



Technical Data Sheet

## **DOWSIL™ 3545 Insulating Glass Silicone Sealant**

DOWSIL™ 3545 Insulating Glass Silicone Sealant is a one-part silicone for insulating glass with immediate strength enabling fast handling of sealed units.

### **Features & Benefits**

- Immediate high strength
- One-part alkoxy silicone technology
- Ready to use
- UV, ozone and weather resistant
- Meets requirements of EN1279 Part 2/4
- Service temperature range -50°C to up to +150°C
- Excellent adhesion to glass, and various spacers (e.g. aluminum, stainless steel)
- Non-corrosive cure
- No solvents, low odor
- Low water absorption
- High level of mechanical properties
- Does not contain organic plasticizer that can cause fogging in the IG air space
- High elastic recovery and high strength to limit movement of the butyl
- Fast unit handling due to instant strength
- Fast build-up of strength
- High durability due to temperature, ozone and UV resistance
- For manual and automated applications

### **Applications**

DOWSIL™ 3545 Insulating Glass Silicone Sealant has been specifically designed to deliver excellent adhesion to glass and a wide range of spacers in residential insulating glass applications. With immediate high strength to allow fast movement of units, it has fast adhesion build up, is UV resistant and cures in the presence of moisture.

## Typical Properties

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

Test <sup>1</sup>	Property	Unit	Result
<b>As Supplied – Uncured State</b>			
CTM 97B	Specific Gravity	g/ml	1.55
ASTM D2202	Flow (Sag or Slump)	mm	0
ASTM C 679	Tack-Free Time (23°C, 50% R.H.)	minutes	15–35
CTM 663A	Curing Time (23°C, 50% R.H.)		
	After 24 Hours	mm	~2
	After 72 Hours	mm	4.1
CTM 1430	Immediate Strength	Pa	> 1400
<b>As Cured After 7 Days at +23°C 2 mm Sheet (ISO 37)</b>			
CTM 99A	Durometer Hardness, Shore A	points	> 45
CTM 137A	Modulus at 100% Elongation	MPa	1.0
CTM 137A	Tensile Strength at Break	MPa	1.8
CTM 137A	Elongation at Break	%	> 350
<b>Properties After 28 Day Cure at 50% RH and +23°C (73°F) 12 mm x 12 mm x 50 mm H-Piece (ISO 8339)</b>			
ISO 8339	Elongation at Break	%	> 100
ISO 8339	Tensile Strength	MPa	> 1.1
	Service Temperature Range	°C	-50 to +150

1. CTM: Corporate Test Method, copies of CTM's are available on request.  
ASTM: American Society for Testing and Materials.  
ISO: International Standardization Organization.

## Description

DOWSIL™ 3545 Insulating Glass Silicone Sealant is a one-part, neutral curing alkoxy formulation specifically designed for residential insulating glass applications, to provide a secondary seal in a dual sealed insulating glass unit. (The primary seal is typically polyisobutylene). It has an ultra-high green strength enabling immediate handling of the glazed unit. When cured, DOWSIL™ 3545 Insulating Glass Silicone Sealant has a very high modulus for good mechanical assembly of insulating glazing.

Neutral alkoxy silicones cure at room temperature on exposure to water vapor in the air, giving off a small amount of alcohol (Methanol). The neutral curing properties of DOWSIL™ 3545 Insulating Glass Silicone Sealant offer the following advantages versus acetoxo silicone formulations:

- Consistent adhesion to both aluminum spacers and glass
- No corrosion of the glass coating, the metallic spacer or the PVB foil of laminated glass
- Reduced vapor transmission rate (low penetration rate index 'I')

## **Green Strength**

DOWSIL™ 3545 Insulating Glass Silicone Sealant provides high durability and immediate green strength directly after application. Once applied and fully cured, DOWSIL™ 3545 Insulating Glass Silicone Sealant is able to withstand dynamic and permanent loads.

Please contact your Dow Technical Service Expert to calculate and define the correct joint dimensions according to the final service life conditions.

The properties of instant green strength are unique and provide higher security and consistent quality when moving the units compared to standard one-part silicones. DOWSIL™ 3545 Insulating Glass Silicone Sealant provides very good durability and is superior to organic sealants due to its UV and temperature resistance. The immediate green strength is about 4–5 times higher than any other standard sealant which gives additional safety during the production and assembly process.

High humidity levels and higher temperatures accelerate the cure process and lead to earlier skin formation. Green strength continuously builds up during cure. Adhesion to the substrates is developed at the same time as the product cures. Although the strength build up is quite fast, the sealant will develop its final properties once completely cured.

## **How to Use**

DOWSIL™ 3545 Insulating Glass Silicone Sealant is ready to use. It has excellent immediate strength and adheres to a wide range of most commonly used spacers (e.g. aluminum, stainless steel, plastic and glass).

DOWSIL™ 3545 Insulating Glass Silicone Sealant is suitable for factory applications with a manual gun for cartridges or sausages or in conjunction with a hydraulic pump.

Due to its low stringing and high viscosity, DOWSIL™ 3545 Insulating Glass Silicone Sealant provides excellent ease of use, workability and a higher compressive strength in an uncured state allowing the units to be moved faster.

