning additives to meet the needs of expanding global fabric softener applications. The versatile additives can be used to reduce wrinkling, aid ironing, and add water absorbency and softness to fabrics. Amine functional silicones and dimethyl silicones can deliver the

fabric conditioning benefits of silicone for a range of formulating requirements. In addition, Dow provides some of these silicones in the form of cationic and nonionic emulsions, which allow for easy mixing and dispersion without a preemulsification step.

The silicones described in this selection guide can provide synergistic effects when formulated with quaternary ammonium compounds.

The guidelines below can help you choose the most appropriate silicone fabric conditioning additive for your application.

Silicone family	Products (names)	Material description	Wrinkle Reduction Rating (WR)	Softness Rating (S)	Ease of Ironing Rating (EOI)	Water Absorbency Rating (WA)	Crease Reduction Rating (CR)
Silicone Polydimethyl-Silicone Emulsion	XIAMETER™ MEM-1865 Emulsion	25% active polydimethylsiloxane microemulsion with anionic emulsifiers	•	=	=	••••	=
Amino Silicone Emulsion	XIAMETER™ MEM-8663 Emulsion	15% active cationic microemulsion	•••	••	••		••
Amino Silicone Emulsion	XIAMETER™ MEM-8035 Emulsion	35% active cationic emulsion	••••		••••	•	••••
Amino Silicone Emulsion	XIAMETER™ MEM-8203 Emulsion	20% active nonionic microemulsion	•••	••••	••	••	••

Statistical rating:

- = Wetting time > 252 S
- Wetting time < 252 S
- Wetting time > 120 S
- Wetting time > 30 S
- Wetting time > 10 S

## Test methods

### Fabric preparation

For the ease of ironing (EOI) and antiwrinkle (AW) tests, 100% cotton pillowcases are used. For softness (S) and water absorbency (WA) tests, 100% cotton terry towels are used. Before tests are conducted, sizing and fabric treatments (such as silicone) must be removed from new fabrics. To avoid any experimental bias, fabrics are washed in a single batch by a laundry service.

### Fabric treatment: Washing and drying conditions

- Washing machines:  
Three Miele washing machines (European front loading type)
- Temperature:  
40.5°C (105°F) wash cycle
- Spin cycle:  
1000 rpm
- Program:  
Normal with “Water Plus” feature
- Water hardness:  
90 ppm during final rinse (based on average water hardness)
- Detergent dose:  
66 g powdered detergent
- Fabric conditioner dose:  
110 g of dilutes
- Silicone dose:  
3% as silicone active material, post blended into fabric conditioner. Mix is prepared when wash cycle starts.
- Method of dosing:  
Via dispenser after 1 hr 20 min when fabric conditioner is flushed. Water hardness is increased to 90 ppm by adding 63 ml calcium solution (262 g/l CaCl<sub>2</sub>). An additional 100 ml water is added to rinse the dispenser.
- Load:  
2.5 kg total; load consists of 16 pillowcases (desized) and one terry towel (desized).

All fabrics including the reference and silicone-treated fabric are removed immediately at the end of the wash cycle and line dried on hangers. Test specimens remain in the stability laboratory for the day and an additional night. A minimum of 12 hr drying time and 12 hr at 65% relative humidity (RH) is needed to obtain consistently dry fabric.

All evaluations except the water absorbency test are conducted using a 16-person panel.

### 1. Wrinkle Reduction Evaluation Test (before and after ironing)

Pillowcases are displayed for evaluation on a panel that conforms closely to the AATCC standard for Wrinkle Evaluation for Repeated Home Launderings.

### 2. Softness Evaluation Test

The reference and silicone-treated terry towels are presented to panelists to judge softness level. To avoid cross contamination, panelists are instructed to wash their hands, then evaluate one fabric in each hand.

### 3. Ease of Ironing Test

The EOI test used for this study is a side-by-side paired comparison test, again using the 16 panelists. The test is performed in a well-lighted area, using a steam iron (Black and Decker Nice and Easy X415) and two standard ironing boards, one for each set of fabric treatments. A single iron is used to avoid bias resulting from differences in temperature setting and iron plate smoothness.

### 4. Water Absorbency Test (Modified Draves Test)

Samples for this test are taken from the terry towels treated prior to the softness evaluation. To avoid test bias that might result from skin oils, the tester should wear latex gloves while handling the towel samples. The towel samples are treated in wash and rinse cycles as required. After drying, ten specimens measuring 25 mm x 25 mm are prepared, and a 1-liter beaker is filled with distilled water. A test specimen is dropped from approximately 10 mm above the water surface, and a stopwatch is used to record the time required for the fabric to sink below the surface.

### 5. Crease Removal

After the ironing test, panelists are asked to judge the two pillowcase samples again for wrinkle level.

## Contact us

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