

CONTAINMENT REPAIR

CONCRETE CRACKS (REALLY!)

We all understand that concrete cracks, and it is important to handle properly. The EPA regulations in 40 CFR 165 require secondary bulk tank containment as well as operational area containment (load pads). EPA also requires you to make monthly inspections of your containment systems.

A well-designed containment system directs cracking to expansion joints and other design features. But even the best design needs maintenance, especially at those joints, and may develop cracks in other areas, too.

In general, a protective sealant or coating is not required unless stated by state or federal law, but the containment must be liquid-tight. Some states do have specific requirements. For example, Wisconsin sites must only use Department of Agriculture-approved materials for repairing cracks in containment structures. In addition, synthetic liners cannot be used for pesticides in Wisconsin.¹ On the other hand, Washington state allows synthetic liners.² Be sure to consult with your state regulations before making any repairs.

Crack extends through wall and is visible on both sides of wall. Crack should be repaired.



HAIRLINE VS. REPAIRABLE CRACK

Some cracks simply require monitoring. A hairline, or fine crack, that is visible but does not show signs of separation or movement is likely not of concern. However, multiple hairline cracks may warrant consideration of a general sealant or coating to slow further deterioration. A crack that is showing some sign of separation needs attention. Consult your vendor whether a crack can be coated or sealed or must be enlarged to properly caulk or repair.



Mortar shrinkage in cinder block wall needs repair.



Caulk between wall and floor has separated.

¹ "Wisconsin Minimum Design and Construction Standards for Concrete Mixing and Loading Pads and Secondary Containment Structures." David W. Kammel, Biological Systems Engineering Department. University of Wisconsin Cooperative Extension. February 2005.

² WAC 16-229-040 Secondary containment of liquid bulk pesticides— Synthetic liners.

DIY VS. USING A VENDOR: SURFACE PREPARATION, SAFETY, AND QUALITY

Even a good caulk, sealant or coating will fail if the surface preparation is poor. Read the manufacturer's instructions, technical data sheets, and Safety Data Sheets carefully. Some products also require bonding agents or other special handling for safety or quality reasons. A good vendor may be worth the money invested.

CANDIDATE PRODUCTS

This information is provided in good faith but is not a recommendation or endorsement of any of the products or topics discussed. No warranty of suitability is implied or stated. Facility owners and operators are responsible for determining the appropriateness and accuracy of any information presented.

Please note: over time, new products are introduced and/or new versions replace previous generations. You may have to research alternatives, but the following (or their equivalents) are good candidates for joint sealing and crack repair in a TELONE™ dike or load pad.

Ceilcote EJ-11 caulk is expensive versus other caulks because it contains Viton. It is described by the manufacturer as a chemically resistant, fluorolastomer compound for expansion joints with excellent resistance to strong acids, like 98% sulfuric, 60% nitric & concentrated HCL and phosphoric acid. Search for "EJ-11" at www.international-pc.com.

Thiocalk H-705A is a polysulfide joint sealant for both horizontal and vertical joints. The manufacturer says it is an excellent expansion joint with chemical resistance to hydrocarbons, solvents, organic acids, esters, and inorganic liquids. EPOSEAL (www.eposeal.com) tested Thiocalk H-705A caulk against TELONE™ II and rated it as "Not Affected".

Wall-Nu Trowelable is a 100% solids trowelable material that claims a strong bond to a variety of substrates including concrete, and may be applied up to 1" thick on vertical surfaces. EPOSEAL also tested it against TELONE™ II and rated it also as "Not Affected". Another vendor is Corrosion Technology Systems, www.corrosion-tech.com.

Silicon-based caulks have not been specifically tested against TELONE™ as crack sealants. However, some have successfully used blue silicone-based products as a thread sealant if the product is allowed to cure before exposure to product. UV exposure may be another issue of concern. Use only after testing.

Epo-Line 161 was also tested for TELONE™ and recommended by Eposeal for secondary containment and load pads. Proceed only after testing. Visit www.eposeal.com for more information.

Also, high phenolic-based linings or coatings are at least somewhat compatible with TELONE™. Do not use polyurethane or urethane-based, or epoxy-based coatings or sealants.

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CAULK: Any flexible polymer or material applied to cracks or breaks in concrete, including expansion joints, to prevent further damage or provide liquid tightness.

COATING: Any product that remains on top of the surface creating a layer or physical barrier. Coatings can be 5-mil to 20-mil thick. A properly prepared surface is critical, but a coating may last longer than a sealant.

SEALANT: A product that penetrates the surface to seal. Some sites say a sealer is typically 5-mils thick, or less. Note: enough coats of a sealer will eventually become a coating. Sealants may be easier to apply, but may require reapplication sooner than a properly-applied coating.

BONDING AGENT: Any caulk, sealant, or coating requires good surface preparation prior to application. Many products, especially coatings, may require application of a bonding agent before applying the coating. Follow the manufacturer's instructions.