



Expansion Joint Systems V-Seal System

Product Description

V-Seal is a preformed extruded EPDM seal that can be bonded to concrete, steel or elastomeric concrete with a quick-setting V-Epoxy-R adhesive.

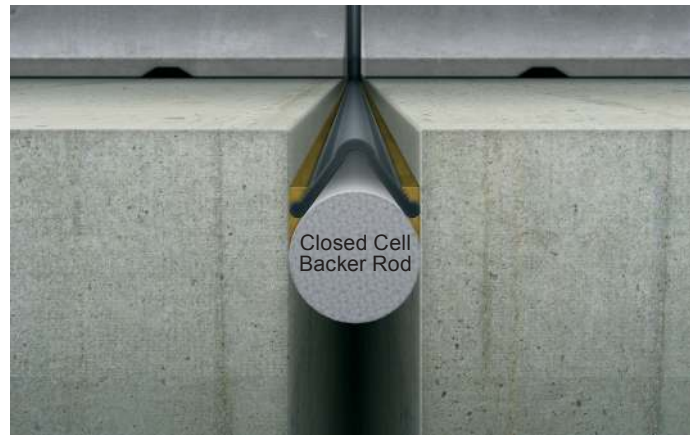
Basic Uses

Typical applications include: control joint and expansion joints for both new and rehabilitation projects for bridges, highways, parking structures, stadiums, plazas, water and sewage treatment facilities and other types of concrete construction.

Advantages

- EPDM seal is weather, UV, ozone and tear resistant
- Designed for use under extended water immersion
- Flexible at lower temperatures
- V-Epoxy-R adhesive bonds in excess of 1500 PSI
- V-Epoxy-R is available in 600 ML dual cartridges
- Easy rehabilitation of existing expansion joints
- Quick installation
- Movements up to 5"
- Full cure of the V-Epoxy-R adhesive at 70° F is 24 hours

Complete installation instructions are available on dsbrown.com/bridges/expansion-joint-systems/v-seal.



Property	Test Method	Requirement
Tensile Strength	ASTM D412	1200 PSI Min
Elongation	ASTM D412	400% Min
Durometer Content	ASTM D2240	50±5
Ozone Resistance	ASTM D1171	100 Min
Water Resistance - 70 Hrs at 100°C	ASTM D471	10% Max
Tear Strength	ASTM D624 (Die C)	150 PLI



V-Seal Chart

Property Name	Min. Opening		Min. Install Wd.		Max. Install Wd.		Max Opening		Min Depth
	Width	Height	Width	Height	Width	Height	Width	Height	
V-300	0.625"	2.250"	1.750"	2.125"	3.500"	1.750"	3.625"	1.500"	2.500"
V-400	1.000"	2.750"	2.250"	2.500"	4.500"	2.000"	5.000"	1.375"	3.500"
V-500	1.000"	3.375"	3.000"	3.125"	5.000"	2.750"	6.000"	1.625"	4.000"

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V-Epoxy-R Adhesive Properties

The V-Epoxy-R adhesive meets the requirements of ASTM C881 Type III, Grade 2. The adhesive shall also have the following properties:

Property	Test Method	Requirement
Gray Color		
Viscosity		45,000 cP (typical)
Gel Time	ASTM C881	30 Minutes Min
Shelf Life (in separate sealed containers)		12 Months

Responsibility

- It is the responsibility of installer to understand all of the requirements of this document before attempting to install the V-Seal system.
 - Failure to perform any of the steps outlined in this document will result in under performance or failure of the V-Seal product.
 - Failure to perform any of the steps outlined in this document shall void any warranties, either expressed or implied, with regard to the V-Seal system.
- It is the responsibility of The D.S. Brown Company to provide written instructions with regard to the proper installation and handling of the V-Seal system.
- It is the responsibility of The D.S. Brown Company to provide technical support, training, and quality control testing as requested by the installer, contractor, or owner of the project.
 - Technical support, training, and quality control testing is available for a fee.

Product Description

- The seal component is an elastomeric diaphragm supplied in a continuous length. It is available for movements up to 5 inches.
- The conditioning agent is a solvent based conditioner that activates the surface of the seal to create a bond with the V-Epoxy-R. It is supplied in 1-quart bottles.
- The V-Epoxy-R is supplied in 600mL dual cartridges. One cartridge of V-Epoxy-R is capable of bonding 6 joint feet of seal for V-300 and V-400, and 5LF for V-500.

- Mixing tip for dual cartridges is included with the shipment.
- Closed cell polyethylene backer rod is available from D.S. Brown for setting the proper joint depth for the V-SEAL system.
 - The closed cell backer rod diameter should be slightly larger than joint opening and capable of supporting the V-Seal gland until the epoxy material cures.

Product Safety

- The V-Epoxy-R is corrosive. Please review each component's SDS before installation to fully understand the safety concerns related to this system. Failure to do so could result in serious injury or death.
- The following guidelines are recommendations consistent with the SDS literature. These recommendations are not intended to supersede or replace any existing requirements set forth by local laws or policies.
 - Use in a well-ventilated area, using good industrial hygiene practices. Avoid contact with eyes, skin, and clothing and wear proper PPE.

Personal Protective Equipment (PPE)

- Use approved respiratory protection equipment when airborne exposure is above the occupational exposure limits.
 - Consult SDS for exposure limits.
 - Operators shall be properly trained in the use of a respirator.
 - OSHA's Respiratory Protection Standard sets forth requirements for a facility Respiratory Protection Program (29 CFR 1910.134).
- Corrosive-resistant chemical gloves (e.g., nitrile)
- Eye protection consisting of safety glasses with side shields or tightly sealed goggles
- Skin protection consisting of impervious clothing, including but not limited to the use of an apron; use long sleeves at a minimum.
- Workers not wearing the correct PPE should not enter the application area.
- In the event of an over-exposure to the product, see section 4 of the SDS for First Aid Measures.



