REPAIR

and

REPAINT

GUIDELINES

(Liquid Rubber (EPDM) or Acrylink G)

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REPAIR and REPAINT GUIDELINES
For
CONVAULT TANKS

I. Introduction

While Convault tanks have been designed and manufactured so that they require little maintenance, they still should have regularly scheduled inspections and maintenance. Small cracks in concrete could result from normal everyday expansion and contraction. Such cracks will not affect the primary or secondary containment, fire protection capabilities or structural integrity of the tanks. However, since cracks can absorb and retain water, in a colder climate there is a possibility that water freeze and thaw process may cause erosion of the concrete. Tank owners should have a regular maintenance program to inspect their tanks, repair cracks and refinish the tanks if necessary. The refinishing interval may vary depending on geographic conditions, ambient conditions, and the exterior finish but should be considered at least every three to five years. Refinishing of the tank and repairing of small cracks are not covered under the general tank warranty. If you have questions about the type of exterior finish on your tank you should contact the local manufacturer.

Note: Read ALL instructions on pages 1-8 before using these procedures. The order of items in this document may not match the order of repairs required on the job, depending on the original finish used on the tank, the condition of the tank and other job specific circumstances.

II. Summary of Sequence:

If there is water in the interstice, it should be pumped or vacuumed out. See paragraph B of the attached CONVAULT VACUUM PAINTING PROCEDURE for pumping water out of interstice.

Generally the tank should be pressure washed and scrubbed to remove general dirt, loose paint and chalking paint. Then any remaining decals, chipped, flaked or loose paint should be removed, cracks should be cleaned and if necessary grooved, any loose caulking removed from around pipe nipples, and all smooth surfaces should be roughed up using sandpaper or wire brush.

The tank should then be pressure washed again to remove dust and loose materials generated during the preparation process. After letting the tank dry, the pipes can be painted as required and concrete cracks repaired as described in this document. After paint on pipes has cured sufficiently, caulk around nipples. After everything has cured (let caulk cure a minimum of 1 hour), apply paint to top and/or sides as needed. If water has seeped into the concrete, evidenced by the calcification deposits on the tank walls, you should paint the top first and wait a few weeks or until the concrete is dry before painting the sides. Otherwise, water in the concrete may push out on the paint causing bubbles. If your tank is dry, we recommend that the sides be painted first as curing is typically quicker for the paint used on the sides than it is for the Liquid Rubber top coat. In some cases you may

not need to paint the walls. While painting of the top and top bevel is critical to preventing water intrusion, painting of the walls is mostly cosmetic.

III. Preparation.

A. Pressure wash the area that is to be repaired and repainted. This will remove the top layer of dirt and loose decals.

B. Remove decals and signs from area that is to be repainted. Decals can be removed with the use of a single edge razor blade or a sharp putty knife. Plastic signs can be removed by driving a wedge under the sign. Some aluminum signs are attached with screws which will have to be removed. Do NOT REMOVE the UL Label. It should be covered with masking tape prior to painting.

C. Remove all chipped, flaked or loose paint from the tank surface. It is essential to have a solid surface for the new paint to stick.

D. Sand any smooth surface to be painted and lightly sand non-smooth areas on tank top.

E. Clean off old and loose caulking around the nipples at the tank top with a sharp pointed object to approximately ¼"depth. Be careful not to damage the powder coating on the pipe nipple. Lightly sand the lower ½ inch of pipe nipples.

F. Clean area of calcification with a scraper, wire brush, or use a grinder with wire brush wheel. A light acid such as white vinegar or muriatic acid may also be used to help remove the calcification.

G. Wash the vault with a scrub brush and detergent and pressure wash it until clean to remove all loose debris, dust and other materials. If any area of the vault has been contaminated with diesel fuel, take extra effort to make sure all residue has been removed. Do not use EPDM on this area.

H. After washing, allow the vault to dry prior to painting. The surface must be clean, dry and above 40 degrees F.

IV. Concrete Crack Repairs

Note: While repairing of cracks in the top of the tank and the top bevel is critical to preventing water intrusion, repairing of cracks in the walls is mostly **cosmetic.** Crack repair to the walls will usually make cracks more obvious and require painting of the sides to restore a pleasant appearance. If the tank has taken on water through the cracks in the top, you must wait till the top is sealed and the tank has dried before painting the sides. Drying may take weeks. These factors should be taken into account before deciding to repair cracks in the wall.

A. Tanks with Smooth Finish
   1. Cracks larger than 1/16”
      a) Make a 1/8” to ¼” deep by 1/8” to ¼” wide groove in the concrete.
      b) Clean crack with compressed air.
      c) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
      d) Caulk using DAP “Concrete and Mortar Filler and Sealer”. Overfill slightly as the DAP will shrink, or let cure and refill. You may have to refill the groove two or even three times to get it level.
      e) Smooth sealer to the same height of original surface leaving a smooth transition.
      f) Allow a minimum of one hour to cure.
   2. Cracks 1/16” or smaller
      a) Clean crack with compressed air.
      b) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
      c) Caulk using DAP “Concrete and Mortar Filler and Sealer”.
      d) Smooth sealer to the same height of original surface leaving a smooth transition.
      e) Allow a minimum of one hour to cure.

B. Tanks with Exposed Aggregate or Natural Finish
   1. Cracks on tank top and top bevels
      a) Cracks larger than 1/16”
         (1) Make a 1/8” to ¼” deep by 1/8” to ¼” wide groove in the concrete.
         (2) Clean crack with compressed air.
         (3) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
         (4) Caulk using DAP “Concrete and Mortar Filler and Sealer”. Overfill slightly as the DAP will shrink, or let cure and refill. You may have to refill the groove two or even three times to get it level.
         (5) Smooth sealer to the same height of original surface leaving a smooth transition.
         (6) Allow a minimum of one hour to cure.
      b) Cracks 1/16” or smaller
         (1) Clean crack with compressed air.
         (2) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
         (3) Caulk using DAP “Concrete and Mortar Filler and Sealer”.
         (4) Smooth sealer to the same height of original surface leaving a smooth transition.
         (5) Allow a minimum of one hour to cure.
   2. Cracks on tank walls and Lower bevels
      a) Clean crack with compressed air.
      b) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
      c) Seal crack using Devcon 5-minute Flow-Mix two-part epoxy sealer. You will need to apply small amounts at a time as it is very liquid when first applied. If the

vacuum is pulling the epoxy in so much that it is recreating a hole, reduce or temporarily remove the vacuum until that hole is sealed.

d) Immediately smooth sealer to the same height of original surface leaving a smooth transition. It is hard to smooth the epoxy once it begins to cure.

e) Allow a minimum of ten minutes to cure.

C. Tanks with STO or Perma Crete Finish

1. Cracks on tank top and top bevels
   a) Cracks larger than 1/16”
      (1) Make a 1/8” to ¼” deep by 1/8” to ¼” wide groove in the concrete.
      (2) Clean crack with compressed air.
      (3) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
      (4) Caulk using DAP “Concrete and Mortar Filler and Sealer”. Overfill slightly as the DAP will shrink, or let cure and refill. You may have to refill the groove two or even three times to get it level.
      (5) Smooth sealer to the same height of original surface leaving a smooth transition.
      (6) Allow a minimum of one hour to cure.
   b) Cracks 1/16” or smaller
      (1) Clean crack with compressed air.
      (2) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
      (3) Caulk using DAP “Concrete and Mortar Filler and Sealer”.
      (4) Smooth sealer to the same height of original surface leaving a smooth transition.
      (5) Allow a minimum of one hour to cure.
2. Cracks on tank walls and Lower bevels
   a) Clean crack with compressed air.
   b) Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
   c) Seal crack using Devcon 5-minute Flow-Mix two-part epoxy sealer. You will need to apply small amounts at a time as it is very liquid when first applied. If the vacuum is pulling the epoxy in so much that it is recreating a hole, reduce or temporarily remove the vacuum until that hole is sealed.
   d) Immediately smooth sealer to the same height of original surface leaving a smooth transition. It is hard to smooth the epoxy once it begins to cure.
   e) Allow a minimum of ten minutes to cure.

V. Repainting Exposed Steel

A. It is imperative that all nipples are properly protected from inclement weather conditions.

B. Check all exposed metal nipples, manway and spill container.

C. Remove any visible rust and old paint with wire brush or scraper.

D. If the UL plate is attached to a pipe, cover it with masking tape to prevent coating it with paint.

E. Apply good quality rust inhibitor paint such as Rust-oleum on all exposed metal. Unprotected steel exposed to humid saline ocean weather will severely rust in a short period of time.

VI. Concrete Repainting Procedure

Note: If water has seeped into the concrete, evidenced by the calcification deposits on the tank walls or moisture in the area of a crack, you should paint the tank top first and wait a few weeks or until the concrete is dry before painting the sides. The best time to check if the concrete is dry is immediately after the tank has been refilled with product**.**

A. Tank Walls and Bottom Bevels.

1. Remove decals and signs, sand, pressure wash, repair cracks and prepare surface as detailed in Sections III through IV above.
2. If the UL Label is attached to the side of the tank, cover it with masking tape.
3. Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
4. Paint the Vault walls and bottom bevels using an appropriate coating. Follow carefully the manufacturer instructions for storing, mixing and application of the paint.
5. If your tank walls have a **Smooth Finish**, a **STO Finish**, or a **Perma Crete Finish**, the following paints are acceptable
   a) Any quality outdoor latex.
   b) Imron 2.8 HG by Dupont, Manufactured by Passonno Paints, Watervliet, NY
6. If your tank walls have an **Exposed** A**ggregat**e **Finish**, you may consider resealing the walls of your tank using:
   a) Rhoplex AC-630 Emulsion, acrylic polymer.
   b) THORO EA-SEALER WB HI GLOSS.
7. Affix new signage on the tank. Signs or decals may be purchased from your Convault representatives or local petroleum equipment supplier. See VII B below for affixing signs.

B. Tank Top and Top Bevels

1. Remove decals and signs, sand surfaces, pressure wash, repair cracks and prepare surface and pipe nipples as detailed in Sections III through V above.
2. You may wish to mask all nipples starting at ½" above the tank top so that the concrete coating will only be on the lower ½ inch of the pipe.
3. If the tank wall finish is smooth and you are only painting the top, you may want to mask the tank wall immediately below the lower edge of top bevels to obtain an even edge. If the tank walls do not have smooth finish (such as having exposed aggregate or STO finish), you will need to carefully paint the bottom edge of the upper bevel so that it has a nice looking edge.

4. Apply a low vacuum to tank interstice. See attached Convault Vacuum Painting procedures.
5. Caulk around the nipples using DAP "Concrete and Mortar Filler and Sealer".
6. Let cure for a minimum of 1 hour.
7. Paint tank top and top bevels using EPDM Liquid Rubber or Acrylink G Roof Coating.

Note: Acrylink G advantages are:

a) it is more fuel resistant than EPDM,
b) it is easier to apply and can be cleaned up with water,
c) cures faster than EPDM,
d) acts more like paint during application,
e) it will adhere to an oil based paint, and
f) it is a one part product, so you don't have to measure a catalyst or waste premixed product.

Acrylink G disadvantages are:

a) it needs at least two coats
b) if you must walk on the first coat and you have any on your shoes it will pull the first coat up off the Convault
c) it can't get wet for a period of time because it dries by evaporation, and
d) it doesn't seem to adhere as well as EPDM to previously painted Convault surface.

EPDM advantages are:

a) it only needs one coat,
b) it cures even in humid conditions
c) if it gets rained on it will not affect the curing, and
d) it has good adhesion to epoxy and raw concrete finishes.

EPDM disadvantages are:

a) it needs warm temperature to cure, (Temperature drops below freezing arrest the cure, but will not damage Liquid Rubber. The cure reaction will resume again whenever adequate temperature returns.)
b) it has a long cure time,
c) it is a two part product requiring mixing,
d) it will not adhere to oil based paint, and
e) it cannot be used on concrete that has been contaminated with diesel fuel or oil.

8. For both paints, **carefully follow the manufacturer instructions** for storing, mixing and application of the paint. Also, please note that the standard color is white. We do not recommend adding any colors since white will better reflect sunshine and heat and therefore result in less vapor emissions to the air and savings in fuel costs. If you must add color to the paint to match the existing color of the tank, refer to manufacturer's product information. If you are using Acrylink G, skip to paragraph #10. If you are using EPDM, continue at #9.

