XIAMETER® MEM-0075 Emulsion

Reactive silicone emulsion
Water-dilutable water repellent for all types of fabrics

FEATURES

- Can be diluted with water to improve dispersion
- Good abrasion resistance and tear strength
- Evolves hydrogen when mixed with bases, heavy metals or their compounds
- Durable water repellency
- Greater abrasion resistance
- Good water repellancy

BENEFITS[1]

- Durable water repellency
- Full, luxurious hand
- Greater abrasion resistance
- Improved tear strength
- Cost competitive – in many cases, this silicone is less costly than other types of water repellents, including fluorocarbons

COMPOSITION

- Methylhydrogenpolysiloxane for Water Repellent

[1]When properly applied,dried, and conditioned.

APPLICATIONS

- Treatment for powders and granular materials to make them water repellant and free flowing, and to reduce caking.
- Water repellent and softener for all types of woven, knit and nonwoven fabrics.

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local XIAMETER® sales representative prior to writing specifications on this product.

Test	Unit	Value
Appearance		Milky white liquid
Silicone Content	%	60
pH		4-5
Flash Point, closed cup	°C (°F)	93 (200)
Boiling point	°C/°F	100-212
Surfactant (Paints, Inks & Coatings)		Non ionic
Consistency		Water thin

DESCRIPTION

XIAMETER® MEM-0075 Emulsion is a reactive methyl hydrogen emulsion especially designed for use as a water repellent for all types of woven, knit and nonwoven fabrics. When used with a catalyst, it provides durable water repellency.

When used in Paints, Inks & Coatings, upon heating the polymer will crosslink at the site of the hydrogen atoms to form a durable film.

HOW TO USE

Paints, Inks, & Coatings Applications:
Powders and granular materials treated with XIAMETER MEM-0075 Emulsion can be cured between 66°C and 175°C. The actual curing time will vary with the surface being treated and the temperature used.

Water Repellents Applications:
XIAMETER MEM-0075 Emulsion is readily diluted with water. If a catalyst is used, dilute the catalyst in water and then add to the previously diluted silicone emulsion for optimum bath stability.

For use as a textile treatment, 1 percent silicone solids based on the dry weight of the fabric is typically required. The dilute solution is typically applied to a substrate by padding.

Typical Water Repellent Formulation[1]

Water, percent	97.5
XIAMETER MEM-0075 Emulsion, percent	2.5

[1]To deposit approximately 1.0 percent silicone solids. Developed using 65/35 PE/cotton sheeting with a wet pickup of approximately 60 percent.

Water Repellents Applications: Fabric Preparation

For maximum water repellency, fabrics that are to be processed with XIAMETER MEM-0075 Emulsion should be free of all wetting agents, sizes, dyes and other chemical additives. The fabric should have a pH of 4 to 6 for optimal results.

Water Repellents Applications: Equipment Preparation

XIAMETER MEM-0075 Emulsion is applied with conventional padding equipment. The emulsion has excellent wetting properties and penetrates most fabrics quickly and thoroughly in the pad box. A high nip pressure is desirable for uniformity and to remove excess emulsion from the fabric.

Water Repellents Applications: Pad Bath Preparation

The pad bath should be prepared to obtain a pickup in the range of 0.75 to 1.25 percent silicone solids based on the dry weight of the fabric. Therefore, based on normal fabric wet pickup, a pad bath containing 2 to 3 percent emulsion (as received) will be satisfactory for most applications.

Water Repellents Applications: Mixing

When XIAMETER MEM-0075 Emulsion is to be applied with permanent press or crease-resistant resins, the following mixing procedure should be used:

1. Prepare the resin for use as directed by the resin manufacturer.
2. Dilute the prepared resin to at least one-half of the final bath volume with cold water.
3. Add the desired amount of XIAMETER MEM-0075 Emulsion.
4. Mix thoroughly.
5. Add hand builders and other additives prediluted in at least an equal volume of water and stir thoroughly into the bath.
6. Bring the bath to the final volume with water and mix thoroughly.
7. If bath pH is above 7, hydrogen gas evolution will increase. Add acetic acid to lower the pH range to the 5 to 6 range.

