

Water
Repellents

Dow Corning® Z-6689
Water Repellent

FEATURES

- Excellent beading in as little as 5 minutes after application
- Dilutable in organic solvent to formulate water repellent products
- Produces a hydrophobic treatment that inhibits water absorption
- Excellent performance at low active solids levels, in range of 5-10 percent

BENEFITS

- Penetration of absorbent surfaces due to small molecular structure provides added repellency
- Chemically bonds to the substrates
- Performs on both neutral and alkaline substrates
- UV stable to increase the life of the treatment
- Water vapor permeable but resistant to liquid water
- Reduction in water absorption reduces cracking and spalling due to freeze-thaw and efflorescence, thereby increasing the life of the substrate
- Penetrating treatment will not change the appearance of the substrate at low solids levels
- Performs at low solids levels allowing higher dilution rate

COMPOSITION

- Solvent-free silane/siloxane concentrate
- Clear liquid

Active component for formulating penetrating water repellent treatments

APPLICATIONS

- For use on neutral and alkaline mineral substrates such as brick, sandstone, concrete and mortar that require water repellency

TYPICAL PROPERTIES

Specification Writers: Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Test	Unit	Result
Color		Clear to straw
Active Ingredient	percent	98
Non-Volatile Content	percent	92.8
Specific Gravity at 25°C (77°F)		0.96
Flash Point, closed cup	°C (°F)	65.5 (150)
Density	g/cm ³ (lb/gal)	0.96 (8.01)
Volatile Organic Compound (VOC) Content	g/L (lb/gal)	73 (0.63)
Solvent (Thinner)		Alcohol, chlorinated solvents, aromatic or aliphatic hydrocarbons, or silicone solvent

DESCRIPTION

Dow Corning® Z-6689 Water Repellent is a solvent-free silane/siloxane concentrate, dilutable in organic or silicone solvents to formulate a water repellent. Upon proper application, the formulated product will penetrate and provide water repellency by chemically reacting with the substrate. Treated substrates are hydrophobic and retain their original appearance. A catalyst is present, so it can be used on both neutral and alkaline substrates.

The active ingredients react with moisture to produce hydroxy groups. These hydroxy groups will bond with the substrates and themselves to produce a hydrophobic treatment that inhibits water absorption into the substrate. Exposure to water before use as a treatment may cause the material to cure in the container.

HOW TO USE

Dilution

Dow Corning Z-6689 Water Repellent should be diluted in organic solvents such as aliphatic hydrocarbons, aromatic hydrocarbons, anhydrous alcohol, chlorinated solvents, or low molecular weight polydimethylsiloxanes, such as *Dow Corning® 244 Fluid*, before use. Recommended dilution level for neutral substrates, such as brick and sandstone, is 1 part *Dow Corning Z-6689 Water Repellent* to 19 parts solvent.

For alkaline substrates, such as mortar and concrete, *Dow Corning Z-6689 Water Repellent* should be diluted in organic or silicone solvent at 1 part *Dow Corning Z-6689 Water Repellent* to 9 parts solvent. This formulation will also give excellent performance on neutral substrates.

Table 1: Performance of Dow Corning Z-6689 Water Repellent on Various Substrates

Substrate / %Active Solids	%Water Exclusion ¹ vs. Control after 24 hr immersion (ASTM C 642) ²
Alkaline Substrates	
<u>Mortar Cubes</u>	
10% Dow Corning Z-6689 Water Repellent	76.0
15% Dow Corning Z-6689 Water Repellent	81.6
<u>Concrete Block</u>	
5% Dow Corning Z-6689 Water Repellent	77.4
10% Dow Corning Z-6689 Water Repellent	86.0
15% Dow Corning Z-6689 Water Repellent	90.0
Substrate / %Active Solids	%Water Exclusion vs. Control after 24 hr immersion (ASTM C 67) ³
Neutral Substrates	
<u>Belden Belcrest 350-550 Brick</u>	
10% Dow Corning Z-6689 Water Repellent	98.0
<u>Briar Hill Sandstone</u>	
5% Dow Corning Z-6689 Water Repellent	90.7
10% Dow Corning Z-6689 Water Repellent	90.2
15% Dow Corning Z-6689 Water Repellent	91.7

¹Calculation is based on weight gain of untreated control cube.

²ASTM C 642 used 2-inch x 2-inch x 2-inch mortar cubes.

³ASTM C 67 modified to use an 1/8th of a brick instead of 1/2 of a brick, with 3 specimens instead of 5.

Table 2: Performance of Dow Corning Z-6689 Water Repellent on Concrete Cubes

2-inch Concrete Cubes	%Water Exclusion vs. Control after 3 days Immersion (NCHRP 244) ¹
10% Dow Corning Z-6689 Water Repellent	77.8
15% Dow Corning Z-6689 Water Repellent	86.4
20% Dow Corning Z-6689 Water Repellent	82.9

¹NCHRP 244 (National Cooperative Highway Research Program) was modified to use 2-inch concrete cubes instead of 4-inch concrete cubes.