9. Painting with EPDM

a) To help you purchase and mix the proper amount of paint for one tank, we have attached a table showing you the square footage of tank top including the top bevel for different tank sizes and estimated amount of paint required. **We recommend that you mix full units to insure proper amount of catalyst is used.**

b) The paint manufacturer suggests that on average you will be using one gallon of paint per 30 square ft area. Try to apply the EPDM as evenly as possible and reduce the occurrence of puddles.

c) A brush is necessary for placing the product under piping or other areas where the roller cannot reach, for finishing around nipples, and for cutting in the bevel. It is better to finish the brushwork on the top first so you have better working area. We have found that pouring the product as evenly as possible is preferable to pouring in one place and trying to move the product. Once the product is spread, it can be smoothed out with a short nap (1/4") roller. The consistency of EPDM is similar to honey. It will string, and slowly flow to the low points. We do not recommend painting in windy conditions as every time you raise a brush or roller the wind will blow the resulting string or sheet of paint.

d) Do not place too thick a coating on the bevels as it will migrate down off of the bevel and onto the sides over time. Rolling at a 45 degree angle to the bevel and using a roller less than 50% saturated with paint seems to work best. If you do place a thick coating on the bevels, check it periodically and keep pulling it back up until it becomes stiff.

e) On large tanks you must work from one end, finishing as you go. You should use about 1 gallon for each 30 sq ft, or a little more than 3 1/2 feet of length of the large (8 ft wide) tanks. It will take 4 to 8 hours to place the EPDM on a large tank that has minimum brush work. On a hot day the EPDM should be kept in the shade after mixing, or even in ice or it will begin thickening and become hard to work toward the end of the job. "In 75 deg F to 85 deg F, the product will start to thicken up in about 4 hours…" EPDM cures at temperatures above 55 degrees and humidity does not affect the curing process. Skip to #11

10. Painting with Acrylink G

a) To help you purchase the proper amount of paint for one tank, we have attached a table showing you the square footage of tank top including the top bevel for different tank sizes and estimated amount of paint required.

b) The paint manufacturer suggests that for both coats you will be using a total of one gallon of paint per 27 square ft area. Remember that the paint is to be put on in at least two coats, so you may get 40 to 50 square feet per gallon on the base coat. We suggest that you use a roller to apply all coats. Try to apply the Acrylink G as evenly as possible and reduce the occurrence of puddles.

c) A brush is necessary for placing the product under piping or other areas where the roller cannot reach, for finishing around nipples, and for cutting in the bevel. It is better to finish the brushwork on the top first so you have better working area.

d) On large tanks you must work from one end, finishing as you go. The paint should be kept in the shade and sealed, or it will cure in the bucket. Acrylink G should not be applied if rainfall or freezing temperatures are expected. See manufacturer's recommendations.

e) Acrylink G sticks very well to itself, so be very careful when applying the second coat. If you get any paint on the bottom of your shoes and walk on the first coat, it may pull the first coat off the tank. Some applicators wear paper booties when applying the second coat. The Manufacturer recommends that each coat be allowed to cure for at least four (4) hours, depending upon temperature and humidity conditions, before a subsequent coat is applied.

11. Once an area is coated check the finish of the tank, and fill in any pinholes where the vacuum may have pulled the paint into the concrete. If you have extra paint it can be applied to areas with a thinner coat.

VII. Affix New Signage On Tank.

A. Signs or decals may be purchased from your Convault representatives or local petroleum equipment supplier. Peel-and-stick decals will not stick to EPDM or Acrylink G.

B. The best method for attaching the placard type signage to the tank is to use two types of adhesive in conjunction with each other. DAP "Strong Stik Instant Grab Adhesive" will provide long term adhesion. However, though the name includes the words "Instant Grab", the Technical Bulletin states that it has 15 minutes maneuverability. This means it will slide down the tank during the 15 minutes, or even fall off. Use Devcon "5-minute two-part epoxy sealer" to hold it in place while the DAP cures. First place thin strips of DAP "Strong Stik Instant Grab Adhesive" approximately every three inches in a vertical orientation on the back of the placard and a continuous strip across the top. It is best to make short (not continuous) horizontal strips on the bottom of the placard so that it will not trap rain and condensation behind the sign. Lay the placard flat and place strips of Devcon in-between the strips of DAP. Wait about 2 to 3 minutes **from the time you began** applying the Devcon depending on the temperature. Then apply the decal on the tank, holding it in place till the Devcon sets. If you don't wait, the Devcon will drip out. If you wait too long, the Devcon will set and will not adhere to the tank coating. Timing on the Devcon is critical for good results. After the Devcon is set, seal the top and side edges of the placard with DAP "Concrete and Mortar Filler and Sealer".

VIII. Purchasing Materials

A. DAP "Concrete and Mortar Filler and Sealer" can be purchased at your local hardware store or store such as Lowe's or Home Depot.

B. DAP "Strong Stik Instant Grab Adhesive" is a relatively new product that may or may not be at your local hardware store, or store such as Lowe's or Home Depot. A partial list of local sellers can be found at http://www.dap.com/rpm_poi.asp?frmInputProduct=398, or you can get more accurate purchasing information at http://www.dap.com/ask_the_expert.aspx.

C. Devcon 5-minute Flow-Mix two-part epoxy sealer (part number 20445) can be purchased at hardware stores, Wal-Mart, or some auto parts stores. The best thing to do is go to http://www.itwconsumer.com/wheretobuy.aspx, scroll down to "Flow-Mix 5-minute epoxy" and enter your state. This will give you a list of stores that sell the product. We recommend you use the Flow-mix (part number 20445) because the tip mixes the two parts as it dispenses the product. Otherwise you must mix the parts manually which may result in improper mixing, or the product may harden before it can be used. Note: you only have 5 minutes per mixing tip, so have everything ready before opening the unit.

D. Acrylink G Roof Coating can be ordered directly from Acrylink G in Texas. http://www.acrylinkg.com or call (800) 237-8759.

E. EPDM Liquid Rubber can be ordered directly from EPDM Coatings online. It can be ordered in 1 gallon containers or 5 gallon containers. Go to http://www.liquid-roof.com or call 610-298-1989 or email info@epdmcoatings.com. They are in located in Pennsylvania**.**

F. Outdoor latex and paints can be purchased locally.

G. Imron 2.8 HG by Dupont, Manufactured by Passonno Paints, Watervliet, NY More information is available at https://www.bennette.com/vcart/item/?item=1873 and http://www.bennette.com/pdf/Imron2-8HG.pdf

H. Rhoplex AC-630 Emulsion, acrylic polymer, manufactured by Rohm and Haas Company, Philadelphia, PA can be purchased from ChemCentral 708-594-7000 or go to http://www.chemcentral.com/locations/ The minimum quantity is 5 gallons.

I. THORO EA-SEALER WB HI GLOSS by BASF Building Systems, Shakopee, MN http://www.buildingsystems.basf.com/localRepresentativeMap.asp **to find local rep, or** http://buildsite.com/dbderived/thoro/derived_files/derived254792.pdf for more information.

EPDM Liquid Rubber Requirements
Based on
Coverage of approximately 30 sq. ft per Gallon

Tank Size	Tank Length	Tank Width	Sq. ft. Tank Top Including Top Bevels	Required Gallons Paint Per Tank	Gallons Paint Per Tank (Mostly Rounded Up)
250	7' 8"	3' 9"	32	1.07	**1**
500	11'	4' 6"	54	1.80	**2**
1000	11'	5' 8 '	67	2.23	**3**
2000	11' 3"	8'	95	3.17	**3**
3000LP	11' 3"	8'	95	3.17	**3**
3000DW	12' 2"	8'	103	3.43	**4**
3000SP	17' 7"	8'	148	4.93	**5**
4000LP	17' 7"	8'	148	4.93	**5**
4000DW	12' 2"	8'	103	3.43	**4**
4000HP	12' 6"	8'	106	3.53	**4**
5200G	15' 6"	8'	131	4.37	**5**
6000	17' 7"	8'	148	4.93	**5**
6700	28' 7"	8'	239	7.97	**8**
8000	23' 1"	8'	193	6.43	**7**
10000	28' 7"	8'	239	7.97	**8**
12000	34' 1"	8'	284	9.47	**10**

Acrylink G Requirements Based on Coverage of approximately 27 sq. ft per Gallon				
Tank Size	**Tank Length**	**Tank Width**	**Sq. ft. Tank Top Including Top Bevels**	**Gallons of Paint per tank**
250	7' 8"	3' 9"	32.0	1.2
500	11'	4' 6"	53.9	2.0
1000	11'	5' 8 '	67.0	2.5
2000	11' 3"	8'	95.4	3.5
3000LP	11' 3"	8'	95.4	3.5
3000DW	12' 2"	8'	103.0	3.8
3000SP	17' 7"	8'	147.8	5.5
4000LP	17' 7"	8'	147.8	5.5
4000DW	12' 2"	8'	103.0	3.8
4000HP	12' 6"	8'	105.7	3.9
5200G	15' 6"	8'	130.6	4.8
6000	17' 7"	8'	147.8	5.5
6700	28' 7"	8'	238.8	8.8
8000	23' 1"	8'	193.3	7.2
10000	28' 7"	8'	238.8	8.8
12000	34' 1"	8'	284.4	10.5

Area of ConVault End and Side Walls (see Note 1)

Models (see Note 2)	Tank Length	Tank Width	Tank Body Height	End and Side Walls Area (sqft)
250	7' 8"	3' 9"	2' 11"	**61**
500	11'	4' 6"	3'	**87**
1000	11'	5' 8 '	4'	**125**
2000	11' 3"	8'	5' 2"	**182**
3000LP	11' 3"	8'	6' 11"	**250**
3000DW	12' 2"	8'	6' 7"	**247**
3000SP	17' 7"	8'	4' 10"	**227**
4000LP	17' 7"	8'	5' 11"	**291**
4000DW	12' 2"	8'	8' 3"	**321**
4000HP	12' 6"	8'	8' 3"	**326**
5200G	15' 6"	8'	8' 3"	**375**
6000	17' 7"	8'	8' 3"	**408**
6700LP	28' 7"	8'	5' 11"	**417**
8000	23' 1"	8'	8' 3"	**497**
10000	28' 7"	8'	8' 3"	**586**
12000	34' 1"	8'	8' 3"	**675**

Note 1: This square footage does not include the top bevel as it is assumed that it was painted with EPDM or Acrylink G.

Note 2: If you have a tank split, use the aggregate total of your unit to find the correct line above. The number of compartments in the unit does not affect the area of the external surface.

CONVAULT

VACUUM PAINTING

PROCEDURES

CONVAULT VACUUM PAINTING PROCEDURE

The purpose of this procedure is to provide an improved method of coating the tank and to help seal around nipples and small cracks in the concrete vault.

A. Prepare exterior tank surfaces by sanding and washing in accordance with Convault recommended procedures.

B. Check the interstice for liquid in the Leak Detector Tube. If it does not contain any visible liquid skip to step **B2**. If it contains liquid, determine if it is water or fuel. If it is fuel contact ConVault immediately. If the tank top has cracked or the caulking around the nipples on tank top has deteriorated, it is possible that water has seeped into the interstice. If water has entered in the interstice, it should be removed using a combination of siphoning, pumping and/or using vacuum system. To remove the water, proceed as follows:

1. **Siphoning and/or Pumping out the Water**
   a) If the tank has a communication nipple, remove the cap. Make sure you keep this cap, as it will need to be reinstalled after you have finished the painting procedure.
   b) Remove the cap or any monitoring sensors from the leak detector tube.
   c) Insert a ½" or ¾" hose into the leak detector tube and extend it all the way to the bottom of the leak detector tube. We recommend a transparent hose so you can see what is going on.
   d) Let the other end of the hose on the ground to siphon the water out. You will have to prime the siphoning operation by sucking the air from the hose.
   e) Let the water completely drain from the leak detector tube.
   f) Alternatively, you may use a hand held pump to pump the water out of the leak detector tube. Either electric driven or manually operated pumps can do the job.
   g) It will take some time for the water to drain from the outlying areas of the interstice to the leak detector tube. Therefore you may have to give time for the water to accumulate in the leak detector tube and you may have to repeat steps a) through f) a couple of times.
2. **Using vacuum to remove the Water**
   a) If the tank has a communication nipple remove the cap (it may have been removed in 1.a. above) and check if the cap contains a slot in the threads that lets it breathe. If the communication nipple has a slot, replace the cap with a regular one and tighten it to make it airtight. Otherwise reinstall the cap and tighten it to make it airtight. Make sure you keep the original cap, as it will need to be reinstalled after you have finished the painting procedure.

<u>CAUTION</u>: Make sure you don't accidentally attach the pressure side of the vacuum pump to the interstice, as you will <u>cause the vault walls to fail</u> or implode the primary tank if you over pressurize the secondary containment.

b) Connect a vacuum pump to the leak detector tube using the system recommended in Figures 1 through 4. The clear tube inside the leak detector should extend to the bottom of the interstice. If you have a square leak detector tube, use Figure 4 in place of Figure 3.

