

V-4

Metal and Masonry Silicone Sealant

Technical Data Sheet

March 2002

Product Information

Description

Z Bond V-4 is a one component, non-flowing, neutral cure, low modulus silicone sealant. It cures by absorption of atmospheric moisture to form a flexible and durable elastomeric sealant.

Special Features

Z Bond V-4 is a highly elastic low modulus neutral cure silicone sealant. It therefore imparts the minimum stress on the adhesion bond, between the silicone and the substrate, in a working joint.

The thixotropic nature of this product ensures that it will not slump in typical construction joints.

Typical Uses

Because of its good adhesion to a broad range of substrates and low modulus, this product is an excellent general-purpose building and construction sealant. It is commonly used in weather seals in curtain wall; air seal in pre-cast concrete; sealing of Marble & Granite (after the completion of stain testing); sealing polycarbonate.

One Part System

Being a one-part sealant Z Bond V-4 offers the confidence of consistent even cure. It also improves operator productivity, as time is not lost mixing the product, is easy to use in difficult locations, and can be applied out of a standard cartridge gun.

Packaging

The standard packaging for Z Bond V-4 is 300ml polyethylene cartridges. We can pack it into many different containers, please contact your local agent for details of minimum order size, lead-time and dispensing methods.

Long Life Reliability

Z BOND V-4 has excellent natural ageing stability. It will maintain its elastomeric joint sealant properties permanently, even under harsh conditions and temperature extremes.

Characteristics

System Properties

Property	Mean Result Achieved	Test Method
Skin Time	8 Minutes	BS 5889
Tack Free Time	3 Hours	ASTM C679
Tooling Time	8 Minutes	ASTM C679
Sag or Slump	Nil	BS 5889



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Cured Properties

Property	Mean Result Achieved	Test Method
Shore A Hardness	17	ASTM C 661
Modulus at 100% Elongation	0.25 MPa	ASTM D 412
Tensile Strength	0.80 MPa	ASTM D 412
Elongation at Rupture	600%	ASTM D 412
Peel Strength after UV through Glass	67N/25mm	BS5889
Dynamic Movement Capacity	+35 –35%	ASTM C 920
Accelerated Ageing and Weathering	Excellent	ASTM C 792

Temperature

	Minimum	Maximum
Application Temperature	-10 ⁰ C	+40 ⁰ C
Service Temperature	-50 ⁰ C	+220 ⁰ C

Application of the sealant at -10⁰C is permissible provided the surface to receive the silicone is dry and free of frost. The maximum service temperature listed is for transient temperatures; the silicone sealant will deteriorate if subjected to these temperatures on a continuous basis.

Effect on Water Quality

Z Bond V4 meets the requirements of Australian Standard AS 4020-1994 “Products for use in contact with water intended for human consumption with regard to their effect on the quality of water”. The Australian Water Quality Centre completed the testing to this standard.

Colours

White; Beige; Grey; Charcoal

We can manufacture silicone sealants in almost any solid colour. To manufacture a special colour we need a sample of the required colour, and a single purchase order covering the full batch quantity. There could be a small additional charge to cover colour matching costs, or special pigments.

Sealant Application

Joint Design

The sealant must be capable of withstanding the expected joint movement. To calculate the joint width, establish the expected movement (expansion, contraction and shear movement) that the joint is required to withstand. The dynamic movement capability of **Z BOND V-4** is $\pm 35\%$. The Data Sheet on Joint Design contains the formula for calculating the required joint width from the expected joint movement and the dynamic movement capability of the sealant.

The joint design must avoid three-sided adhesion.

The sealant depth for a weatherseal is normally half the joint width. The minimum acceptable joint depth is 6mm; therefore, if the required joint width is 6mm the depth is also 6mm.

Back Up Material

Use a closed cell polyethylene-backing rod, 25% larger than the joint width, to control the depth of the joint.

Compatibility with Adjacent Substrates

Silicones are not always compatible with plasticised sealants, such as butyls. Also some backing rods and glazing tapes contain bitumen or other agents that are incompatible with the silicone. The incompatibility may cause discolouration, poor sealant cure or long term degradation of the sealant. Always carry out compatibility tests where contact with potentially incompatible materials occurs.

Application

Always ensure that the surfaces to be sealed are dry and free from oil, dirt and grease. Use the two-wipe process for impervious substrates. Ensure the cloths are clean and changed frequently, and use a suitable solvent such as Z Bond R-40, IPA or White Spirits. Typical substrates are glass, aluminium and Zinalume[®]. For porous surfaces such as concrete, abrade the surface to remove loose particles, release and curing agents. When extruding the sealant cut the nozzle to the desired width, cut the tip off the cartridge, and apply the sealant firmly to ensure good contact between the sealant and the substrate. Before the sealant has skinned, tool it off to ensure a good finish, and to improve the wetting out of the sealant to the substrate.

