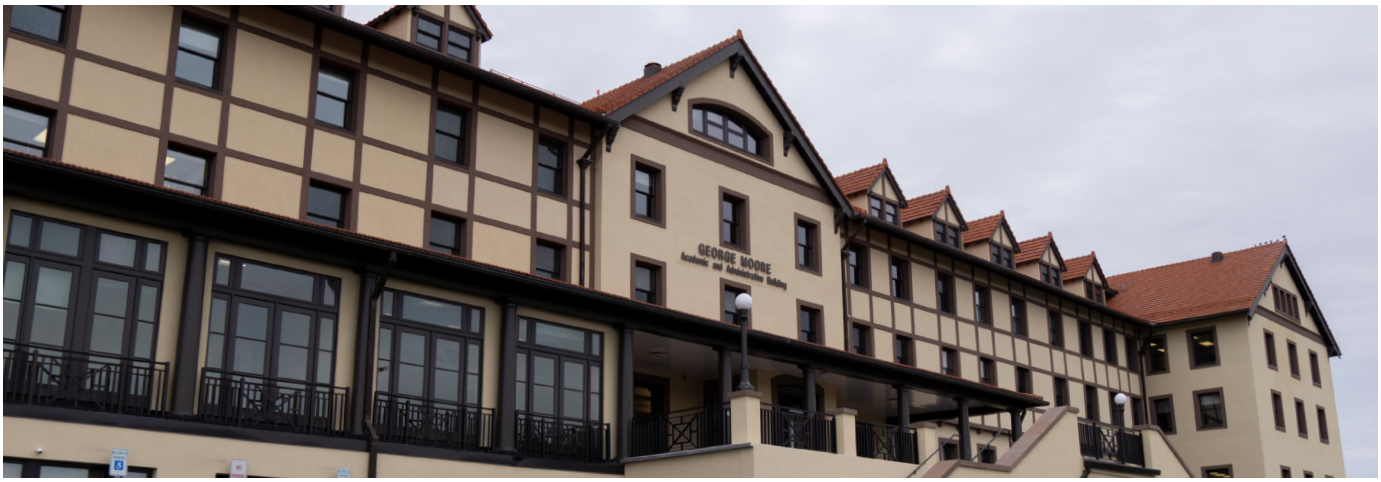
RESTORATION GUIDE

SEALANTS

TREMCO

Construction Products Group



Restore Your Building with Confidence

With proper system review and remediation strategies, building owners, facility managers, and contractors can effectively restore a building's appearance and performance. The Restoration Guide, created by building envelope and technical specialists from the Tremco Construction Products Group (CPG) companies, offers expert advice on how to address the most common challenges that occur as structures age.

Executing the best practices found in this document will help ensure the maximum life of your project. Each section also includes links to relevant product web pages, application instructions, and other complementary resources. For additional details or project-specific questions, please reach out to a Tremco CPG representative.

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SEALANTS

Blistering Sealant
Moisture Issues, Adhesive Failure and Missing Sealant
Split Sealant

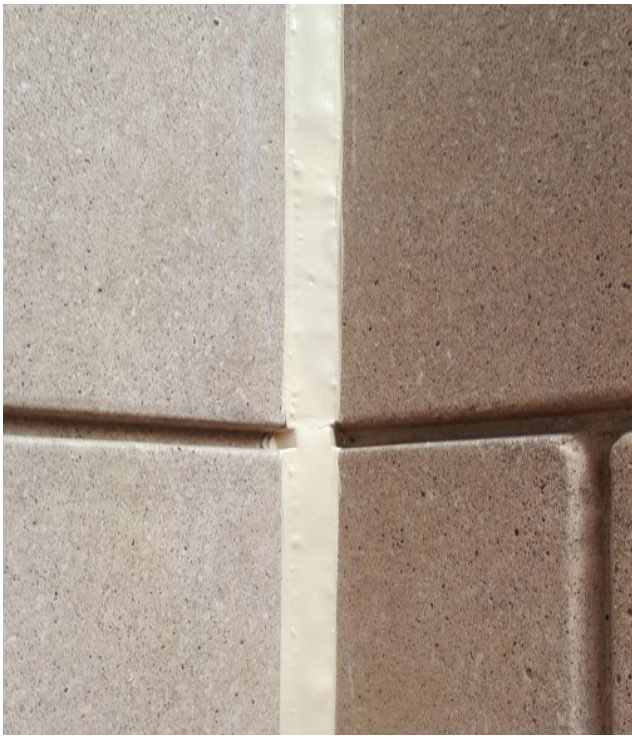
BLISTERING SEALANT

DESCRIPTION

Presenting as small bumps or blisters on the surface of sealant bead, blistering is usually caused either by unwanted moisture in the substrate behind the sealant bead or by holes punched into the closed cell backer rod during application.