WARNING **When vacuum coating DO NOT pressurize the primary steel tank.**

c) Surge Tank:
   i) The small tank (surge tank) is placed in the middle of the system because you may have residual water in the interstice that will be squeezed out when the vacuum is applied. Most vacuum pumps warn you not to pump water, so this is a way to capture the water before it gets to the pump.
   ii) If there is a lot of water, you will have to stop and empty the surge tank, and start over with the vacuum. It is best to shut off valve 2 before you empty the tank so you don't lose all vacuum.
   iii) Most people use a tank that is normally used to carry pressurized air around, but you could make one from large PVC pipe and caps. It will be under vacuum, so it won't explode.
   iv) The tank also acts as a vacuum reservoir if there are leaks during the coating process.

d) The pressure side of the pump is generally just open to the atmosphere to release the air pumped from the interstice. **Make sure you don't accidentally hook the pressure side of the pump to the interstice or you may destroy the ConVault.**

CAUTION: You will cause the vault walls to fail if you over pressurize the secondary containment.

e) The vacuum pump we use is an older version of the GAST DOA-P707-FB (http://www.grainger.com/Grainger/items/4Z024), which can be purchased from Grainger. You don't have to use this model, but it is an option. Also available is Item# 5KA84, which can attain a higher vacuum but is more expensive.
http://www.grainger.com/Grainger/wwg/start.shtml

f) Close Valve 3 and open Valve1 and Valve 2. Start the vacuum pump and monitor the vacuum rise in the interstice. Gradually increase the vacuum in the annular space to 10 inches Hg. This may take only 30 seconds on a small tank. You will be able to hear the water entering the surge tank, and see the water moving through the clear tube as the vacuum pump starts pulling the water from the interstice.

g) Increase the vacuum to 10 inch HG and maintain the vacuum until you are no longer pulling any water or moisture from the interstice.

C. Thoroughly examine the tank's finished concrete surface for cracks. Concrete cracks should be repaired and sealed in accordance with Convault guidelines.

D. Close Valve 3 and open Valve1 and Valve 2. Gradually increase the vacuum in the annular space to 10 inches Hg. This may take only 30 seconds on a small tank.

   NOTE: We recommend 10 inches Hg vacuum. Excessive vacuum levels may cause nipples to pop up through the concrete or cause the spill containment to tilt, creating hairline cracks.

E. Close Valve 2, and shutdown the vacuum pump.

F. If necessary, use Valve 3 to reduce the vacuum by bleeding air into the annular space. Bring the vacuum down to 10 inches.

G. Apply nipple caulking and tank coating under 10 inch of vacuum. If vacuum falls below 5 inch, restart vacuum pump and bring the vacuum level back to 10 inch.

H. When caulking and coating is completed maintain the 10 inch of vacuum about 5 minutes and then disconnect the vacuum system from the tank

I. Reinstall and tighten the original cap on the communication nipple, and reinstall the original accessories on the leak detector tube.

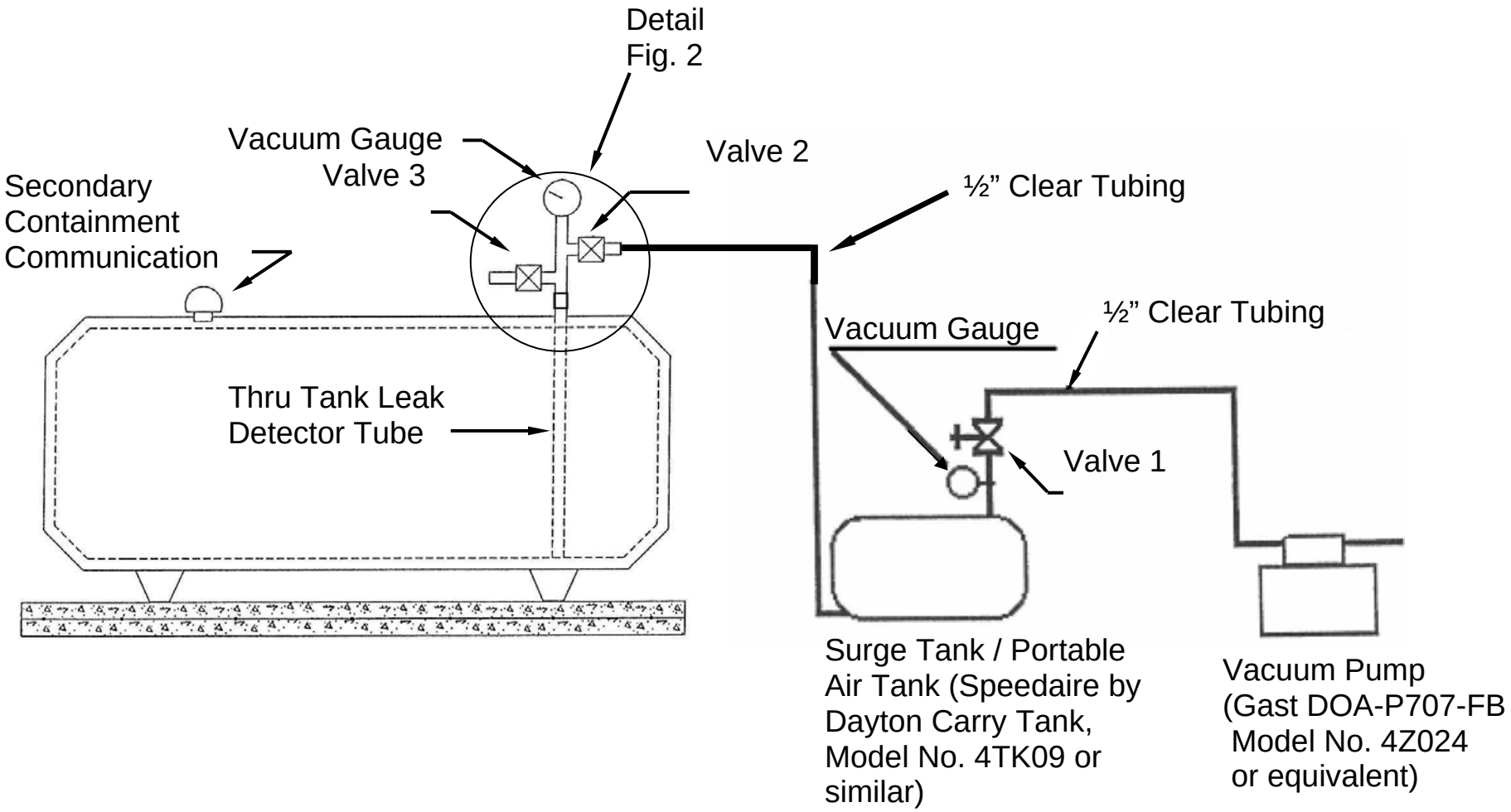

FIGURE NO. 1
EQUIPMENT & PIPING ARRANGEMENT

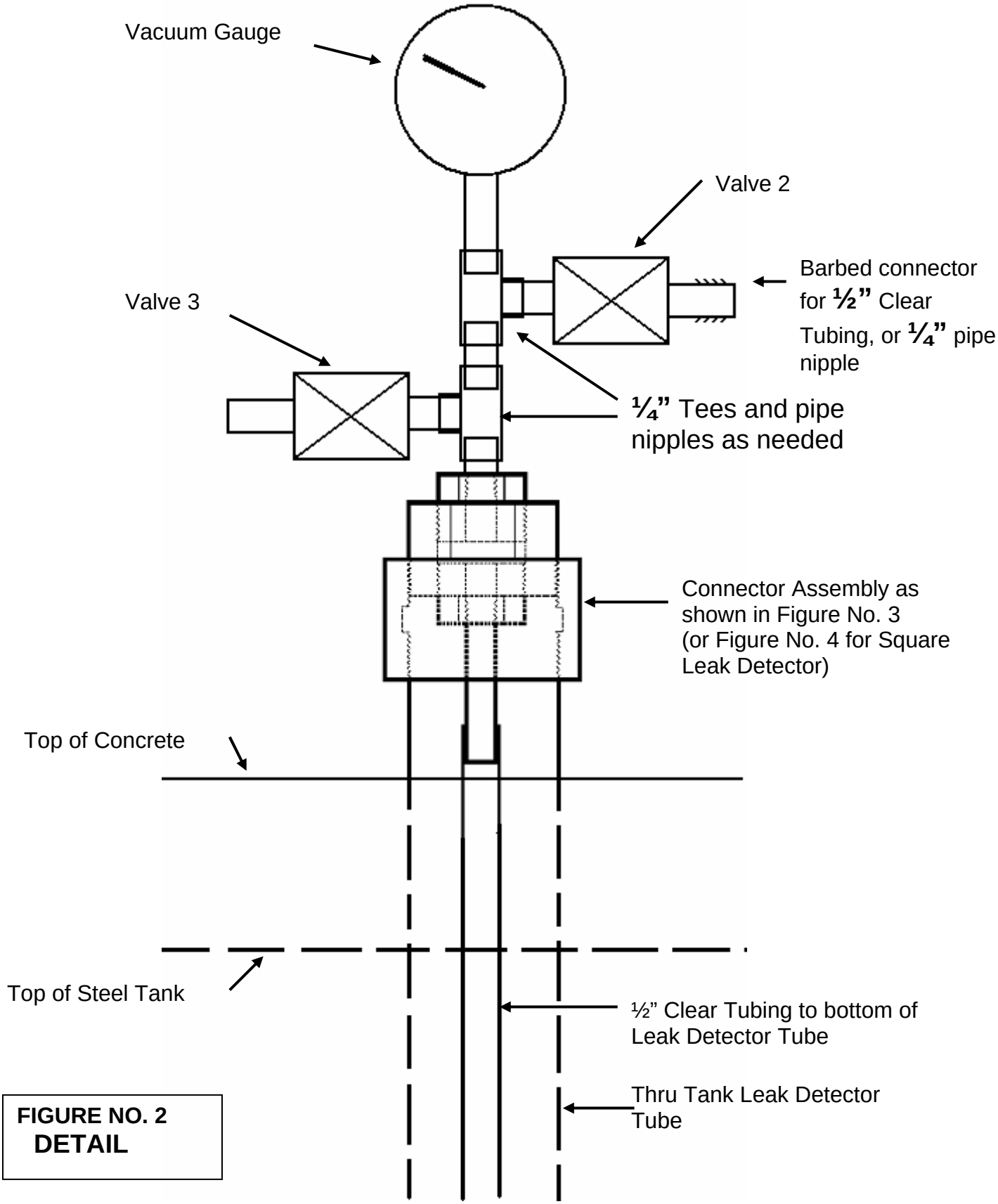

FIGURE NO. 2
DETAIL

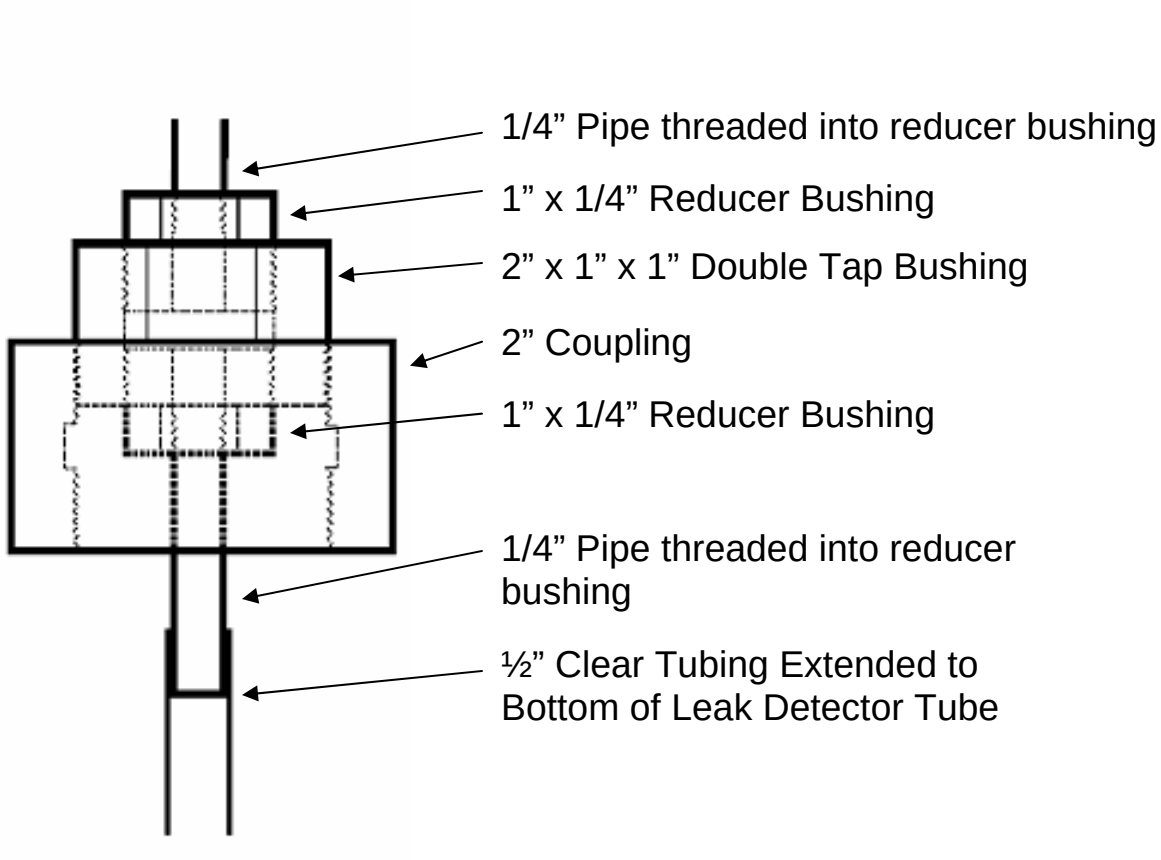

FIGURE NO. 3 Detail

LEAK DETECTOR TUBE
DETAILS OF TUBING CONNECTIONS

This item works as an expansion plug. You must add enough washers so that when the Tee is tightened it pushes down the washers, compressing the rubber and forcing it out against the inside walls of the square leak detector tube. You may use the coupling on the bottom for minor adjustments.