To achieve satisfactory adhesion a primer may be required for some substrates. Consult the manufacturer or your distributor for more information.

Curing

Z BOND V-4 cures by absorbing atmospheric moisture, it will skin over in 8 minutes and cure to a depth of 7mm in 7 days.

Co-operative Test Program

Effective sealant systems require the sealant to adhere to the substrates, and work in the joint without cohesive failure. Non-adhered systems result in gaps in sealant caused by shrinkage, thermal movement or wind pressure. Positive wind pressure will find its way through these gaps and cause leaks in the sealant system.

The intention of the program is to eliminate potential problems by pre-testing Rhodia construction sealants with samples of the actual building material. The test will provide detailed information about optimum surface preparation techniques, including recommended solvents, and the requirement for primers. We will also review the proposed joint designs for potential points of failure, such as three-side adhesion, joint shape and joint dimensions.

For projects that incorporate stone substrates, we test to ASTM D 2203-84. This is an internationally recognised test procedure specifically designed to evaluate the potential of a sealant material to stain a stone substrate. Because of the variability of stone, in terms of porosity and texture, we recommend the completion of these tests for each project.

Test samples should be identified as to manufacturer, origin, design use, building project, the firm originating the request and a contact person. Appropriate details or shop drawings will give us the opportunity to complete the assessment of the project.

To commence a test program contact your local Rhodia office.

Because of the importance of Surface Preparation, Sealant Application and Joint Design Rhodia Australia Pty. Ltd. provide specific Data Sheets on these topics. These data sheets are available free of charge, and we strongly recommend that you consult these sheets before commencing application of the sealant

Storage and Shelf Life

Always store the sealant in a cool dry place. Ideal storage temperature is not more than 25°C. Prolonged storage at high temperatures may affect shelf life and ultimate performance. The shelf life of Z BOND V-4 is 6 months from the date of manufacture when stored below 25°C and below 50% relative humidity.

Limitations

Z BOND V-4 is ***NOT*** suitable for use in the following applications: -

- As the sealant requires atmospheric humidity to cure, it will not cure in totally confined spaces where it does not have access to atmospheric humidity.
- Aquariums
- Structural Applications such as Mirrors or Glazing
- Under Water Applications (including swimming pools)
- N. B. This product is suitable for some applications where the sealant is in contact with water for extended periods. Please contact Rhodia Australia Pty. Ltd. to confirm your design details before commencing such an application.
- Below Grade Applications, and
- Horizontal walkways.
- This silicone is not paintable. If there is, a requirement to paint the sealant our recommendation is to use our Rhodorsil Multi Purpose silicone sealant or Z Bond Gap Filler acrylic sealant products. Follow both the sealant and paint manufacturers painting instructions carefully, when painting sealants.

Health and Safety

Z BOND V-4 is not classified as Dangerous Good or Hazardous Substance according to the ADG Code and Worksafe Australia respectively. The product however, should be used in accordance with good occupational, health and safety practices. May cause irritation if swallowed. Moderately irritating to eyes. Repeated or prolonged skin contact may lead to irritation. High concentrations of vapour may cause irritation to respiratory tract. Releases vapour of ethyl glycol, methanol and ethanol until fully cured.

Do not swallow and avoid prolonged or repeated contact with the skin. If contact with the eyes occurs, wash eyes with copious quantities of water and consult a doctor if irritation persists.

The Material Safety Data Sheet defining the known hazards and describing the appropriate safety precautions with respect to the product is available through Rhodia Australia Pty. Ltd.

Important Notice for Users

RHODIA'S SOLE WARRANTY IS THAT ITS PRODUCTS WILL MEET RHODIA'S THEN CURRENT SALES SPECIFICATIONS, WHICH ARE AVAILABLE THROUGH ITS COMMERCIAL AGENCY.

We based the Information and data contained in this publication on our current knowledge of the product. The properties of individual batches of sealant may vary from the results published as mean results achieved, however our Quality Control System will ensure they are always within an acceptable tolerance of the published figures. As the application, use and processing of the product are beyond our control Rhodia disclaims any warranty for fitness for use or for a particular purpose.

Rhodia Australia Pty. Ltd. provides a comprehensive testing service, in our Quality Control Laboratory. Where particular performance criteria are required we strongly recommend that a testing program be carried out, prior to the commencement of the project.

Suggestions for use should not be taken as an inducement to infringe any particular patent.

* Z Bond is a registered trademark of RHODIA