



Technical Data Sheet

DOWSIL™ 2-1251 Water Repellent Emulsion

Active component in formulating penetrating water repellent treatments

Features & Benefits

- Can be used as is or diluted in the formulation of water repellent products
- Produces a hydrophobic treatment that inhibits water absorption
- Excellent performance and stability at low active solids levels, in the range of 5–10%
- Deep penetration of absorbent surfaces due to small molecular structure provides added repellency
- Reduction in water absorption reduces spalling due to freeze-thaw and efflorescence, thereby increasing substrate life
- Will not change substrate appearance
- Performs and is stable at low solids levels allowing higher dilution rates

Composition

- Water-dilutable silane/siloxane/resin emulsion
- Milky white
- 53% active

Applications

- On mineral substrates such as brick, stone, concrete and mortar that require additional water repellency
- Ideally suited for lightweight concrete building materials (density of 104 lb/ft³)

Typical Properties

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

Test	Unit	Result
Color		Milky white
Active Solids Content	percent	53.3
pH		4.5
Specific Gravity at 25°C (77°F)		1
Flash Point, closed cup	°C (°F)	> 100 (> 212)
Density	lb /gal	8.343
Volatile Organic Compound (VOC) Content	g/L	165
Solvent (Thinner)		Water

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Description

DOWSIL™ 2-1251 Water Repellent Emulsion is a 53% active silane/siloxane/resin emulsion. It can be used as supplied or diluted in water to formulate a water repellent.

Properly applied, the formulated product will penetrate and provide water repellency by chemically reacting with the substrate. Treated substrates are hydrophobic and retain their original appearance. The active ingredients, a combination of silane, siloxane and resin, allow for penetration into the pores of the substrate. After the emulsion breaks, the active ingredients react with moisture to produce hydroxy groups, which bond with the substrates and themselves to produce a hydrophobic treatment that inhibits water absorption. However, in emulsion form, surfactants protect the reactive molecules from water, providing excellent emulsion stability.

How To Use

Dilution

DOWSIL 2-1251 Water Repellent Emulsion can be diluted in water before use or can be used as supplied. Deionized water is recommended for dilution. To prevent mold growth within the package, additional preservative may be required; Bioban® DXN is recommended.

Laboratory performance data for 6.6% and 13.2% active solids levels are shown in Table 1 and laboratory result on a modified ASTM E-514 test can be found in Table 2. Performance may vary depending on actives applied to different substrates; optimization of the actives level may be required to obtain maximum performance on your selected substrate.

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 a 6–8 inch rundown should be achieved.

A test application is necessary on each surface to ensure compatibility and desired water repellent results. Surfaces should be free of standing water, surface dirt, dust, oils and other contaminants. Formulated DOWSIL 2-1251 Water Repellent Emulsion may be applied to damp or wet surfaces.

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. Otherwise, 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.

Packaging after Formulation

The use of vented caps is required for packaging in drums or pails. Use high-density polyethylene for 1 gal containers.

Table 1: Performance of DOWSIL 2-1251 Water Repellent Emulsion on Various Substrates

		% Water Exclusion vs. Control after 24-hour Immersion ¹	
Substrate/% Active Solids	ASTM C 642 ²	ASTM C 67 ³	
Alkaline Substrates			
Mortar Cubes			
6.6% active solids	91.5		
13.2% active solids	92.7		
Permcon Cement Brick			
6.6% active solids		80.2	
13.2% active solids		68.2	
Neutral Substrates			
Belden Belcrest 350 Brick			
6.6% active solids		92.6	
13.2% active solids		79.5	

1. Calculation is based on weight gain of control.

2. ASTM C 642 used 2 in x 2 in x 2 in mortar cubes..

3. ASTM C 67 modified to use 1 in x 2 in x 3.5 in section of a brick and a 2 in x 2 in x 3.5 in concrete cube. In addition, 3 samples were used instead of 5.

Table 2: Performance of DOWSIL 2-1251 Water Repellent Emulsion – Modified ASTM E 514¹

	% Reduction in Leak Rate ²
Lightweight Concrete Block	
6.6% active solids 2-1251	93.7
7.0% active solids Competitive Product A	57.4
7.0% active solids Competitive Product B	48.2
20% active solids Competitive Product B	64.9

1. Modified ASTM E 514 – 3 blocks were mounted to a chamber and sprayed with water under 2 inches of water pressure for 4 hours.

2. Percent reduction in leak rate – treated blocks compared with untreated blocks.

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 WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

DOWSIL 2-1251 Water Repellent Emulsion evolves flammable hydrogen gas upon cure. Store in vented storage containers in an upright position.

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Handling Precautions (Cont.)	When the material comes in contact with acids, bases, amines and heavy metals or their compounds, the rate of hydrogen evolution increases. Do not store material in the presence of these contaminants, as hydrogen evolution will occur. 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. Local, state and federal regulations should be consulted for proper disposal procedures.
Availability	DOWSIL 2-1251 Water Repellent Emulsion is available only in Asia. This product is not currently available in Europe or the Americas.
Usable Life And Storage	DOWSIL 2-1251 Water Repellent Emulsion has a shelf life of 18 months from date of manufacture. Refer to product package for "Use By" date. Keep away from heat and open flame and protect from freezing. Store in original, airtight containers at or below 25°C (77°F) and above 0°C (32°F).
Packaging	DOWSIL 2-1251 Water Repellent Emulsion is supplied in 190.5 kg (419.1 lb) container, net weight.
Limitations	This product is neither tested nor represented as suitable for medical or pharmaceutical uses. Do not use on structures under hydrostatic pressure. Do not apply when temperature is at or below 4°C (40°F).
Shipping Limitations	DOT Classification: Not subject to DOT.
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, www.consumer.dow.com or consult your local Dow representative.

<http://www.consumer.dow.com>

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