



Technical Data Sheet

DOWSIL™ 2-9034 Emulsion

Wood water repellent giving dimensional stability and protection against decay

Features & Benefits

- Penetrates into wood
- Water repellent primer
- Base to formulate products with excellent water exclusion and beading
- Environmentally responsible
 - Low VOC
 - Water dilutable
 - Free of heavy metals
- Does not change the appearance of substrate
- Improved dimensional stability; reduces warping and cracking of the wood
- Reduces rate of wood decay due to lower water ingress
- UV stability of silicones

Composition

- Organosilicone emulsion

Applications

- Penetrating water repellent primer for subsequent coatings
- Base to formulate with other components to provide complete protection for decking, fences/posts, façade and roof shingles, garden furniture, sheds, or any unpainted wood that needs protection from moisture
- Additive to pressure-treatment solutions to protect wood

Typical Properties

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

Property	Unit	Result
Appearance		Milky-white
		Free flowing liquid
Solids Content	percent	50%
Viscosity @ 25°C (77°F)	cp	1500
Specific Gravity @ 25°C (77°F)		0.94
Volatile Organic Content (VOC)	g/l	55

Description

DOWSIL™ 2-9034 Emulsion is a versatile water repellent for wood substrates. The patented, water-based, low-VOC, organosilicone emulsion is a blend of siloxane monomers, polymers and organic polymer. Each component contributes properties to maintain the natural appearance of the wood, which is under constant attack.

DOWSIL 2-9034 Emulsion excludes water through synergistic effects of the components. The siloxane monomer penetrates into the capillaries of the wood and the other components remain in/on the surface layer. These siloxane monomers contain water repellent functional groups as well as functional groups that are chemically reactive towards the hydroxyl groups of the wood. A siloxane polymer also has a number of functional groups that are reactive towards the siloxane monomer and the hydroxyl groups of the wood. This network building capability provides a physical barrier to liquid water ingress. However, the silicones are permeable to water vapor which can be just as damaging to the wood substrate. Therefore, the organic polymer reduces the water vapor transmission rate as well as adds an extra physical barrier to liquid water. These three ingredients together provide an ideal combination.

How To Use

Dilution

Penetrating Primer:

DOWSIL 2-9034 Emulsion should be diluted to 1.5 to 2.5 percent active solids content as a water repellent (WR) for treating wood prior to application of finishing coats. A water repellent preservative (WRP) can be formulated by incorporating a fungicide to provide additional protection against wood decay organisms, protecting chromate copper arsenate (CCA)-treated wood against mildew fungi.

Base Formulation:

DOWSIL 2-9034 Emulsion can be combined with silicones or other water beading emulsions to formulate products suitable for protecting decking, fences/posts, garden furniture and sheds. While an active solids content of between 4 to 8 percent should typically prove suitable for such applications, DOWSIL 2-9034 Emulsion should be included at a minimum 50 percent of the actives to ensure long term protection. Incorporation of a fungicide will give increased protection (WRP) while additional materials such as UV absorbers will improve the overall protective capability of the product. DOWSIL 2-9034 Emulsion can also be used as a base formulation for wood façade and roof protection products. In these instances, it may be desirable from a consumer perspective to include pigments together with additional resins for increased durability.

Pressure Treatment of Wood:

DOWSIL 2-9034 Emulsion can be used as a component to increase the water repellency of the treatment solution, thereby reducing the quantity of preservatives such as CCAs that are required. Care should be taken in selecting appropriate additives to incorporate with DOWSIL 2-9034 Emulsion base. Emulsifiers in beading promoters, antifoaming agents, etc. can affect water beading, water exclusion, and vapor permeability performance, so the testing the effect of each included component is recommended.

- If an antifoam is needed, Harcross HL-40 has proved suitable.
- If an in - can preservative is required, Troysan® 1005 has proved suitable.

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DOWSIL™ 2-9034 Emulsion

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How To Use (Cont.)

Application

Penetrating Primer:

Apply primer by brushing on new or existing wood that has been restored to its natural state. Ensure that all surfaces are treated taking special care to effectively treat the end grain. Alternatively, dipping in the solution for 3 minutes may be used to effect total treatment. Allow at least 24 hours to dry prior to subsequent treatment.

Base Formulation:

Ensure the wood is clean and dry. If cleaning (of decking, etc.) is required, a dilute bleach solution will remove the surface mildew and light dirt. In some instances, a very dilute detergent solution may be required, but generally the use of detergents should be minimized due to residues that can affect water exclusion performance.