Common Causes:

- Sealant has been applied over a closed-cell backer rod that was punctured during the application of the backer rod.
- Sealant was installed over a wet substrate — either due to adverse weather or surface condensation at the time of installation.



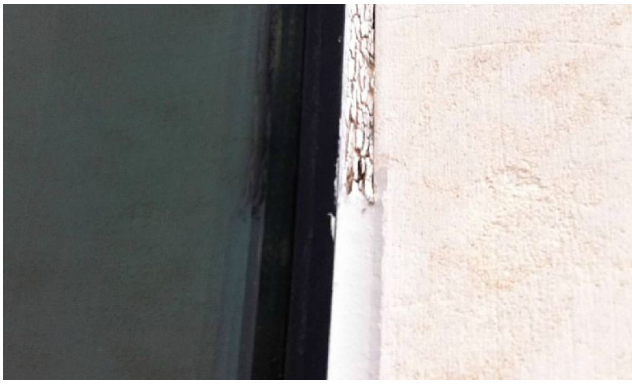
REPAIR METHODS AND STEPS:

Identify the area(s) in need of repair and determine the limits of the affected areas. Depending on how widespread the issue is, you may choose to remove and reinstall a large portion of the sealant or repair each blister separately.

Determine the type of backer rod used during the installation. One or two blisters may indicate that the backer rod was punctured during installation. In the case of many widespread blisters, underlying moisture contamination is more likely.

Method A – Punctured Closed-Cell Backer Rod:

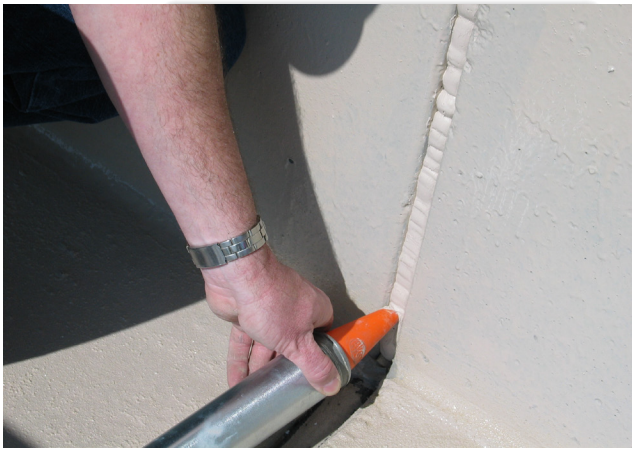
1. Remove the blistered sealant with a sharp knife, extending the cuts 2 to 3 in. (5 to 8 cm) beyond the affected area.
2. Remove the perforated section of the backer rod with a sharp knife.
3. Replace the backer rod with a new section of backer rod, ensuring that no holes are made in the new material.



4. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
5. Reinstall sealant according to the manufacturer's instructions.
6. Be sure to tool the sealant to make sure that there is no void between the new and existing sealants.

Method B – If Moisture Is an Issue:

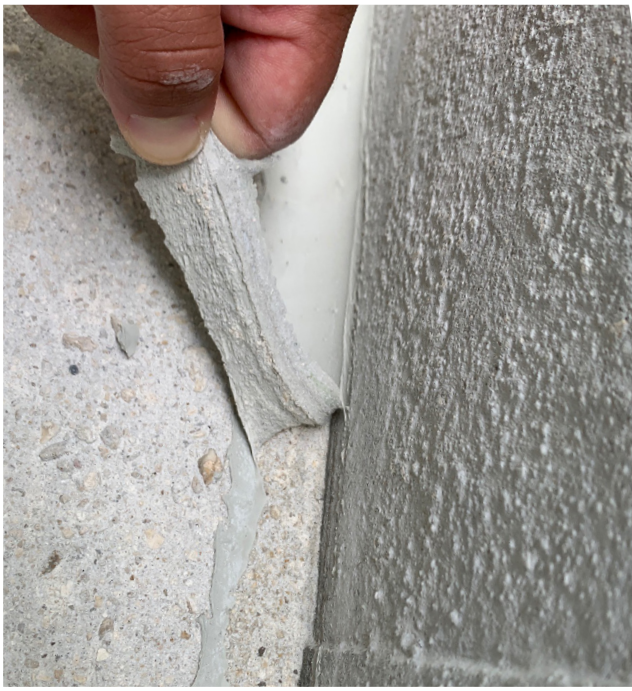
1. Remove the blistered sealant with a sharp knife, extending the cuts at least 6 in. (15 cm) beyond the affected area.
2. If an open-cell backer rod is wet, it should be replaced.
3. Allow to dry, either naturally or with fans/blowers.
4. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
5. Reinstall sealant according to manufacturer's installation instructions.
6. Be sure to tool the sealant to make sure that there is no void between the new and existing sealants.



MOISTURE ISSUES, ADHESIVE FAILURE AND MISSING SEALANT

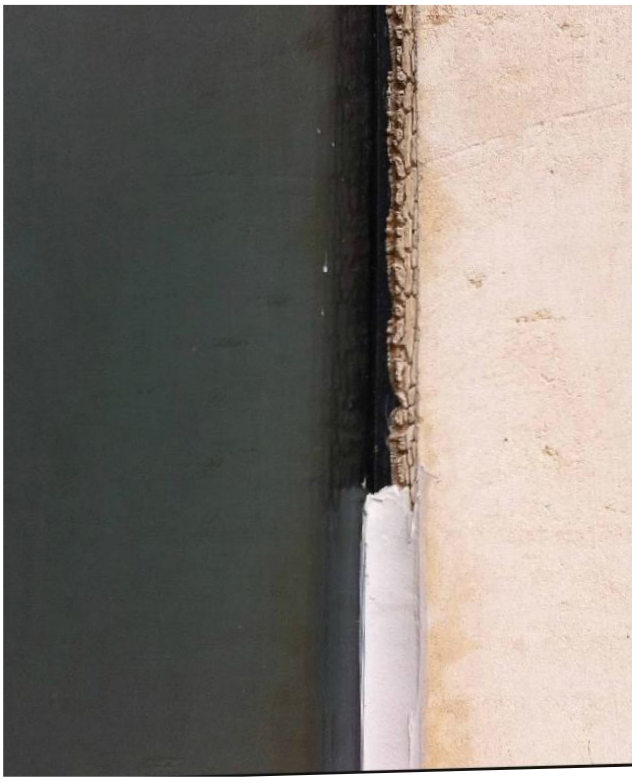
DESCRIPTION

If you observe gaps between the sealant bead and the substrate or the sealant bead is missing entirely, you could have moisture intrusion and/or adhesion issues. Moisture may have been introduced inadvertently during the sealant tooling process, or the sealant may have been installed without the primer required for that substrate.



Common Causes:

- Tools were cleaned with water, instead of xylene or similar cleaners.
- Sealant was applied over a moist substrate due to adverse weather.
- The original substrates were not cleaned properly or had loose debris.
- A pull test or mockup to verify adhesion between the substrate and sealant was not done.
- A pull test was conducted, and the tested area was not repaired afterward.



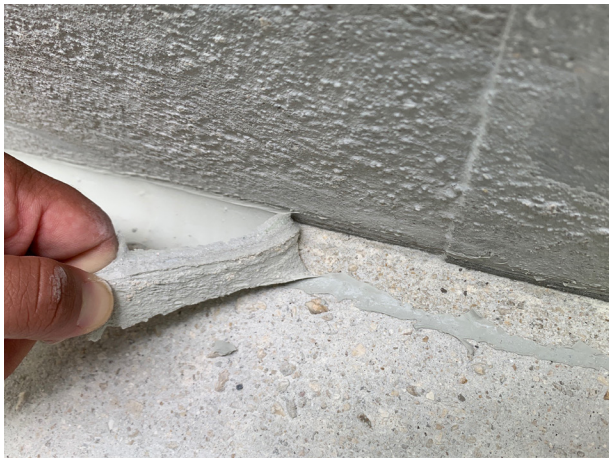
REPAIR METHODS AND STEPS:

Identify the area(s) in need of repair. Depending on how widespread the issue is, you may choose to remove and reinstall a large portion of the sealant or repair each area separately.