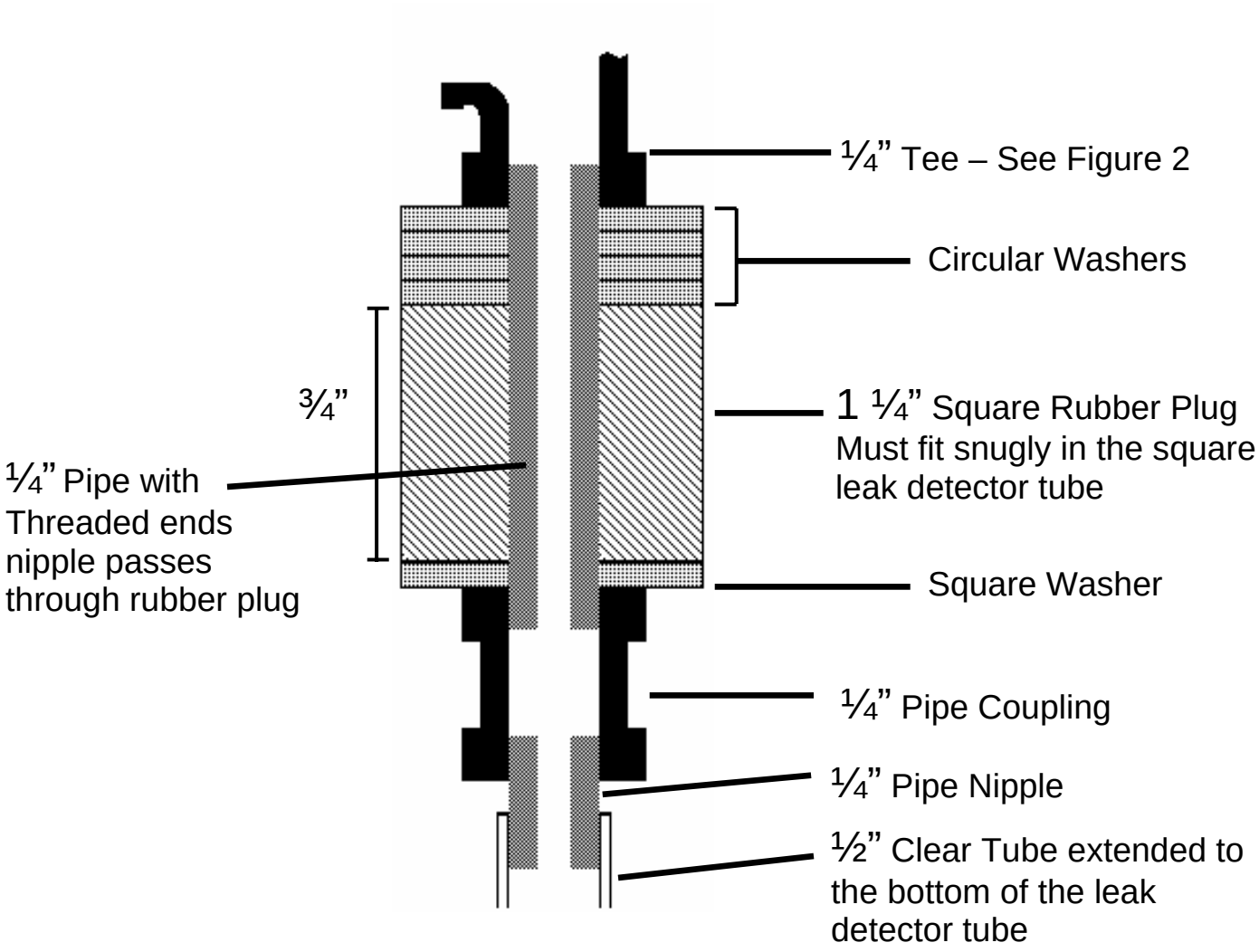

FIGURE NO. 4
TUBING CONNECTIONS TO SQUARE LEAK DETECTOR TUBE

DAP
DEVCON

PRODUCT INFORMATION

ConVault, Inc., 4109 E. Zeering Rd, Denair, CA 95316, (800) 222-7099 or (209) 632-7571
Dec 2007

You'll find us in all the right places.®

http://www.dap.com/product_details.aspx?product_id=18

DAP Products > Caulks and Sealants > Specialty Sealants

DAP® Concrete and Mortar Filler and Sealant

High performance, latex-based sealant formulated to repair cracks and holes in concrete, mortar and masonry. Contains silicone additives for improved adhesion and water resistance. Forms a durable, flexible and watertight seal. Resists gas, oil, grease and salt. Interior/exterior use. Paintable. Water clean-up.

Find a Retailer

Technical Information

MSDS

TDB

Case Code	Product Code	Unit Size	Color	UPC #	Case Pack	Weight	Dimensions	Cases / Pallet	MSDS	Tech Bulletin
18096	18021	10.1 fl. oz.	Gray	7079818021	12	14 lbs.	8x6x12	108	10010	00010010

http://www.dap.com/product_details.aspx?product_id=398

DAP Products > Construction Adhesives > Specialty Adhesives

DAP® STRONGSTIK® Instant Grab Adhesive

An instant grab adhesive that replaces nails and screws by holding projects in place instantly, yet it is repositionable for up to 15 minutes. Can be used for some vertical or overhead applications. Just one ounce can hold a three pound object. The slim 5.5 fluid ounce tube is easy to hold with a stand-up flip top cap for convenience. Works on most household surfaces and cleans up with soap & water. Indoor/Outdoor.

Find a Retailer

Technical Information

MSDS

TDB

Case Code	Product Code	Unit Size	Color	UPC #	Case Pack	Weight	Dimensions	Cases / Pallet	MSDS	Tech Bulletin
01310	01310	5.5 fl. oz.	White	7079801310	12	6.35 lbs.	9.44x7x4.75	225	00079983	00079983

Devcon, a trademark of
ITW PERFORMANCE POLYMERS
(i) Consumer Division
2107 W. Blue Heron Blvd.
Riviera Beach, FL 33404
800-375-2525 / 561-845-2425

http://www.itwconsumer.com/catalog.aspx?prodID=205

FLOW-MIX® 5 MINUTE® EPOXY

State-of-the-art syringe automatically mixes epoxy hardener and resin during application. Eliminates hand mixing, messy clean up and the difficulty of applying to your surface. Comes with two Instant-Mix nozzles. Flow-Mix® 5 Minute® is: High strength, 1,500 psi. Sets up in 5 minutes and dries clear, resistant to most chemicals. All purpose bonding and repairs. Works best on metals, wood, concrete, ceramic, glass and china.

FLOW-MIX® 5 MINUTOS®

Jeringuilla moderna mezcla automáticamente la sustancia que sirve para endurecer epoxi y resina durante la aplicación. Elimina tener que mezclar a mano, limpiar el area despues de uso y hace mas facil la aplicación a su superficie. Viene con dos boquillas. Gran potencia de adhesión, 1,500 psi. Seca en 5 minutos y es transparente, resiste la mayoría de los productos químicos. Para todo tipo de pegado y reparaciones. Funciona mejor en metales, madera, concreto, cerámica, cristal y porcelana. Disponible en tubos, Dev-Tube™ y botellas.

Find MSDS

PART NO.	PACKAGE
20445	14 ml syinge carded w/2 auto mix nozzles

Click here to find a store that sells this product.
http://www.itwconsumer.com/wheretobuy.aspx?prodID=205

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(i) Consumer Division
2107 W. Blue Heron Blvd.
Riviera Beach, FL 33404
800-375-2525 / 561-845-2425

FLOW-MIX 5-Minute Epoxy **Part #20445**
Non Regulated

Strength: 1500 psi

Water-resistant: Yes
Set color: Clear **Chemical resistant:** Yes
Working/Set Time: 5 Minutes **Flexible bond**: No
Can be handled in: 15 Minutes
Full bond strength: 1 Hour
Temperature effects: Not recommended above 200ºF (93ºC).

Works best on: Steel, Concrete, Fiberglass, Glass, Metal, Rubber

Application Information: Devcon's exclusive FLOW-MIX applicator allows you to dispense mixed epoxy that can be applied directly to the surfaces to be glued.
1) Roughen, clean and dry surfaces to be bonded or repaired. Remove plastic storage cap from center of black plunger. 2) Turn nozzle end up and pull plunger back slightly (1/8"). Allow air bubbles to rise to top. Snap off and discard end of syringe.
3) Insert nozzle over opening and push past prongs. Rotate 90º to lock in place. (Note: nozzle must be locked into place before pushing plunger.) 4) Push plunger evenly to dispense equal amounts of hardener and resin. Place nozzle directly onto work surface. Run a line of epoxy on joint, crack or broken area to be repaired. Bond sets in 5 minutes and item can be handled in 15 minutes. Full strength in 1 hour. 5) Remove nozzle and discard. Wipe syringe end clean and snap on storage cap. Does not bond to Polyethylene or Polypropylene Plastics.

Removal Methods

Before it has hardened: Remove excess material immediately with damp cloth. Can also use mineral spirits.

After Cure:
Metal/Ceramic/Glass: Soak in hot water, if possible. Heat in excess of 350ºF will weaken adhesive. Solvents that can be used: Isopropyl alcohol, acetone, Methylene chloride, or other solvent.
Fabric/Wood: Before cure, flush fabric immediately with warm water or wipe wood with a damp cloth. It is not possible to remove cured epoxy from fabric. On wood, sand the cured material from the wood.
Eye Contact: Flush with water for 15 minutes & get medical attention.
Skin Contact: Remove with soap and water.
Inhalation: Remove to fresh air.
Ingestion: Get immediate medical attention.

EPDM
LIQUID RUBBER

PRODUCT INFORMATION

EPDM coatings

THE ONLY LIQUID EPDM PRODUCT IN THE WORLD

25 YEAR History of Success

EPDM Coatings LLC

The only Liquid EPDM in the world.

EPDM Coatings N.E Sales Office
494 Bridgeport Ave Suite 101
PMB# 342
Shelton CT 06484-4748
610-298-1989

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e-mail info@epdmcoatings.com Website http://www.epdmcoatings.com Blog http://liquidroof.blogspot.com

Image Gallery of Projects

Concrete Application

Custom color on Metal Pipeline Airless

Sprayed application on Corrugated metal

Application over Firestone EPDM

Reinforcement of seams with primer prior to EPDM application

Concrete roof application 25,000 Sq ft area

Customized fish pond coated with Liquid Rubber (yes the application is safe for Fish!)

Before and After Picture of Application on Metal with rust. Rust did not need to be removed

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Liquid Rubber®, which is the ONLY liquid form of EPDM in the world, is a unique form of EPDM rubber. As a liquid, it can conform to any shape of surface, flashing or protrusion, vertical or horizontal, and can be applied easily with a paint brush or roller. When mixed with a catalyst it cures by chemical reaction to form a self adhering solid seamless rubber sheet.

Liquid Rubber® is a versatile coating for a broad range of applications. Its superior protective quality is derived from a unique combination of physical and chemical properties. Its EPDM chemistry provides for long durability, water resistance, a broad temperature tolerance and chemical resistance. As a chemically curing Liquid Rubber® it can form a flexible membrane up to 25 mils thick in one coat.

