

Standard Operating Procedures

PRECIDIUM™ ECS™ Liner Inspection and Maintenance Procedure



Quantum Chemical

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ASTM D412	Standard Test Method for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
ASTM D624	Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM D4437	Standard Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes
ASTM D5641	Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.

PRECIDIUM™ ECS™ Liner Inspection and Maintenance Procedure

1.0 Secondary Containment Liners

- 1.1 Liner should be relatively clean and dry for inspection.
- 1.2 Inspect all penetrations closely, ensuring no small tears or mechanical stress is evident. It is important to detect problems early and relieve stress on the liner by releasing existing pipe connection and reapplying. This will prevent major failure due to shifting penetrations.
- 1.3 Inspect all bonded transition areas where liner joins to concrete or metal. Look for areas of failing adhesion. If any areas of concern are observed, do a pick test (ASTM D4437) with a blunt instrument like a screwdriver to test for weak areas. Cut out loose material and re-prime then apply fresh liner.
- 1.4 Inspect entire surface of enclosure looking for suspected holes; any suspected flaws or areas of concern must be vacuum box tested (ASTM D 5641) and repaired if necessary. Check entire area for blisters or cracking. Blisters and cracks must be cut out, the underlying surface cleaned and re-sprayed.
- 1.5 Inspect any joints between pre-sprayed panels. Look for any signs of poor adhesion or mechanical stress on the joints. Suspected poor adhesion should be pick tested (ASTM D4437) and cut out and replaced if any adhesion problems exist. Mechanical stress can occur due to ground shifting or excessive thermal contraction due to an extreme cold period. Mechanical stress will weaken the joined area and the area must be cut out and re-sprayed to relieve stress and restore physical properties.
- 1.6 Choose an area of the liner with maximum sun exposure and carefully inspect for weathering damage. Polyurea will naturally discolour and lose gloss due to exposure to sunlight and weather. This is not damage. Damage due to weathering will first appear as micro-cracking which should be inspected in a few areas under a magnifying glass. Polyureas weather extremely well, and this has not been an issue since WEC began installing these liners.
- 1.7 Small samples for destructive testing should be cut from the liner in the most weather- prone area; samples will be destructively tested by WEC (Tensile Strength and Elongation by ASTM D412, Tear Resistance by ASTM D624) to check for degradation of liner properties. Samples should be cut from an area which is easy to patch.
- 1.8 Look for any areas of “trampolining” where the liner is no longer supported by the underlying soil. This is usually a sign of large scale differential settlement in the soil, or could be a sign of a leak where rain water has eroded soil. This must be addressed by an earthworks contractor and repaired, as in the event of a major spill an unsupported liner can fail.
- 1.9 All repairs must be vacuum box tested (ASTM D5641) when on a flat surface; pick tested (ASTM D 4437) when at a transition.

2.0 Primary Containment Pond Liners

2.1 Water level should be drawn down as far as possible.

2.2 Inspect as above but pay special attention to:

- a. slumping on slopes which can be a sign of leak or slope instability which can put pressure on the liner;
- b. low spots or uneven surface which can be a sign of a leak.