Prior to any repair, conduct a pull test[2] of the affected sealant, if any, according to ASTM standards to review for adhesion and determine if a primer is needed. A sample of the existing sealant can be sent to Tremco CPG technical services for additional insight.

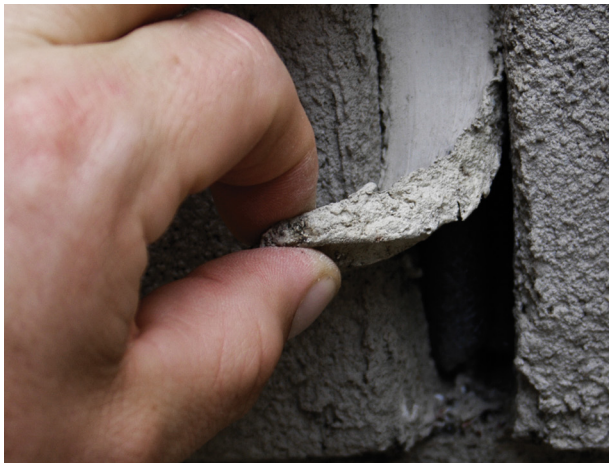
To identify the source of the issue and its proper repair, examine the affected area for the following:

If debris or rust is pulled out with the sealant, see **Method A** as this may mean the substrate was not cleaned properly before sealant application. If traces of a previous sealant are found on the substrate, reference **Method B,** as this can point to compatibility issues between the existing sealants. See **Method C** if the sealant is pulled cleanly away from the substrate, as this means that a primer may be needed for better adhesion. If sealant is missing from the joint altogether, see **Method D.**



Method A – If Debris or Rust Is Pulled out with the Sealant:

1. Remove the affected sealant with a sharp knife extending the cuts 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. Grind the surface properly making sure there is no more debris. If rust is present, sandblast until rust is removed.
3. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
4. Reinstall sealant according to the manufacturer's installation instructions.
5. Be sure to tool the sealant to make sure that there is no void between the new and existing sealants.



Method B – If Traces of Previous Sealant Are Found on the Substrate:

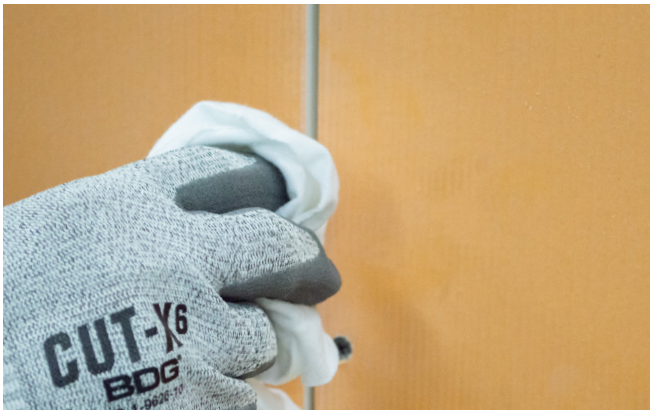
1. Remove the affected sealant with a sharp knife, extending the cuts at least 6 to 12 in. (15 to 30 cm) beyond the area. Use a grinder if necessary.
2. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
3. Install new, compatible sealant according to manufacturer's installation instructions.
4. Be sure to tool the sealant to make sure that there is no void between the new and existing sealants.

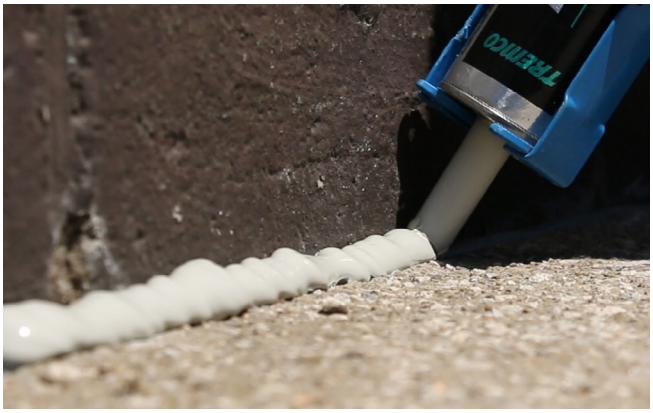
Method C – If the Sealant Is Pulled Cleanly away from the Substrate:

1. Remove the affected sealant with a sharp knife extending the cuts at least 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. Examine the sealant and the substrate closely to make sure the substrate was clean and no evidence of a previous sealant remains.
3. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
4. Determine the proper primer needed, which is dictated by the substrate and sealant type.[1] Apply primer and sealant on an inconspicious area per the manufacturer's installation instructions.
5. Conduct a pull test[2] of the fully cured sealant to confirm adhesion between the primed substrate and sealant.
6. If the adhesion is acceptable, treat the remainder of the affected area using the proper primer.
7. Reinstall sealant according to the manufacturer's installation instructions.

Method D – If Sealant Is Missing from the Joint:

1. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, employing the "Two-Cloth" method.[1] Allow to dry completely.
2. Install sealant according to the manufacturer's installation instructions.
3. Be sure to tool the sealant to make sure that there is no void between the new sealant and the existing sealant.

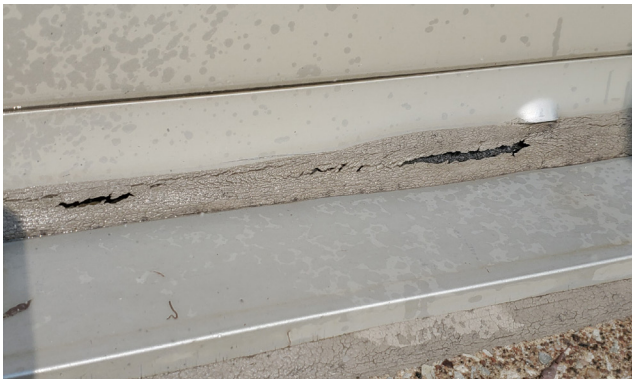




SPLIT SEALANT

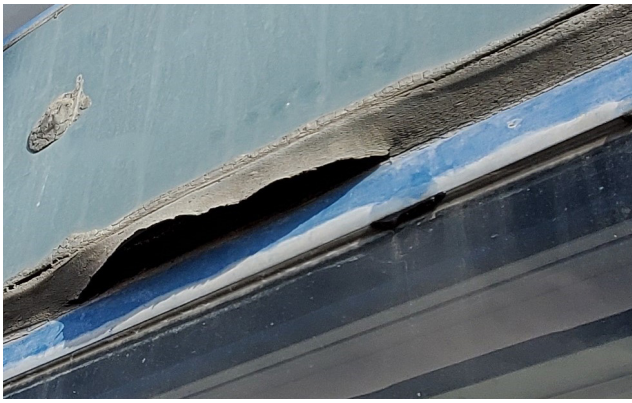
DESCRIPTION

Identify cases of split sealant by observing a gap between the sealant bead and the substrate. This can be caused by poor surface preparation, a lack of proper maintenance or improper product selection.



Common Causes:

- The sealant was installed over an unclean surface with surface debris, rust, etc.
- The sealant is not compatible with surrounding products or substrates.
- The sealant was not approved for prolonged UV exposure.
- The wrong material was specified for the job.



REPAIR METHODS AND STEPS:

Identify the area(s) in need of repair. Depending on how widespread the issue is, you may choose to remove and reinstall a large portion of the sealant or repair each area separately.