The treating bath, prepared according to the recommended procedure, will be stable for 8 to 12 hours, even at temperatures up to 45°C (113°F). Above 45°C (113°F), water volatilization will cause bath instability.

Water Repellents Applications: Compatibility

XIAMETER MEM-0075 Emulsion is compatible with some conventional textile finishing resins, dye fixatives and other finishing agents. When using permanent press resins in formulations with the silicone emulsion, use an amine hydrochloride-type catalyst or a zinc nitrate type catalyst, either flaked or in solution (the flakes must be dissolved in water before they are added to the bath). No organic softener is needed in these formulations.
Dow Corning recommends that compatible with this product, but some may cause bath to optimize the formulation before full production is begun.

NOTE: Some resin catalysts and hand builders are compatible with this product, but some may cause bath instability or reduce spray ratings. The final forumulation should be checked carefully prior to commercialization.

Water Repellents Applications: Drying and Curing

Fabrics padded with XIAMETER MEM-0075 Emulsion are dried and cured on conventional drying equipment. The following time/temperature relationship is typical for most fabrics and leather. The time includes both the drying and curing time at the temperature listed. Some slight changes may be necessary to accommodate variations in fabric weight and construction.

Temp. °C (°F)	Time,minutes
66 (150)	20
93 (200)	10
121 (250)	5 - 6
148 (300)	3
177 (350)	2

In some instances where low drying and curing temperatures are used, further conditioning of the fabric at room temperature may be necessary before maximum repellency is obtained. Adequate circulation of air and complete ventilation of the drying ovens helps ensure uniform drying and curing of the treated fabric. Efficient ventilation will also prevent an accumulation of the small amount of hydrogen gas liberated as the finish cures.

PRODUCT SAFETY INFORMATION

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL, ENVIRONMENTAL, AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE XIAMETER WEB SITE AT WWW.XIAMETER.COM.

HANDLING PRECAUTIONS

Paints, Inks, & Coatings Applications:

This information is for guidance only and is not comprehensive. Appropriate hazard studies and risk assessments should be completed by the user prior to using XIAMETER MEM-0075 Emulsion to ensure the appropriate level of safety protection required for handling and using a silicone hydride functional material has been taken.

The same handling precautions are required when using a silicone hydride functional emulsion as when using a silicone hydride functional fluid.

XIAMETER MEM-0075 Emulsion can evolve hydrogen gas. When used with a catalyst or in the presence of bases, heavy metals or their compounds, the rate of hydrogen evolution increases

Reactions leading to the formation of hydrogen gas include:

$$\equiv SiH + HOR \xrightarrow[\text{or heat}]{\text{Catalyst}} \equiv SiOR + H_2(g)$$

$$\equiv SiOH + \equiv SiH \xrightarrow[\text{or heat}]{\text{Catalyst}} \equiv SiOSi\equiv + H_2(g)$$

Where R = alkyl, aryl, H, metal. Catalysts: bases, acids, heavy metal salts, polar ionic salts, certain transition metals.

Do not store emulsion in un-vented containers.

Keep sparks and open flames away from this emulsion and adequately ventilate areas where it is used. Avoid contact with skin and eyes. To ensure there is no pressure build-up due to hydrogen evolution it is recommended that the containers housing XIAMETER MEM-0075 Emulsion are vented regularly. This will avoid any pressure build-up if the container vent becomes blocked.

Before starting an operation involving the use of XIAMETER MEM-0075 Emulsion, the reaction system used must be inerted to ensure the oxygen content is reduced to a level at which ignition cannot occur (typically <3%). Measures should be taken to prevent oxygen entering the equipment and during the reaction sequence the reaction system should be blanketed with an inert gas to ensure the inert atmosphere is maintained and that hazardous levels of oxygen are not reached

Static electricity may be generated when SIH products flow through or are discharged from a pipe or free fall through space. Appropriate measures should be taken to eliminate static charges and avoid spark discharges.