As it is a moisture curing sealant, the reaction starts at the surface exposed to moisture and cures in depth. The deeper the joint is, the longer it takes the sealant to cure completely. The immediate green strength takes over initial loads, but to provide full strength and movement capability with elastic recovery it needs to be fully cured. Moisture has to migrate below the cured skin and as this skin becomes thicker, the reaction is slower. The combination of initial green strength and strength build-up during cure makes the DOWSIL™ 3545 Insulating Glass Silicone Sealant superior versus conventional one component insulating glass silicones.

As one-part silicones need moisture to cure, the joint depth is limited to 14–15 mm as a maximum. Deeper joints will not completely cure. The deeper the joint is, the longer it takes to fully cure.

## **Cleaning**

Ensure that surfaces to be sealed are clean, dry and free from frost. Substrates must be cleaned prior to sealant application to ensure adhesion durability. All surfaces must be clean of contaminants and residues such as grease, oil, dust, water, frost, humidity, surface dirt, old sealants or glazing compounds and protective coatings.

Solvent should be wiped on and off with clean, oil- and lint-free cloths. DOWSIL™ R-40 Cleaner is recommended for cleaning of metallic and glass surfaces. The ventilation time at room temperature should be at least 1 minute. Please contact your Dow Technical Service Expert for more information.

## **Cleaning (Cont.)**

Note: When using any solvent, always provide adequate ventilation. Avoid heat, sparks and open flames. Observe and follow all precautions listed on the solvent container label.

## **Equipment Cleaning**

Simple hydraulic pumps can be used to dispense DOWSIL™ 3545 Insulating Glass Silicone Sealant either by hand or robot gunning. When the sealant is used in conjunction with dispensing equipment, the dispensing system needs to be air and moisture tight to prevent the sealant curing over time. Normally there is no specific cleaning required as it is a one-part silicone sealant. Following application, any remaining uncured material in the nozzle will start to cure. This can be prevented by covering the nozzle with a moisture tight material such as metal.

## **Installation**

### **Design Considerations**

Insulating glass units intended for residential glazing, should be designed with secondary sealant dimensions in accordance with local regulations. The stress that will be applied to the glazing should be taken into account, including but not limited to dead load, wind pressure, temperature range, snow load for sloped glass surfaces in skylights or conservatory roof. A minimum of 4 mm is recommended to reach a good penetration value (low transition of moisture).

## **Testing**

Dow recommends several factory quality control tests to ensure optimum sealant performance. These tests include:

- Slump test
- Cure test to ensure expected sealant cure rate in the local conditions of temperature and sealant adhesion to production surface
- Peel adhesion test to ensure proper sealant adhesion to production surface

These tests should be performed for every lot change. Specific procedures for these tests are available from Dow.

## **Insulating Glass Application**

DOWSIL™ 3545 Insulating Glass Silicone Sealant offers good adhesion to most common spacers in insulating glass applications. Because of the variety of different spacers, compositions and suppliers, we strongly recommend an adhesion test prior to use or confirmation of the adhesion properties by contacting our Dow Technical Laboratory who can assist with these tests to prove long-term adhesion and durability. In a cured state, DOWSIL™ 3545 Insulating Glass Silicone Sealant is compatible to DOWSIL™ neutral curing weather sealing silicones.

For any other component in direct or indirect contact with DOWSIL™ 3545 Insulating Glass Silicone Sealant, compatibility needs to be ensured by carrying out appropriate tests. The Dow Laboratory is ready to assist you.

## **Maintenance**

No maintenance is needed once sealant has been properly applied and has cured.

## **Color**

DOWSIL™ 3545 Sealant is available in black.

## **Performance Testing**

Insulating glass units sealed with DOWSIL™ 3545 Insulating Glass Silicone Sealant have been successfully evaluated by CEBTP following the French norm NFP 85-516 for 2000 hours UV resistance.

Insulating glass units sealed with DOWSIL™ 3545 Insulating Glass Silicone Sealant are also tested regularly by CEKAL (France).

DOWSIL™ 3545 Insulating Glass Silicone Sealant has been tested by INV as per pr En 1279-4 with the reference HW/GL/MAS/97/BE.95C.

## **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 DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

## **Usable Life and Storage**

When stored at or below +30°C in the original unopened containers. DOWSIL™ 3545 Insulating Glass Silicone Sealant has a usable shelf life of 9 months from the date of production.

Storage conditions must be respected as higher temperatures will significantly reduce shelf life.

## **Packaging Information**

DOWSIL™ 3545 Insulating Glass Silicone Sealant is available in black in 600 ml sausages for manual application and in 20 liter pails and 270 kg drums.

## **Limitations**

DOWSIL™ 3545 Insulating Glass Silicone Sealant must not be used for structural glazing applications in building façades.

To avoid incompatibility, DOWSIL™ 3545 Insulating Glass Silicone Sealant must not come into contact with, or to be exposed to sealants that liberate acetic acid.

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, [dow.com](http://dow.com) or consult your local Dow representative.

## **Disposal Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

## **Product Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## **Customer Notice**

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

dow.com

**NOTICE:** No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