Rinse the wood thoroughly and allow to dry for at least 24 hours or until visually dry. A brush/roller/spray system can be used to apply the protective solution, respreading any excess liquid after 15 minutes to ensure even coverage and final appearance. If necessary, a second application can be applied 1 to 2 hours after the first for maximum protection. The product should be applied only when the ambient temperature is above 10°C (50°F) and will remain above freezing for 24 hours. Do not apply in direct sunlight, or when rain is forecast. Coverage rates depend on the porosity, texture and dryness of the wood, but can range from 2.5 to 7.5 m²/L. Rough-sawn wood will absorb more than planned and second applications will require a smaller amount of product than the first.

Any overspray can be removed immediately with a damp cloth; once the overspray has dried on the surface, mineral spirits or similar materials will be required.

Pressure Treatment:

Use standard methods.

Table 1: Performance of Suggested Formulations

	Formulation A	Formulation B
DOWSIL 2-9034 Emulsion (wt %)	8.0	9.1
Michem®Wood Coating 50 or Michem®Wood Coating 70 Low VOC (wt%)	11.3	9.7
DI H ₂ O (wt %)	80.7	81.2
Performance		
Water Repellency, ASTM D 4446 ¹ , (%)	75	78
Water Exclusion, ASTM D 5401 ² , (%)	85	85
UV Stability in hours (Contact Angle)	2929 (~130°)	> 2929 (135°)

1. ASTM D 4446- Swellometer Test- 0.25"x1.5"x10" boards cut on the open grain are treated, cured for 7 days and soaked in water for 30 minutes. Water repellency is calculated based upon inches of swell of the treated substrate compared to the untreated control.
2. ASTM D 5401- Gravimetric Test- 2"x4"x6" boards were treated, cured for 7 days and soaked in water for 30 minutes. Water exclusion is calculated based upon weight gain of the treated substrate compared to the untreated control.

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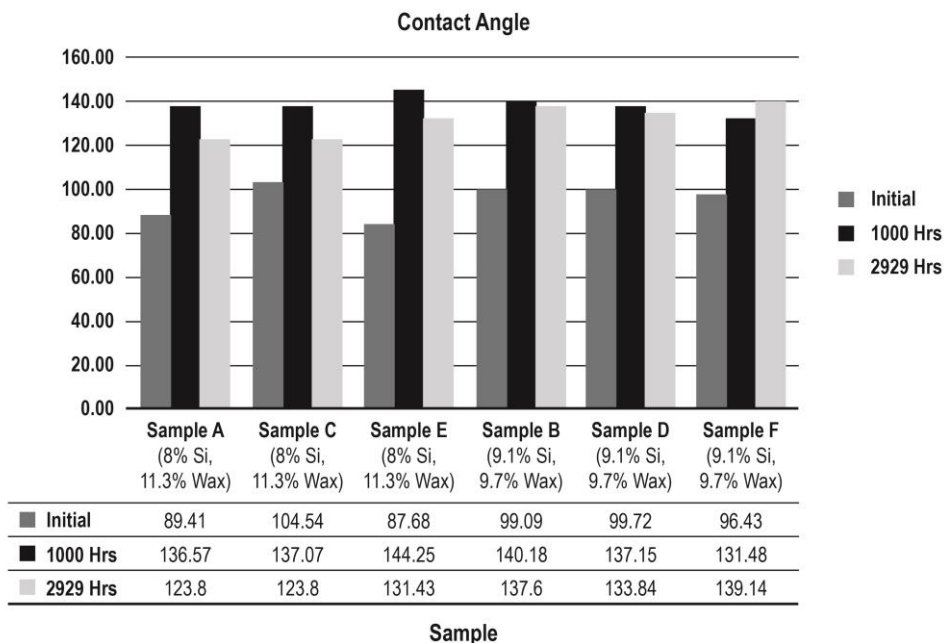


Figure 1: Accelerated QUV Weathering Data; 3 different lots of DOWSIL 2-9034 Emulsion, each at two different concentrations

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.

Usable Life And Storage

When stored in original, unopened containers between 4 and 25°C (39–77°F), DOWSIL 2-9034 Emulsion has a shelf life of 24 months from date of manufacture. Refer to product packaging for “Use by” data. Avoid freezing this material.

Packaging Information

DOWSIL 2-9034 Emulsion is supplied in 180 Kg (396 lb) drums).

Limitations

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

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.

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