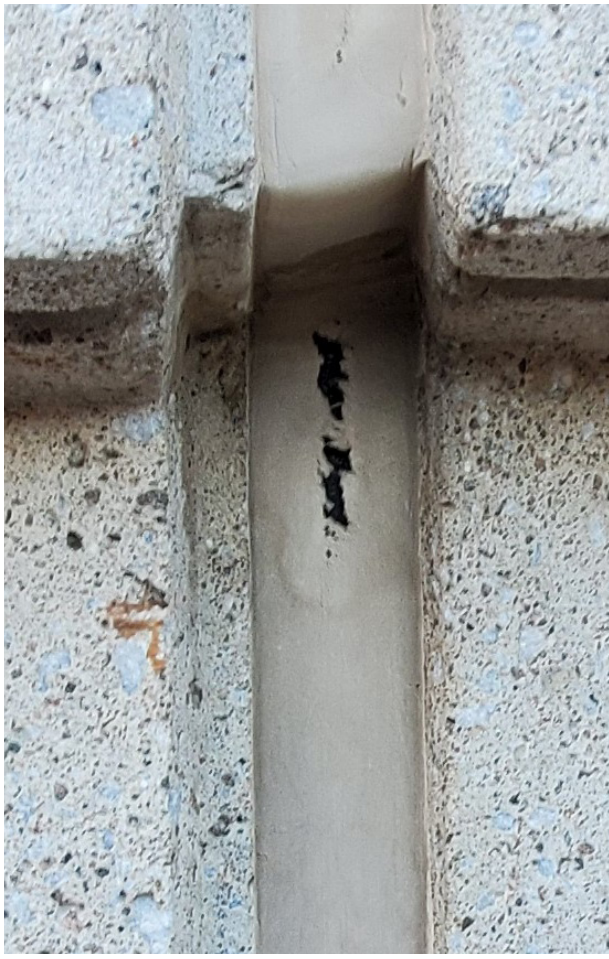
Prior to any repair, conduct a pull test[2] of the affected sealant, according to ASTM standards to review for adhesion and determine if a primer is needed. A sample of the existing sealant can be sent to Tremco CPG technical services for additional insight.

To identify the source of the issue and its proper repair, examine the affected area for the following:

If debris or rust is pulled out with the sealant, see **Method A** as this may mean the substrate was not cleaned properly before sealant application. If traces of a previous sealant are found on the substrate, reference **Method B,** as this can point to compatibility issues between the existing sealants. See **Method C** if the sealant is splitting along the joint, as this means the wrong material may have been used for the joint. Proceed to **Method D** if there is a crazed sealant bead, which signifies that the sealant has aged.

Method A – If Debris or Rust is Pulled out with the Sealant:

1. Remove the affected sealant with a sharp knife extending the cuts 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. If rust is present, sandblast until rust is fully removed.
3. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, using the "Two-Cloth" method.[1] Allow to dry completely.
4. Reinstall sealant according to the manufacturer's installation instructions.
5. Tool the sealant to make sure that there is no void between the new and existing sealants.



Method B – If Traces of Previous Sealant are Found on the Substrate:

1. Remove the affected sealant with a sharp knife extending the cuts at least 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, using the "Two-Cloth" method.[1] Allow to dry completely.
3. Reinstall sealant according to the manufacturer's installation instructions.
4. Tool the sealant to make sure that there is no void between the new and existing sealants.

Method C – If the Sealant is Splitting Along the Joint:

1. Remove the affected sealant with a sharp knife extending the cuts at least 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. Review the sealant and the substrate closely to make sure the substrate was clean, and no evidence of a previous sealant remains.
3. If none is found, then the joint movement should be reviewed either by consulting an engineer or by using a crack movement gauge.
4. When joint movement is determined, select an appropriate sealant material for the anticipated joint movement, and make sure it is within the material's elongation parameters.
5. Remove the existing sealant bead completely and use a grinder, if necessary, to prepare the surface.

6. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, using the "Two-Cloth" method.[1] Allow to dry completely.
7. Install the appropriate new sealant according to the manufacturer's installation instructions.

Method D – If the Sealant is Noticeably Crazed:

1. Remove the affected sealant with a sharp knife extending the cuts at least 6 to 12 in. (15 to 30 cm) beyond the affected area. Use a grinder if necessary.
2. Clean the sides of the substrate using isopropyl alcohol (IPA) or similar cleaner, using the "Two Cloth" method.[1] Allow to dry completely.
3. Reinstall sealant according to manufacturer's installation instructions.
4. Tool the sealant to make sure that there is no void between the new and existing sealants.

ADDITIONAL INFORMATION

NOTES:

Be sure you know the type of sealant you are working with to avoid compatibility issues. Typically, like sealants will bond to one another and sealants of different chemistries (for example, silicone or urethane) will react to each other. If you are unsure of the sealant type you are replacing, contact the manufacturer's technical service department to send a sealant sample and receive additional information regarding your repair.

1. Tremco Sealant Restoration Guide
2. ASTM C1521 - Standard Practice Evaluating Adhesion of Installed Weatherproofing Sealant Joints
3. Build Meets World Blog: Eliminate Costly Rework with the Field Adhesion Test
4. Tremco Primer Selection & Usage Guide
5. Tremco Sealant Selection Guide

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