These properties enable Liquid Rubber® to be used as a one coat system on:

- Metal roofs
- Single ply rubber
- Hypalon and PVC membrane
- Steel and fiberglass siding
- Storage tanks
- Structural steel
- Lumber and plywood
- Concrete and masonry

The exposure environment can vary from high humidity to total immersion; constant or cyclic temperature changes from minus -60 F to 300 F or corrosive environments consisting of vapors, liquids and salt solutions.

Liquid Rubber® is an extremely effective corrosion preventive coating for steel and aluminum. It does not contain any leachable or sacrificial components so its protection does not diminish overtime.

The time needed for the Liquid Rubber® to solidify after it has been catalyzed will vary depending on the temperature. At least two days of cure time should be allotted for most applications. Stationary structures are therefore the most suitable for coating with Liquid Rubber®.

ENVIRONMENTAL IMPACT

Liquid Rubber® meets EPA's limits for volatile organic compounds (VOC) and the solvent contained in the product is not photochemically reactive. There are no leachable components which could contaminate surface of ground water. The greatest beneficial environmental impact, however, can be attributed to the long term durability of the product. This necessitates fewer recoats which translates into less total VOC emissions over the lifecycle of the coating.

CURE MECHANISM

Cross linking takes place at ambient temperatures. Free radicals resulting from the decomposition of the organic peroxide cause cross linking to take place at the DCPD sites. The rate, at which the peroxide decomposes, therefore, determines the rate at which the system will cure. This rate is determined by temperature and the availability of oxygen. Oxygen is necessary to activate a catalyst which promotes peroxide decomposition at lower temperatures. The cure mechanism in EPDM Liquid Rubber® will vary from active to inactive, determined by temperature. Faster cures and slow cures over extended periods of time result in identical physical properties. Broad day-night temperature swings in spring and fall will not compromise the final physical properties of the Liquid Rubber® Membrane.

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OUTSTANDING APPLICATION CHARACTERISTICS

- Extremely high resistance to penetration of water
- Ultra Violet and Ozone stable
- Excellent long term aging properties (i.e. retains its flexibility and elongation longer than other elastomers);
- Very broad temperature tolerance range [from 300 degrees F to minus 62 degrees F]
- Acid and alkali resistant
- Resistant to polar solvents
- Withstands ponding water even when not cured
- *Caution: Oils, fats and waxes will swell the polymer.*

APPLICATION CHARACTERISTICS

The slow curing and non-polar nature of EPDM Liquid Rubber® give it outstanding surface wetting properties. The product does not fill cracks and crevices but will produce an even film penetrating even the smallest cracks and irregularities.

An example of this is, when EPDM Liquid Rubber® is applied over porous surfaces such as poured concrete, pinholes will appear on the surface as the material slowly displaces the air in the pores. This surface wetting feature enables the product to be applied in a single coat over non porous surfaces and still result in complete film integrity. EPDM Liquid Rubber® is hydrophobic in its liquid as well as the cured state and will withstand water immersion at any stage of its cure cycle. Liquid Rubber® should not be used where the material does not have exposure to oxygen such as between two impervious materials. When oxygen is available curing takes place from both top and bottom of film. There is sufficient oxygen available on most surfaces to initiate cure from the bottom. Oxygen readily penetrates films 20 mils thick. Curing is considerably retarded in thick films, however, cures do take place in thicknesses up to 75-80 mils within a three month period at temperatures over 70 degrees F. EPDM Liquid Rubber® can be applied to hot roof surfaces encountered during summer. The solvent in the system will flash off rapidly but the polymer will remain soft long enough to permit overlapping even after 1-2 hours.

On some materials, such as EPDM rubber sheets, some swelling may occur due to solvent absorptions after applying *EPDM Liquid Rubber*®. This is normal. Swelling will recover with time and heat. In 80° F or so, allow 7 to 14 days to recover. In colder temperatures, recovering will take several weeks, as much as 6 to 8 weeks in 60° F.

COMMERCIAL & INDUSTRIAL APPLICATIONS

Steel Siding for Buildings

EPDM rubber is an excellent recoat product for roll formed steel siding which is starting to corrode at the bends. The rubber can be applied as one coat system with no corrosion inhibitive primer needed.

Fabricated steel in marine environments

Cranes, tanks and support structures at dock facilities experience accelerated corrosion rates due to salt water exposure. EPDM rubber coatings are not affected by salt and are ideal for this type of environment.

Steel storage tanks

Elevated or on ground steel storage tank can be effectively protected with a rubber coating. Surface condensation, cathodic protection nor thermal stresses between sun and shady areas present problems for the coating.

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Concrete pipe and spill containments

EPDM rubber coatings are very effective for protecting concrete pipe against salt water corrosion. They can tolerate higher temperatures, exposure to strong sun, and have 2.5 times higher solids than liquid Neoprene coatings.

Manual Application Procedures

Liquid Rubber EPDM can be applied directly on many types of surfaces with solid, stable, nonporous and uniform surfaces such as flat roofs. For most surfaces, primers are not necessary. As an example, some types of surfaces that can be coated with Liquid Rubber EPDM are as below;

EPDM Rubber Sheets / Roofs -Galvanize Steel Panels / Roofs -Non-Polished Aluminum Sheets / Roofs -Steel Plates (Painted, Unfinished, Light Corrosion) Fiberglass Panels / Roofs -Wood & Plywood (treaded with oil based primer) Non-porous / steel troweled concrete surfaces / masonry

Though, Liquid Rubber EPDM can be applied using airless spray equipment, this document deals with manual applications – recommended for surfaces of less than 20,000 sq.ft. Please contact us for procedures on using spray equipment.
Besides flat and sloped surfaces Liquid Rubber EPDM has enough consistency so that it can also be applied on vertical walls / surfaces, to about 20 mils dft. or thinner per coat. The prime considerations when applying on sloping / vertical surfaces should be safety and falling hazards.

Planning

Work on days when rain is not expected, and in temperatures of 65 to 75 deg. F. for comfort. The curing process requires an ambient temperature of between 55 deg. F to 140 deg. F. As an estimate, you will need about 3 to 6 hrs to apply Liquid Rubber EPDM on a flat (horizontal) surface of 240 sq.ft. This does not include surface preparations time (cleaning the surface). Allow another16 to 20 hours after application, before the surface is dry to the touch and will take foot traffic.

Although Liquid Rubber EPDM will immediately waterproof, even when wet, avoid heavy rain until dry to the touch (16 – 20 hours after application). Pitting may occur otherwise. A full cure will be achieved in 4 – 10 days after application, in consistent 70 deg. F. ambient temperatures. Higher temperatures will accelerate cure times and lower temperatures will extend cure times.

Pre-Application Inspection of Roofs / Surfaces to be coated

Inspect your roof / surfaces for structural damage, tears, leaks, gaps, corrosion, etc. Light surface corrosion if adhering well to the roof / surface can be either lightly sanded-off or may be left in place. Heavy corrosion should be removed and a good corrosion inhibitor / primer should be applied – check with the primer manufacturer and wait for the recommended dry time before applying Liquid Rubber EPDM over these areas.

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With heavy leaks, inspect the wood deck (or roof structure) for structural damage (rot) and under skin corrosion. Any type of coating, including Liquid Rubber EPDM, will not fix structural damage and under skin corrosion by itself. Any structural fault should be fixed first, under skin corrosion should be stopped, metal roof skins should be replaced if corroded too thin, prior to applying Liquid Rubber EPDM. Under skin corrosion may be due to; trapped moisture between the skin and the roof structure, degradation of glues used to bond the skin and the roof deck, and or a combination of these. In such conditions, the damp area, acts as an electrolyte, causing galvanic corrosion. This corrosion will propagate under the skin and will eventually corrode through and fail, irrespective of whatever coatings are applied on the topside of the skin. Galvanic corrosion can occur with all types of metal roofs including aluminum.
Dampness may also rot wood roof deck / structure sections, compromising the structural integrity of the roof / structures. Such rotten sections should be replaced. All dampness and old glue removed and re-bonded with quality glue or refastened mechanically. In situations where leaks have occurred, but no structural damage or rot has set in, be sure to dry the wood roof deck / structure and under skin, prior to sealing leaks and coating with Liquid Rubber EPDM.

Surface Preparations

After inspection and repairing structural faults and under skin corrosion, any asphalts or silicone type of caulking on the roof / surface should be removed. Asphalt products are not compatible with Liquid Rubber EPDM, silicone rubber and Liquid Rubber EPDM will also not adhere to each other, and should be avoided.

Any holes, gaps, seams, tears (of more than 1/16" wide) should be repaired or reinforced. Any potential weak areas should be reinforced (consult with our Technical Service Department and ask for detailed reinforcing procedures). Holes and low spots should be filled with non-silicone caulking, or epoxies to "plug leaks" and level "low spots". Prior to coating, clean and wash the surface with detergent (soap) and water, ensuring the surface is free of oils, dirt, debris and flaking paints, etc. If the surface has fungus, molds, algae or other biologicals, you may need to soak these areas in a 1/3rd bleach and water solution to kill the biologicals. Let soak until the solution evaporates to kill the biologicals. You will still need to scrub (with a stiff brush) these areas with soap and water after soaking with the bleach solution, as some biologicals anchor onto some types of surfaces and must be mechanically removed even after killing.

Thoroughly dry the roof prior to applying Liquid Rubber EPDM after cleaning. Unwanted splatters and drippings can be cleaned off with rags and xylene or mineral spirits when wet (within 4 hours after application).short nap roller and a paint brush to apply Liquid Rubber EPDM manually. Use a brush for hard to reach areas. Broadcast & Spread using a short nap roller to smooth out entrapped air and a rubber squeegee and to evenly distribute the Liquid Rubber EPDM. Using long mop type handles for the squeegee and the roller will allow you to apply the product standing up and not on your knees. Standing up will be much easier than on your knees. It is important to apply an even distribution of Liquid Rubber EPDM and at the correct thickness. Too little materials will produce too thin of a membrane, with inadequate adhesion and inadequate film strengths. Too much material will be wasteful, may cause under cure situations / long cure situations and may cause excessive swelling with some types of sheet rubber roofs.
The optimum thickness for most purposes (non-immersion conditions) is one coat of 20 mils dft.

A) Clean and prepare the surface to be coated as directed. B) Reinforce with Butyl Tape & Polyester Fabric if needed (gaps, tears, seams, pin-holes, defects, etc.) – check with our Technical Service Department for procedures. C) Catalyze and apply Liquid Rubber EPDM on the surface / roof as described, use a squeegee, roller and brush to ensure an even application of 20 mils dft. To achieve a 20 mils dft. thickness, you should do a spreading rate calculation. For fairly smooth surfaces such as EPDM sheets, un-polished metals, fiberglass roofs, etc., use a spreading rate of about 40 sq.ft. a gallon. Reduce this for rougher surfaces, e.g., for surfaces such as steel troweled concrete surfaces, use a spreading rate of about 30 sq.ft. a gallon.

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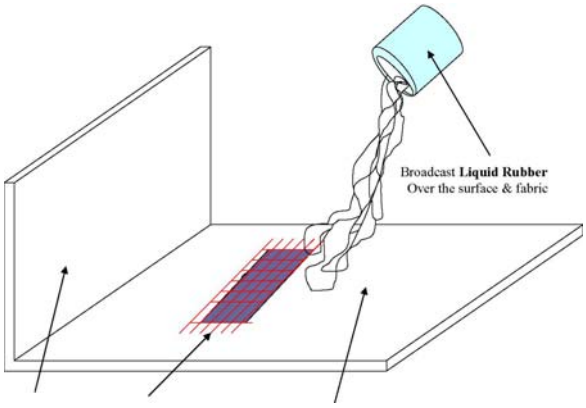
When calculating applied surface area, ensure you measure true surface areas. Example; if a panel is corrugated; take into account the corrugations in calculating the surface area of the panel. If you have not applied Liquid Rubber EPDM before, we would recommend you apply this in several pre-measured sections. The first section will give you a feel for the product and how fast you are able to apply this. You can then do larger areas in subsequent sections.



Wall Lay Polyester Fabric Prepared Surface to be coated and Butyl Tape over Defects (check procedures with Technical Services)

We recommend on the first section, you apply 2 gallons first, over a pre measured 80 sq.ft. section by applying all the 2 gallons over this 80 sq.ft. area, in an even application, you will form a 20 mil dft. thickness when cured. The key is to spread the product evenly – not thick in some sections and thin in others. In 75 deg F to 85 deg F, the product will start to thicken up in about 4 hours, so you should plan your (work sections) within that 4 hour time frame or less.

Corrosive environments

Corrosive environments are created by many industrial operations where acids are used. Similar conditions can also be produced organically in poultry and hog production operations which generate high volumes of manure. EPDM coatings can protect the steel and other construction materials from rapid deterioration in these environments.