When cleaning out equipment that has contained XIAMETER MEM-0075 Emulsion, caution should be exercised when using surfactants and detergents as these are alkaline in nature and could cause hydrogen formation.

Water Repellents Applications:

XIAMETER MEM-0075 Emulsion evolves hydrogen gas. When used with a catalyst or in the presence of bases, heavy metals or their compounds, the rate of hydrogen evolution increases. Do not store catalyzed emulsion in unvented containers. Keep sparks and open flames away from catalyzed emulsion and adequately ventilate areas where it is used.

Leather Applications:

XIAMETER MEM-0075 Emulsion can evolve hydrogen gas. When used with a catalyst or in the presence of bases, heavy metals or their compounds, the rate of hydrogen evolution increases.

Do not store catalyzed emulsion in unvented containers. Keep sparks and open flames away from catalysed emulsion and adequately ventilate areas where it is used. To ensure there is no pressure build-up due to hydrogen evolution, it is

recommended that the containers housing XIAMETER MEM-0075 Emulsion are vented regularly. This will avoid any pressure build-up if the container vent becomes blocked.

STORAGE

Leather and Water Repellents Applications:
Product should be stored at or below 32°C (90°F) in original, unopened containers.

Do not store at temperatures above 38°C (100°F). Although testing has shown that this material is not damaged by freezing, care should be taken to keep in an unfrozen state.

Paints, Inks, & Coatings Applications:
Product should be stored at or below 50°C (122°F) in original, unopened containers.

Do not store at temperatures above 50°C (122°F). Although testing has shown that this material is not damaged by freezing, care should be taken to keep in an unfrozen state.

The most up-to-date shelf life information can be found on the XIAMETER Web site in the Product Detail page under Sales Specification.

LIMITATIONS

This product is neither tested nor represented as suitable for medical or pharmaceutical uses. Not intended for human injection. Not intended for food use.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Paints, Inks, & Coatings Applications:
Performance Data
A phosphate based powder was treated with 2 wt% XIAMETER MEM-0075 Emulsion. The materials were mixed using a rotating metal blade, and the treated powder placed in an oven at 120°C until fully dry. The following performance tests were then completed on the untreated and treated powder.

The treatment of the phosphate based powder with XIAMETER MEM-0075 Emulsion improved both the water repellency and the free flowing properties of the powder.

Results

	Untreated Powder	**Powder Treated With XIAMETER MEM-0075**
Appearance	Caked	Free Flowing
Hydrophobicity – Float time in water	Sank in 5 secs	Floated >3 hours
Hydrophobicity – Contact angle of water on pressed powder	13°	98°

TYPICAL PERFORMANCE PROPERTIES
These values are not intended for use in preparing specifications.

Spunbond PE Nonwoven (1.5 oz/yd^2)

	Untreated	**XIAMETER MEM-0075 Emulsion**	**XIAMETER MEM-0075 Emulsion w/Catalyst**
Water Repellency			
Initial	0	70	90
After 5 washes	0	50	90
Abrasion Resistance			
Initial	175	299	215
After 5 washes	353	301	153
Tear Strength			
Initial	44	52	60
After 5 washes	49	46	50

Woven PE/Cotton (65/35)

	Untreated	**XIAMETER MEM-0075 Emulsion**	**XIAMETER MEM-0075 Emulsion w/Catalyst**
Water Repellency			
Initial	0	0	90
After 5 washes	0	0	50
Abrasion Resistance			
Initial	515	1282	773
After 5 washes	412	706	923

Tear Strength (W - Warp; F - FIll)	**W**	**F**	**W**	**F**	**W**	**F**
Initial	49	58	77	91	92	90
After 5 washes	39	47	66	72	56	63