Laboratory performance data for 5, 10 and 15 percent active solids levels of Dow Corning Z-6689 Water Repellent are shown in Table 1. Laboratory results for modified NCHRP 244 testing are shown in Table 2. The performance may vary depending on actives level applied to different substrates. Optimization of the actives level may be required to obtain maximum performance on your selected substrate(s).

VOC-compliant formulations with less than 600 g/L VOC can be achieved with Dow Corning Z-6689 Water Repellent by using a VOC-compliant solvent, such as Dow Corning 244 Fluid. Examples of VOC-compliant formulations can be found in Table 3.

Laboratory performance data on ceramic tile comparing Dow Corning Z-6689 Water Repellent versus a competitive product at 5 percent active solids level in two different solvents is shown in Table 4.

Application

Methods of application include airless sprayer, roller and brush. When a brush or roller is used, repeated applications should be made until the surface remains moist for a few minutes. If an airless sprayer is used, application should continue until the substrate is thoroughly saturated. On vertical applications, material should be applied from the bottom up and achieve a 6- to 8-inch rundown. Sprayers should be fitted with solvent-resistant hoses and gaskets.

To ensure compatibility and the desired water repellent result, a test application is necessary on each surface to be treated. Surfaces should be free of standing water, surface dirt, dust, oils and other contaminants. Formulated Dow Corning Z-6689 Water Repellent may be applied to damp or wet surfaces, although dry surfaces are preferred to achieve maximum penetration into the substrate.

As with most repellents, plants or shrubs should be protected from exposure to the treatment. Windows and any other material that should not be treated must be protected or cleaning with solvents may be necessary to remove the treatment. Likewise, if applied as spray, control overspray and drift to prevent contamination of nearby substrates, especially windows, vehicles, etc.

HANDLING PRECAUTIONS

Dow Corning Z-6689 Water Repellent evolves methanol and ethanol upon cure. Exposure to water may cause the material to cure in the container. Use dry solvents when diluting the product. During the dilution procedure, limit exposure to air.

Take safety precautions at all times. Do not store or use near sparks or open flames. Do not smoke in the vicinity of application. Use this material in a well-ventilated area away from sparks and open flames. Always wear protective goggles and gloves.

If inhaled, move immediately to fresh air. In case of skin or eye contact, flush immediately with water for 15 minutes. Remove contaminated clothing and shoes and call a physician. Local, state and federal regulations should be consulted for proper disposal procedures.

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 AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE DOW CORNING WEBSITE AT WWW.DOWCORNING.COM, OR FROM YOUR DOW CORNING REPRESENTATIVE, OR DISTRIBUTOR, OR BY CALLING YOUR GLOBAL DOW CORNING CONNECTION.

USABLE LIFE AND STORAGE

When stored in original, airtight containers at or below 35°C (95°F), *Dow Corning Z-6689 Water Repellent* has a shelf life of 1 year from date of manufacture. Refer to product packaging for “Use By” date.

Keep away from heat and open flame.

PACKAGING

Dow Corning Z-6689 Water Repellent is supplied in 190-kg (418-lb) drums and 18-kg (40-lb) pails, net weight.

LIMITATIONS

Do not use on structures under hydrostatic pressure. Do not apply when temperature is at or below 4°C (40°F).

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

SHIPPING LIMITATIONS

DOT Classification: Combustible liquid.

Table 3: VOC-Compliant (<600 g/L) *Dow Corning Z-6689* Formulations Using *Dow Corning 244 Fluid* and Organic Solvent

<i>Dow Corning Z-6689 Water Repellent;</i> Diluted in solvent, percent concentration		
<i>Dow Corning Z-6689 Water Repellent</i>	<i>Dow Corning 244 Fluid</i>	Organic Solvent
5.0	84.0	11.0
10.0	68.0	22.0
15.0	51.0	34.0
20.0	35.0	45.0
25.0	17.0	42.0
30.0	0.0	70.0

Table 4: Performance of *Dow Corning Z-6689 Water Repellent* Versus a Competitive Material on Ceramic Tiles

	%Water Exclusion vs. Control after Immersion for			
	24 hours	4 days	5 days	7 days
5% <i>Dow Corning Z-6689 Water Repellent</i> in kerosene	70.6	70.2	68.9	66.3
5% Competitive product in kerosene	69.6	65.4	62.4	55.7
5% <i>Dow Corning Z-6689</i> in mineral spirits	83.2	81.8	80.1	77.5
5% Competitive product in mineral spirits	83.6	82.6	81.7	80.0

HEALTH AND ENVIRONMENTAL INFORMATION

To support customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, www.dowcorning.com, or consult your local Dow Corning representative.

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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 Dow Corning’s products

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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.

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