Liquid Rubber® should not be applied directly over an asphalt based coating. Water based acrylic elastomeric coatings can be used as intermediate coat before applying Liquid Rubber®. Asphalt's based applications should be considered as being unstable materials and are excluded from warranty coverage since the asphalt will over time work its way into the EPDM material. Caution-Latex house paints can not be substituted in place of the acrylic elastomeric coatings. EPDM Coatings has a system specifically designed for petroleum-based surface adhesion. You can visit our contractor website at http://www.fixallroofs.com for our additional product line.

One component thermoset. Non thermoplastic materials, regardless of shape can now be coated with EPDM rubber as a protection against corrosion or chemical attack. The coating can be applied by spray, dip or flow coat methods and then cured in an oven at temperatures from 250-300 F (120-150 C). These single component products are custom formulated for a specific application, have good storage stability and are very easy to apply. Viscosity and solids content can be controlled and make it possible to apply thin as well as thick coatings of EPDM rubber.

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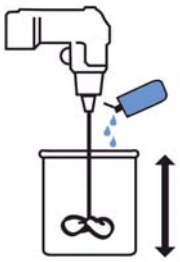
You Need

Gallon containers	Four and five gallon pails
3/8 inch electric drill Gallon mixing shaft Short nap roller(6 inch) brush rubber edged squeegee masking tape paint thinner for clean-up	1/2 inch electric drill Pail mixing shaft rubber edged squeegee on a broom handle Short nap roller(6 inch) brush masking tape paint thinner for clean-up

BUTYL TAPE, POLYESTER FABRIC OR BUTYL TAPE-To strengthen damaged roof skin or for reinforcing any worn seams

TOOLS EQUIPMENT and MIXING INSTRUCTIONS (Electric drill, mixer shaft, pop rivets, wire brush, sandpaper (60grits), spatula, paint brush). The container is under filled to allow for the addition of the pre-measured catalyst that is included. A drill and a mixer (shown below) will be needed to incorporate the catalyst. For a 1 gallon can a short mixer will suffice. For 4 or 5 gallon pails you MUST use a long shaft mixer. The catalyst will be inside the box for 1 gallon and 1 gallon repair kits. The catalyst will be located under the lid in 4 and 5 gallon pails.



Mix rubber material in can/pail until uniform; center mixer shaft in pail or can and begin mixing until a vortex is formed. Slowly pour all of catalyst into vortex. Move mixer up and down and in a circular motion for 2-3 minutes until all portions of can/pail are uniformly mixed.

APPLICATION PROCEDURES

1) Incorporate supplied catalyst using drill and mixer shaft by following label directions. Let stand at least 1/2 hour before using.

2) Apply masking tape to perimeter of roof or wherever straight edges are desired. Tape can also act as catch basin for sags if only one edge is attached to roof and rest is formed into shape of a gutter.

3) Pour some material on roof and use squeegee to distribute over surface. Follow with roller to even out the wet film. Product will self level. Use brush around vents, ladder, and antenna. Brush and roller marks will disappear when sufficient material is applied. Work from front to rear.

4) Masking tape should be left on until rubber is solid enough to be touched.

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To Stop Leaks

1. Use wire brush to clean edge-strip, seams and flashings. Use sharp edged spatula to remove cracked or brittle caulk. Rough up and smooth surfaces with sand paper.
2. Apply masking tape where straight edge is desired leaving 1 1/2" neither side of seam for coating.
3. Apply 1 coat Liquid Rubber®. (catalyzed) with a brush to all seams, flashings and remaining caulk
4. Remove masking tape the following day after rubber has undergone a partial cure

To Repair Cracks

1. Sand area to 3" around crack.
2. Cut butyl tape to overlap tear. Center over tear and press on with release film attached.
3. Remove film. Cut polyfabric to fit and press into butyl tape.
4. Coat over fabric with LIQUID RUBBER®

To Repair Reaps and Tears

1. Trim ragged edges of damage.
2. Cut new aluminum plate to overlap damaged area by 3".
3. Drill rivet holes 1/2" from edge 1 1/2 apart.
4. Remove plate and apply rubber over holes
5. Pop rivet plate and coat over with LIQUID RUBBER®

CHEMICAL COMPOSITION

Liquid Rubber® is based on a low molecular weight polymer of Ethylene and Propylene with a pendant group of Dicyclopentadiene. The Ethylene-Propylene backbone is saturated and cross linking takes place via the DCPD group. The cure rate is still controlled even at temperatures up to 120 degrees F and will not result in a porous film. The product can, therefore, be safely applied on the hottest day. The controlled cure rate also results in long pot life, giving the applicator more than an adequate length of time [6 hours depending on temperature] to use the mixed quantity of material.

ADHESION: Adhesion will increase over time. Polar surfaces such as metal, concrete and wood result in stronger adhesion than non-polar surfaces such as asphalts and single ply EPDM sheet. Most weathered surfaces including single ply and thermoplastic membranes will have enough of a surface profile to anchor the Liquid Rubber®.

DURABILITY

By itself, the Liquid Rubber® membrane will exhibit the characteristics of its EPDM chemistry, i.e. U.V. and ozone stability, excellent ponding water resistance and long-term retention of flexibility. However, since it is always applied to an existing roof surface, the condition of that surface will determine overall life expectancy. Liquid Rubber® applied over generally sound single ply EPDM can extend its life another 20 years. The useful life of metal roofs also benefits greatly when Liquid Rubber® is applied. BUR systems often have existing problems such as delamination between layers, buckling and stress cracking. These are further aggravated by wet insulation which often results in severe corrosion and weakening of the metal supporting deck.

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Projecting a life expectancy for the EPDM Liquid Rubber® membrane ultimately comes down to a case by case determination. When the EPDM membrane is compared to urethanes, acrylics and other elastomers in accelerated weathering and heat aging tests, the EPDM shows itself to be superior.

To recoat weathered metal, sheet rubber, urethane foam, and modified asphalt roll roofing. Excellent for waterproofing concrete roof decks and roof tiles. Can be applied directly to plywood and lumber. Liquid Rubber® is also a very effective coating for steel especially where it is exposed to a salt environment.

Liquid Rubber®® Application Tips for Contractors

Liquid Rubber® is a two component solvent solution version of the single ply EPDM membrane rubber. Its physical properties and method of cure make it unique among liquid applied coatings. The unique combination of properties of Liquid Rubber® include:

- Can apply an up to 35 mil dry film in one coat.
- Penetrates into cracks and crevices.
- Can go directly over a tightly rusted surface without a primer.
- Cure is not affected by relative humidity.
- Freezing does not damage uncured coating.
- Can withstand ponding water or immersion indefinitely.
- Tolerates a wide temperature range from minus 60°F to 300°F.

Liquid Rubber® has application and spray characteristics that are considerably different from other types of liquid coatings. Although Liquid Rubber® has a heavy consistency, it will self level and penetrate small crevices and pores. It is also harder to brush and more difficult to atomize for spray. The two efficient methods of application are:

For Flat Surfaces (flat or low slope)

First, catalyze the rubber: Pour a quantity on the surface and broadcast with a rubber edged squeegee. Follow this with a short-nap roller to evenly distribute the wet film. Spread rubber at no more than 42 sq. ft. per gallon.

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SPRAY APPLICATION

Air atomized or airless spray, roller, squeegee or brush. A combination of methods may be most effective. For example, on a flat roof; pour serpentine bead of material from pail; distribute with squeegee; finish with short nap roller to press air out of cracks and even out the wet film.

A.) Equipment: Use a 3.0 gallon per minute airless spray pump capable of developing a minimum 3,000 psi outlet pressure; 3/8 inch ID hose or larger with a max length of 100 ft. Tip size of .015 or .017 for smaller pumps and a .019 tip for larger capacity pumps. Use a 100 mesh strainer at the outlet of pump or in handle of gun. Use a swivel fitting at the gun in place of a "whip" in order to reduce the pressure drop through a smaller ID hose.

B.) Thinning: It will be necessary to thin Liquid Rubber® with xylene solvent before it can be sprayed. The amount of xylene needed will vary depending on pump size and material temperature. The following is a recommended starting point procedure for thinning a 5-gallon pail:

1.) Add one gallon xylene to pail and mix until uniform.
2.) Add entire amount of catalyst supplied. Mix thoroughly.
3.) Transfer ½ contents to another pail.

4.) Start pump and check spray pattern. If spray is too coarse, try a .015 tip. If this still isn't enough improvement, then add another quart of xylene to the 2 1/2 gallons of rubber in the pail.
Once an acceptable spray pattern is achieved, use the same amount of xylene to dilute each succeeding pail. Pour newly mixed rubber into pail under the pump as needed.

TROUBLE SHOOTING PROCEDURES

Poor spray pattern and clogging of the tip are the most frequently encountered problems during application. These can invariably be traced to inadequate flushing and poor maintenance of the equipment. Check to make certain the 100 mesh strainer is clean before starting.

Problem: Poor spray pattern.
Solution: Follow thinning procedure in B.)

Problem: Still getting a poor spray pattern, even after thinning rubber with 1 ½ gal of xylene per 5 gallon pail.

Solution: Starting at gun, successively remove one component at a time, (i.e. tip, tip extension, gun filter, gun, strainer at pump, etc.) and check flow. With tip removed, the material flow should be steady and strong (discharge into pail at pump.)

If tip extension is removed and flow increases notice-ably, the ID of the extension is too small. Remove or replace.

If discharge stream is weak and pulsating, attach gun and open drain cock at strainer to see if condition is the same there. If pulsation persists, the problem is in the pump. (The balls are not seating properly or are dented and need replacing.)

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HOW TO ACHIEVE MINIMUM DRY FILM THICKNESS

Liquid Rubber® must be applied at a rate that will produce a minimum dry film of 20 mils. This can be accomplished in one coat by applying the rubber at a rate of 200-220 sq.ft. per 5 gallon pail if undiluted. (6 or 6½ gallons when thinned with xylene.) The actual (expanded) surface area must be used for this calculation.

Example

If expanded area of a ribbed or standing seam roof is 1.2 times the length and width area calculation and 1.5 gallons of xylene thinner was used per 5 gallons of rubber, how much material will a 3,000 sq.ft. roof require?

3,000 sq.ft. X 1.2 = 3,600 = 16.36 pails X 5 gal = 82 gallons
220 sq.ft./pail 220 undiluted

16.36 pails X 1.5 gal xylene/pail = + 24.5 gal xylene
106.5 gal
Diluted rubber

SPREAD RATE

The spread rate of 220 square feet. Expanded area per 6.5 gallons of diluted rubber (5 gal rubber + 1.5 gal xylene) is adjusted to the length X width roof dimension.

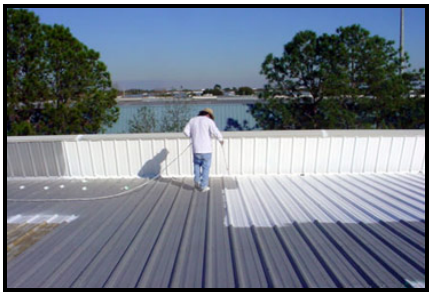
220 = 183 sq.ft of roof area (L X W) therefore:
1.2

When 6.5 gal of diluted Liquid Rubber® are applied to183 sq.ft. (LXW) of roof, an average dry film of 20 mils will result.

Liquid Rubber® is designed to recoat structurally sound existing roofs and protective materials. They should not be used in place of roofing membranes".

The following are recommended substrates to coat:

Metal – Coated or Galvanized Steel
Weathered Aluminum
Weathered Copper
EPDM Rubber membrane
Concrete (except foot traffic surfaces)
Urethane Foam
Primed Wood
Fiberglass
PVC Sheet and Pipe



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The following are recommended substrates to coat (Con't)

Acrylic Sheet
Sponge Rubber insulation
EPDM Rubber Membrane on flat or sloped Roofs
Weathered Steel Siding
Weathered Fiberglass
Weathered standing seam and corrugated metal roofs
Weathered Vinyl, PVC and Polycarbonate plastic
Foam insulation for pipe
Cast Concrete foundations

Do Not use Liquid Rubber® on the following substrates: For the below roof types visit our other contractor website http://www.fixallroofs.com . *We have proven solutions for your petroleum based substrates!* Ask about our Neoprene Primer and Butyl Rubber for flat asphalt or built up roofs!