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Material Storage

- The V-Epoxy-R and conditioner should be stored in a dry environment within a temperature range of 60°F to 80°F. Extremes of temperature beyond this range may result in crystallization or polymerization of the materials and render them unsuitable for use.
- It is recommended that the V-Epoxy-R be used within one year of manufacture. Beyond one year, the material should be checked to ensure suitability for the application.

Equipment

- Equipment requirements for the installation of the V-Seal system are as follows:
 - Wire brush
 - Sandblaster
 - Dual cartridge applicator gun, 600mL
 - Clean rags and paint brush
 - Acetone or denatured alcohol for removal of conditioner
 - Duct tape or other suitable masking material
 - Caulking spatula

Pre-Application Inspection

- Visual Inspection of the expansion joint is the first task to be completed by the installer.
- New concrete shall have a minimum of 14 days of cure.
 - Moisture content of the concrete shall be below 5%.
- All formwork must be removed.
- Substrate temperature and air temperature must be above 40°F and rising
 - The V-Seal system can be installed at temperatures below 40° but longer cure times for the epoxy bonding agent will be required.
- In applications where the V-Seal system will be replacing an existing seal system the old system must be completely removed before installation of the V-Seal system.

- Joint components, such as armor angle or strip seal channels may remain in place, but must be inspected to ensure that they are soundly secured in concrete.
- Steel profiles should be grit blasted to an SSP6 finish or better in the bonding area.
- Loose, contaminated, weak, spalled, deteriorated and/or delaminated concrete must be removed to sound concrete.
 - Any spalls, voids, or structural cracking at joint interfaces must be repaired.
 - Concrete should be grit blasted to a finish between coarse sandpaper and a ¼" profile.
- Joint openings must be free of all contaminants, loose materials, dry and free of frost.
 - V-Epoxy-R will not bond to water.

Installation

- Before starting installation take time to ensure that all materials are available and ready for use, including an adequate amount of personnel to complete the installation.
- Mask off joint edges to facilitate easier cleanup.
- Install closed cell backer rod to a depth that will allow the seal to install deep enough in the joint opening so that at full closure the seal is at least ¼" (½" preferred) below the deck surface.
- With a clean rag or paint brush, apply conditioner to both sides of the seal in the bonding area (Fig. 1).
- Roughen the bonding area with a wire brush to work the conditioner into the seal.
- After 5 minutes remove the conditioner using a clean rag and denatured alcohol or acetone.
- Apply a 3/8" bead of V-Epoxy-R on both sides of the closed cell backer rod against the joint wall (Fig. 2).
- Install the V-Seal by pressing the lug portion of the seal into the bead of V-Epoxy-R on both sides of the joint.



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- Apply a final bead of V-Epoxy-R along the top of the lugs.
 - The V-Epoxy-R should be filled to the top adhesive groove.
- **Excess V-Epoxy-R should be removed before cure. No V-Epoxy-R should be present on the smooth top surface of the seal.**

Clean Up

- Clean all uncured V-Epoxy-R off of the top portion of the seal.
- Uncured V-Epoxy-R is removed as you would spilled resin. Scrape as much material as you can from the surface using a stiff metal or plastic scraper. Clean the residue with lacquer thinner, acetone, or alcohol placed on a clean rag.
 - Follow safety warnings on solvents, and provide adequate ventilation.
- Remove all masking materials.
- Unused V-Epoxy-R and conditioner should be disposed of according to local rules and regulations.
 - Consult SDS for proper disposal methods.

Figure 1

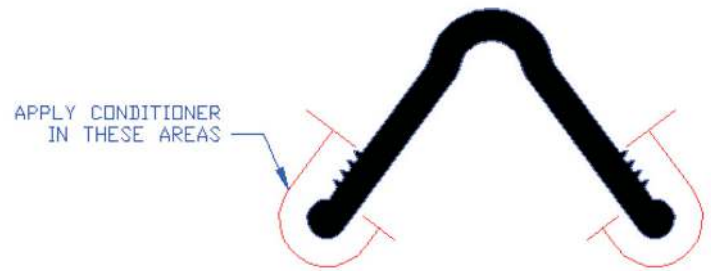


Fig. 1 – Definition of Bonding Area

Figure 2

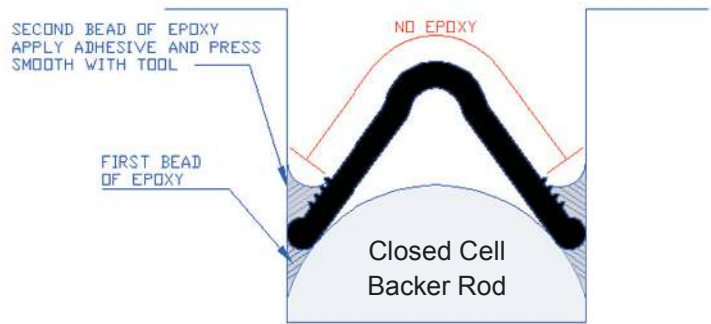


Fig. 2 – Proper Installation

Closed Cell Backer rod is not needed when installing V-Seal in an armored angle joint that has shelf tabs placed at the proper depth on each side of the joint.