Built up asphalt roofs
Asphalt shingles
Modified asphalt roll roofing
Stainless steel
Glass
Silicone caulk
Foot traffic surfaces
Hypalon Membrane
(Contact EPDM Coatings for other product lines for a solution to these roof types)

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Technical Data

Volume Solids:	63.5%
Spreading Rate:	A 20 mil dry film will result when liquid is applied at the rate of 50 sq ft per gallon on a smooth surface. A rate of up to 45 sq ft per gallon allows for average surface roughness.
Theoretical Coverage:	1020 sq ft per gallon at 1 mil dry
Weight/ Gallon:	8 pounds (mixed)
Elongation:	180-200%
Brittle Point:	-62 degrees F.
Permeability:	0.1 perm
Weatherometr:	2000 hours (ASTM D4459-8-03)
Peel Adhesion:	4.85 pounds per linear inch on Firestone EPDM.
Pot Life:	4-10 hours depending on temperature.
Cure rate at 70° F:	7-8 hours to touch 24-30 hours to walk on 5-7 days full cure
Thinner:	Most aliphatic and aromatic hydrocarbon solvents (Mineral Spirits, VMaP Naphtha, Xylol). Weaker solvents should be used when coating EPDM rubber sheet to minimize distortion.
Chemical Resistance:	Cured EPDM rubber is resistant to acids, alkalis and polar solvents (Alcohols, Ketones, Glycols). Oils and fats will soften the rubber and should be avoided.
Cure System:	Two component Peroxide initiated free radical cure
Heat Resistance:	302° F (150 C) continuous exposure
VOC:	2.46 pounds per gallon (295/ grams liter)

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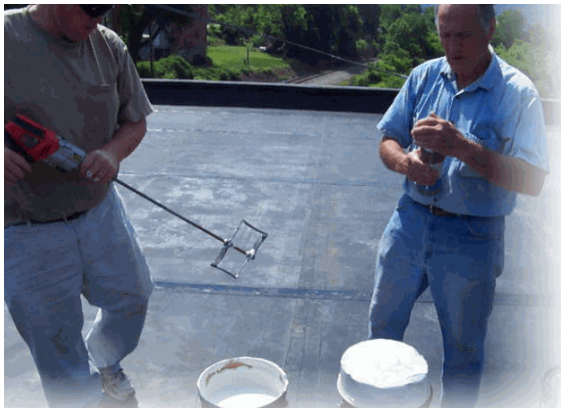
Cure Conditions: The cure rate of Liquid Rubber® is temperature dependent; i.e. higher temperatures will accelerate the cure and lower temperatures will retard it. Contact with air is another requirement. If, for example, a rain shower develops before material has cured [material may still be wet] and water collects on the surface the following condition will prevail. Material that is still wet will prevent water from penetrating the film; however, the curing process will not begin unless material is exposed to air. The material under water will remain uncured until the water has evaporated and the surface again becomes exposed to air, at which time the curing process will begin.



Pricing

Quantity	Pricing Per 5 Gallon Pail *(One Coat-No Primer Needed)*	Price Per Sq Ft.
0-50 Gallons	$297.50	$1.41
51-100 Gallons	$285.75	$1.36
Over 100 Gallons	$265.75	$1.26

Call for pricing over 500 gallons

**Custom colors are available

***Note: Prices are subject to change*

EPDM Cost Summary vs. The Competition

Material & Labor Summary	Liquid EPDM	Competitor #1	Competitor #2
Cost Per Sq.Ft.	$1.25	0.74	0.57
Primer Needed	No	No	Yes
Primer Per Sq Ft	n/a	n/a	0.25
Cost of Primer	-	-	1250
Total Coats Needed	1	3	2
Total Cost of Coatings	$6,250	$11,100	$5,700
Total Number of Applications (Labor)	1	3	3
Total Material cost	$6,250	$11,100	$7,125

*** This scenario is based on a 5000 sq ft roof*

EPDM Coatings LLC
For More Information call 610-298-1989
Or visit our website http://www.epdmcoatings.com
Blog http://liquidroof.blogspot.com

ACRYLINK- G
ROOFING SYSTEM

PRODUCT INFORMATION

ConVault, Inc., 4109 E. Zeering Rd, Denair, CA 95316, (800) 222-7099 or (209) 632-7571

May 2006

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ACRYLINK G™
Roof Coating
CROSSLINKING ACRYLIC LATEX ELASTOMER

ACRYLINK G Technical Data

Solids (wt.)	73%
Solids (vol.)	63%
Wt./gal	11.43 lbs.
Viscosity (Brookfield @ 100 rpm)	3000 cps
Vehicle type	100% Crosslinking Acrylic
Pigment/Vehicle Ratio	1.5/1
Elongation (failure, ASTM D 412)	360%
Elongation (90% recovery, ASTM D 412)	350%
Tensile Strength (ASTM D 412)	304 psi
Hardness (ASTM D 2240, Shore A)	57
Tear Strength (ASTM D 624)	63 lbs./inch
Service Temperature (ASTM D 2137,D 794)	-45° F. to 250° F.
Ponding Water Resistance	Excellent
Water Vapor Permeance @ 45 mils (ASTM E 96)	2.21 perms
Water Absorption (ASTM D 471; 22hrs, 73° C)	4.34%
Cold Flex (ASTM C 711)	Pass
Weatherometer (ASTM D 1499, G23)	1000 hours
Weathered Elongation	76% of original
Weathered Tensile Strength	169% of original
Fire Resistance (UL 790 Non-Comb. Deck), incline unlimited	Class A
Fire Resistance (UL 790 Combustible Deck)	Class B
Fungicide	0.02%
Adhesion (ASTM D 3359)	Pass
Chemical Resistance (ASTM D 1308)	Pass (no effect)
Solar Reflectance (ASTM E 903)	79%
Near-Normal Infrared Emmittance (ASTM E 408)	0.95
VOC	16.2g/liter

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Utilizing crosslinking technology and a unique custom-engineered Pliotec® resin by Goodyear, **ACRYLINK G™** exhibits a combination of high tensile strength and elongation previously found only in some urethane coatings, while retaining the superior ultraviolet resistance and ease of application of acrylic coatings. Its low surgactant polymerization process shortens curing time, minimizing application risks associated with poor weather.

In addition to high tensile strength and elongation, the cured **ACRYLINK G™** membrane has excellent resistance to ponding water, fire, and harsh chemical environments, including acids, bases, industrial pollutants, and hydrocarbons, such as petrochemicals and animal fats.

Technologically advanced crosslinking acrylic resin and superior coating formulation combined with competitive pricing set **ACRYLINK G™** apart from all other roof coatings. With warranted applications over nearly every type of commercial and industrial exterior, **ACRYLINK G™** is as versatile as it is durable.

For technical data on **ACRYLINK G™** 's companion products, and for procedures and specifications for the 17 roof types that **ACRYLINK G™** renews, please refer to our Technical Specifications Manual.

ACRYLINK G™ can be tinted with aqueous or universal colorants. Most warehouses have White and Light Gray available as premixed colors, while some warehouses also have Gray, Tan, and Beige available. (http://www.acrylink.com/color_chart) Actual color chips are available upon request.

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CONCRETE ROOF SYSTEM SUMMARY

http://www.acrylink.com/Concrete

This procedure is a generic summary of IPC's more detailed **CONCRETE ROOF SYSTEM SPECIFICATION**. For warranty purposes, Approved Applicators are responsible for studying, understanding, and following the specification. As always, contact IPC for technical assistance.

I. Surface Preparation

1. Pressure wash surface to be coated using TSP or other suitable cleaner and rinse with water.
2. Prime all non-painted or galvanized metal that will be coated (e.g., flashings, counterflashings, air handlers, penetrations, and the like).
3. Bridge all gaps around roof deck, penetrations, flashings, holes, etc. with the following method to make sure that the **ACRYLINK G**™ membrane will be continuous:
    a. Brush a coat of **ACRYCAULK**™ along either side of gap.
    b. Embed a strip of non-woven polyester fabric in **ACRYCAULK**™.
    c. Brush heavy coat of **ACRYCAULK**™ over polyester, making sure that there are no wrinkles or fishmouths.
    d. Allow to cure overnight. Inspect and repair as necessary.

II. Coating Application

1. The surface to be coated must be clean and dry.
2. Apply **ACRYLINK G**™ elastomeric roof coating with an airless sprayer or roller, giving special attention to seams and bridged or repaired areas.
3. Use an appropriate number of coats to achieve the correct millage. For IPC purposes, "pitched" refers to a roof with at least 1 in 12 pitch.
    a. 5-year: 3.67 gallons of **ACRYLINK G**™ per square total.
    b. 10-year: 4.6 gallons of **ACRYLINK G**™ per square total.
    c. 20-year: 6.5 gallons of **ACRYLINK G**™ per square total.
4. Backroll the base coat as it is being applied.
5. Allow each coat to dry, inspect and repair as necessary before applying next coat.
6. Apply 0.5 gallons per square (200 square feet per gallon) of **ACRYSHEEN**™ surface coating as a top coat, if desired.

III. Limitations

1. This procedure is to be used only in conjunction with commonly accepted roofing and waterproofing standards.
2. No material shall be applied to wet, dirty, or frozen surfaces, or to areas of gross ponding water.
3. **ACRYLINK G**™, **ACRYCAULK**™, **ISOPRIME**™, and **ACRYSHEEN**™ shall not be applied during inclement weather, when a precipitation appears imminent, when the temperature is below 45°F, when the relative humidity exceeds 85%, or within 4 hours of sundown.
4. In order to qualify for factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the **ACRYLINK G**™ membrane must be continuous, and the membrane must meet the TDM minimum.
5. In conjunction with the final inspection, all debris, material, and equipment are to be removed from the job site, leaving the area in an undamaged and acceptable condition.

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CONCRETE ROOF SYSTEM SPECIFICATION

Section 1.0 Scope

The intention of this specification is to outline procedures for the application of an ACRYLINK G™ elastomeric coating membrane for the purposes of waterproofing, protecting, extending the life, and/or renewing an existing concrete substrate. This specification describes materials, methods, and conditions necessary for the proper installation of this membrane.

1.1 This integrated system complies with all model building codes for roofing. Additionally, it constitutes one of the most cost-effective methods of waterproofing, protecting, extending the life, and/or renewing commercial and industrial roofs.

1.2 This system is to be used only in conjunction with commonly accepted roofing and waterproofing standards.

1.3 Any substantial deviation from these specifications shall be referred to the authorized representatives of Isothermal Protective Coatings, Inc. (IPC).

Section 2.0 Materials

All materials shall be manufactured or approved by IPC, and shall meet the following minimum specifications:

2.1 ACRYLINK G™ Elastomeric Coating
Vehicle Type: Crosslinking Acrylic
Pigment to Vehicle Ratio 1.5 to 1
Solids (Volume) 63%
Elongation 360%
Tensile Strength 304 psi
Permeance @ 45 mils 2.21 perms
Reflectivity (White) 79%

2.2 ACRYCAULK™ Brush or Trowel Grade Sealant
Vehicle Type 100% Acrylic
Pigment to Vehicle Ratio 1.97 to 1
Solids (Volume) 70%
Elongation 325%

2.3 ACRYSHEEN™ Surface Coating
Vehicle Type 100% Acrylic
Pigment to Vehicle Ratio 1.2 to 1
Gloss Medium Low
Color Bright White (tintable)
Reflectivity (untinted) 80%

2.4 ISOPRIME™ Corrosion Inhibiting Primer
Vehicle Type Phenolic Modified Alkyd
Solids (weight) 57.5%
Weight (per gallon) 11.25 lbs.
Color White

2.5 ISOPHOS™ Phosphate Solution
Active Ingredient Phosphoric Acid (H3PO4)

2.6 Delivery and Storage

2.6.1 Materials shall be delivered in their original, tightly sealed containers or unopened packages, clearly labeled with the manufacturer's name, Underwriter's Laboratories file number, and — where appropriate — product identification and lot numbers.

2.6.2 Materials shall be kept from freezing, and shall be stored out of the weather, in their original tightly sealed containers or unopened packages, as recommended by the manufacturer.

Section 3.0 Contractor

3.1 The ACRYLINK G™ elastomeric coating membrane shall be applied by a single, experienced, and competent contractor or applicator, approved by IPC.

3.2 Contractor or applicator shall be responsible for selecting and supplying all labor and supervision, and shall be responsible for furnishing all materials required to complete the job satisfactorily, in accordance with manufacturer's specifications.

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3.3 Contractor or applicator shall be responsible for assessing and determining the integrity of the existing substrate. All structural repairs (including, but not limited to, the installation or repair of insulation, crickets, scuppers, roof drains, one-way vents, and the like) as well as the elimination of areas of gross ponding water, shall be the exclusive responsibility of the contractor or applicator.
3.3.1 All installations or repairs shall be completed before coating application commences.
3.3.2 The industry standard definition of gross ponding water is ½ inch or more of water, standing on a 100 square foot or more area, 24 hours or more after a precipitation. Contractor shall be responsible to address and eliminate all such areas before coating application commences.
3.3.3 All installations or repairs shall be performed in accordance with commonly accepted roofing and waterproofing standards and practices.
3.3.4 An authorized representative of IPC may be consulted for technical assistance in such matters.

Section 4.0 Surface Preparation -- Cleaning Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G™ elastomeric coating membrane to the substrate surface. Preparation shall include, but shall not be limited to, the following:
4.1 All unnecessary and non-functional equipment, conduit, and debris shall be removed from the roof.
4.2 All structural repairs or installations shall be completed before coating application commences.
4.2.1 Crickets, roof drains, insulation, one-way vents, scuppers, roof deck, and the like, shall all be installed or repaired before coating application commences.
4.2.2 Areas of gross ponding water shall have been addressed and eliminated before coating application commences. Consult section 3.3.2 of this specification for further details.
4.4 PLEASE NOTE: During coating application procedures, ACRYLINK G™ elastomeric coating shall be applied a minimum of three (3) inches above the termination of all flashings, repairs, and bridges. That is, coating shall be applied to sections of parapet walls, the bases of air handling equipment, penetrations, and the like. Section 7.0 of this specification should be consulted for details. These surfaces must be adequately prepared in order to ensure adhesion of the ACRYLINK G™ membrane.
4.4.1 All masonry surfaces to be coated shall be wire-brushed before pressure washing in order to remove all dust.
4.4.2 All oxidized metallic surfaces to be coated shall be wire-brushed or otherwise abraded before pressure washing in order to remove as much rust and scale as possible.
4.5 The entire surface to be coated — including, but not limited to, sections of parapet walls, penetrations, air handling equipment, and the like — shall be pressure washed in order to remove all dust, dirt, debris, chalk, oil, tar, and the like from the substrate surface. A suitable cleaner, such as TSP, and a broom shall be used as necessary. If a cleaner is required, the surface shall be rinsed with water to remove residue.
4.6 Special care shall be taken with surfaces coated with aluminized asphalt. All poorly adhered leafed aluminum shall be removed by vigorous brushing in addition to pressure washing.

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Section 5.0 Surface Preparation - Priming Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G™ elastomeric coating membrane to the substrate surface. Preparations shall include, but shall not be limited to, the following:

5.1 All metal flashings, expansion joints, penetrations, and other metallic surfaces that are to be coated shall be prepared according to the following procedure:

5.1.1 As much loose rust and scale as possible shall already have been removed by abrasion (wire brush or other suitable instrument) from oxidized areas that are to be coated.

5.1.2 All oxidized areas shall be pre-treated with ISOPHOS™ phosphating solution, or equal, according to the following procedure:

5.1.2.1 ISOPHOS™ may be applied by brush, mop, low-pressure hand pump sprayer, or other suitable instrument.

5.1.2.2 ISOPHOS™ shall be applied to all oxidized areas and these surfaces shall be kept wet with ISOPHOS™ until the reddish color of the rust turns grayish in color. The amount of time required to complete this procedure will vary as the amount and degree of oxidization varies.

5.1.2.3 After the reaction has been completed, the areas treated with ISOPHOS™ shall be rinsed clean with water.

5.1.3 Phosphated surfaces shall be allowed adequate time to dry before primer application commences.

5.2 Primer application shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 °F, or when the relative humidity exceeds 85%. To provide adequate curing time, primer application shall terminate a minimum of two (2) hours before sundown.

5.3 All surfaces to be primed with ISOPRIME™ corrosion inhibiting primer shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of the primer to the substrate surface.

5.4 Using conventional airless spray equipment or a brush, all galvanized, phosphated, and non-painted metallic surfaces that are to be coated — including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like — shall be primed with ISOPRIME™ at a rate of 250 to 400 square feet per gallon.

5.5 Primer shall be allowed to cure for approximately two (2) hours, depending upon temperature and relative humidity, after which an inspection shall be performed. Additional ISOPRIME™ shall be applied to any areas where there are voids in the primer coat, in order to make the coat continuous.

Section 6.0 Surface Preparation -- Detailing Preparations shall include all requirements specified by IPC to ensure adequate adhesion of the ACRYLINK G™ elastomeric coating membrane to the substrate surface. Preparation shall include, but shall not be limited to, the following:

6.1 All structural repairs (including, but not limited to, the installation or repair of insulation, crickets, scuppers, roof drains, one-way vents, and the like) shall have been completed prior to detail work commencement. Areas of gross ponding water shall have been addressed and eliminated prior to detail work commencement.

6.2 Detail work shall not commence during inclement weather, when a precipitation appears imminent, when the temperature is below 45 °F, or when relative humidity exceeds 85%. To provide adequate curing time, detail work shall terminate a minimum of four (4) hours before sundown.

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6.3 All galvanized, phosphated, and non-painted metallic surfaces to be coated — including, but not limited to, metal flashings, expansion joints, air handling equipment, penetrations, and the like — shall have already been primed with ISOPRIME™ corrosion inhibiting primer, or equal, and shall have been allowed adequate curing time before detail work commences. Refer to section 5.0 of this specification for further details.
6.4 The entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost, or any other material that would impair the adhesion of ACRYLINK G™ or ACRYCAULK™ to the substrate surface.
6.5 All penetrations, expansion joints, transitions, gaps on or adjacent to the roof deck, small holes, cracks, fissures, and the like, shall be flashed, bridged, or repaired according to the following procedure:
6.5.1 On a clean, dry surface, a light coat of ACRYCAULK™ shall be applied to both sides of the area to be flashed, bridged, or repaired.
6.5.2 A strip of non-woven or spun polyester roofing cloth, of an appropriate width, shall be pressed down into the caulk, thus bridging the gap. It is important to ensure that there are no fishmouths or wrinkles in the polyester.
6.5.3 The polyester cloth shall then be completely covered with a second coat of ACRYCAULK™ . This second coat shall completely cover the polyester cloth, and shall be applied within the same working day as the application of the polyester cloth.
6.5.4 Narrow gaps and small holes may be sealed with ACRYCAULK™ alone, without the use of polyester cloth.
6.5.5 If practical, ACRYCAULK™ may be used to bridge expansion joint gaps, without the use of polyester cloth.
6.6 After completing this procedure, the newly flashed or bridged areas shall be allowed to cure overnight. Before coating application commences, all such areas shall be inspected and repaired, as necessary, with ACRYCAULK™ or an approved building sealant.
6.7 ACRYLINK G™ coating shall be applied over these areas during normal coating operation procedures.

Section 7.0 Coating Application
7.1 Coating application shall not commence during inclement weather, when a precipitation appears imminent, when temperature is below 45°F, or when relative humidity exceeds 85%. To provide adequate curing time, coating application shall terminate at least four (4) hours before sundown.
7.2 Entire surface to be coated shall be free of dust, dirt, tar, oil, moisture, frost or any other material that would impair the adhesion of ACRYLINK G™ elastomeric coating to the substrate surface.
7.3 All metallic, asphaltic, or aluminized surfaces to be coated shall have been prepared in accordance with the procedures specified in sections 4.0-6.0 in this specification.
7.4 ACRYLINK G™ elastomeric coating: Base Coat
7.4.1 The base coat of ACRYLINK G™ elastomeric coating shall be applied at 1½ gallons per 100 square feet using conventional airless spray equipment.
7.4.2 Coating shall be applied so as to cover the substrate uniformly. All flashed, bridged or repaired areas (as described in section 6.0) shall be coated again at this time, and during each subsequent coat.
7.4.3 Whenever possible, coating shall be applied at least three (3) inches beyond the termination of polyester flashings or bridges, especially along parapet walls, penetrations, air handling equipment, and the like.

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7.4.4 The base coat may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.
7.4.5 IPC recommends the use of a darker color, like gray, for the base coat, as it cures much faster than a lighter color, such as white.
7.4.6 If sprayed, the base coat (the first pass of the base coat if applied in multiple passes) shall be backrolled as it is being applied in order to maximize adhesion to the substrate and to eliminate voids.
7.4.7 The base coat shall be allowed to cure for at least two (2) hours, depending on temperature and humidity conditions, after which an inspection shall be performed. Any defects in the coating membrane shall be repaired with ACRYLINK G™ or an approved building sealant.
7.5 ACRYLINK G™ elastomeric coating: Subsequent Coats
7.5.1 IPC recommends that ACRYLINK G™ elastomeric coating be applied in contrasting color coats to improve coverage and spray pattern. Order of application shall be as contractor specifies.
7.5.2 The surface of the ACRYLINK G™ base coat, and all subsequent coats, shall be free of all moisture, dirt, and debris before a subsequent coat is applied.
7.5.3 The second coat of ACRYLINK G™ elastomeric coating shall be applied as soon as practical, within 24-72 hours of the application of the base coat.
7.5.4 The second coat, and all subsequent coats, shall be applied at a right angle to the direction in which the previous coat was applied. For example, if the previous coat was applied with a north-south motion, the subsequent coat shall be applied with an east-west motion.
7.5.5 The second coat, and all subsequent coats, shall be applied by conventional airless spray or roller at the rate specified to achieve the TDM minimum in a reasonable number of coats. Each coat shall completely mask the color of the previous coat.
7.5.6 The second coat, and all subsequent coats, may be applied in more than one pass, if desired, to accelerate curing, provided adequate curing time has been allowed between passes to prevent damage from being done to the membrane when it is walked upon.
7.5.7 Subsequent coats shall be applied by conventional airless spray or roller at the rate required to achieve the TDM minimum. It is essential to realize that the true surface area may be greater than the apparent surface area because of surface texture or profile. In order to achieve the TDM minimum on such a surface, the application rate must be increased appropriately.
7.5.8 Each coat shall be allowed to cure for at least four (4) hours, depending upon temperature and humidity conditions, and inspected and repaired as necessary, before a subsequent coat is applied.
7.6 ACRYSHEEN™ surface coating: Optional Coat
7.6.1 At the contractor's option, a top coat of ACRYSHEEN™ surface coating may be applied by conventional airless spray or roller at a minimum rate of ½ gallon per 100 square feet. ½ gallon per 100 square feet of ACRYSHEEN™ surface coating may be substituted for ¼ gallon per 100 square feet of ACRYLINK G™ elastomeric coating.
7.6.2 Surface coat may be applied in more than one pass, if desired, to accelerate curing. Adequate curing time shall be allowed between passes.
7.6.3 Surface coat shall be applied at a right angle to the direction in which the previous

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coat was applied. Surface coat shall completely mask the color of the previous coat.
7.6.4 Surface coat shall be allowed to cure for at least four (4) hours, and inspected and repaired as necessary, before a subsequent coat is applied.
7.7 The cured ACRYLINK G™ elastomeric coating system membrane shall be TDM minimum in all areas and shall be free of all pinholes and defects.
7.8 Required spread rates for the ACRYLINK G™ elastomeric coating membrane are as follows:
7.8.1 5-year application: 3.67 gallons per 100 square feet of ACRYLINK G™ total (37 dry mil average, 32 dry mil minimum).
7.8.2 10-year application: 4.6 gallons per 100 square feet of ACRYLINK G™ total (46 dry mil average, 40 dry mil minimum).
7.8.3 20-year application: 6.5 gallons per 100 square feet of ACRYLINK G™ total (65 Dry mil average, 56 dry mil minimum).
7.9 Having completed the procedures specified above, and having achieved the TDM minimum in all areas, the ACRYLINK G™ elastomeric coating membrane shall be given adequate time to cure.
7.10 For a minimum of thirty (30) days after the membrane has been applied, contractor shall be responsible to inspect the membrane after every precipitation.
7.10.1 Contractor shall carefully remove water from small ponding areas ("birdbaths") with an air blower, without damaging the ACRYLINK G™ membrane.
7.10.2 Areas of gross ponding water shall have been addressed and eliminated prior to coating application, in accordance with commonly accepted waterproofing and roofing practices.

Section 8.0 Clean-Up
Upon completion of all work covered in this specification, and before the job is inspected, the contractor shall remove all equipment, material, and debris, leaving the area in an undamaged and acceptable condition. In no case shall the job be considered complete before the job site has been properly cleaned.

Section 9.0 Limitations
This system is to be used only in conjunction with commonly accepted waterproofing and roofing standards including but not limited to the following:
9.1 In order to qualify for a factory warranty, applicator must have Approved Applicator status, the roof must meet the square foot minimum, the ACRYLINK G™ membrane must be continuous, and the membrane must meet the TDM minimum.
9.2 No application of component materials shall commence during inclement weather, when a precipitation appears imminent, when temperature is below 45°F, or when relative humidity exceeds 85%.
9.3 No material shall be applied to wet, dirty, or frozen surfaces.
9.4 Coating application shall not commence until all other trades are off of the roof.
9.5 Coating shall not be applied to areas of gross ponding water. Contractor shall address and eliminate areas of gross ponding water prior to coating application.
9.6 In conjunction with the final inspection, all debris, material, and equipment are to be removed, leaving the area in an undamaged and acceptable condition.