

SOLARGARD[®] ULTRA

SYSTEM FOR WEATHERED SINGLE-PLY MEMBRANES (PVC, EPDM*, PIB, HYPALON, TPO, ETC.)

PART 1 – General

1.01 General

- A. This document is intended to provide only **general** guidelines regarding the application of listed materials as furnished by Republic Powdered Metals, Inc. These general guideline specifications are **NOT** intended as project-specific specifications and should not be used as such. The information contained herein may be used, and modified where necessary, by the owner, architect, and contractor in preparing specifications for particular roofing projects. It is the responsibility of the owner, architect, and/or contractor to ensure that these general guideline specifications are consistent with the contractual and construction requirements relating to the project.

1.02 Quality Assurance

- A. Applicator’s Qualifications
 - 1. Applicator shall have knowledge and general understanding of building design as well as Republic’s products specified for the project.
 - 2. Applicator shall have business stability and own, or have access to, the equipment necessary for successful completion of the project.
 - 3. Technical service on application and suitability of Republic’s materials is available by contacting Republic Powdered Metals, Inc., 2628 Pearl Road, Medina, Ohio 44256.

1.03 Submittals

- A. In the normal course of bidding, descriptive literature and technical data on all materials proposed for usage under this specification will be submitted. A roof survey shall be submitted by the bidder identifying total area to be coated, along with pictures of panel profile, seams, and details including any repairs to seams, protrusions, and general conditions of the existing roof along with a completed Notice of Award to Republic.

1.04 Product Storage and Handling

- A. Storage of Materials: Store in accordance with manufacturer’s recommendations.
- B. Handling and Protection of Materials: Meet requirements of manufacturer’s recommendations for handling and protection of materials during installation. Handle products so that they are not contaminated by foreign materials.
- C. Damaged Materials: Contaminated or damaged materials shall not be used in the installation and shall be immediately removed from site upon discovery.
- D. Exercise caution when working with solvent-based materials within the limitations described by the manufacturer.
- E. WARNING: Consult MSDS for SOLARGARD ULTRA for precautionary information.

PART 2 – Products as Manufactured by Republic Powdered Metals, Inc.

2.01 Coating System

A. SOLARGARD Ultra

1. Description

SOLARGARD ULTRA is a high solids, water-based, heavy bodied elastomeric coating formulated with a proprietary acrylic latex polymer. SOLARGARD Ultra is VOC compliant and asbestos free. Do not use in areas that pond water per NRCA Guidelines.

2. Performance Requirements

Weight per gallon (ASTM D 1475)	7.92 ± 0.5 lbs.	Flexibility @ -15°F after 1000 hrs. (ASTM D 522)	Passes ½ inch mandrel bend
Specific gravity (ASTM D 1475)	0.91 ± 0.2	Tensile Strength @ 73°F	167 ± 1 psi
Solids by weight (ASTM D 1644)	64% ± 1%	Dry time (ASTM D 1640)	1 hour to touch 24 hours to recoat
Solids by volume (ASTM D 2697)	60% ± 1%	Flash point (ASTM D -93-97)	None
Elongation @ 73°F (ASTM D 2370)	290% ± 25%	Clean up	Water

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2.02 Accessory Materials

- A. PERMAFAB is a 100% stitchbonded polyester fabric used in repairing blisters, fish mouths, splits, and as reinforcement for flashing details.
- B. REPUBLIC Single Ply Primer is the recommended primer for use on weathered single ply, concrete and polyurethane foam roofs prior to the application of SOLARGARD ULTRA.
- C. SOLARGARD Seam Sealer is a single component polyurethane sealer formulated to provide a tough, flexible repair for waterproofing.

PART 3 – Execution

3.01 Preparation For Coating

A. Cleaning

1. Remove all loose dirt, dust, debris, etc., by mechanical brush, stiff broom, vacuum, power washing, etc. All surfaces must be clean and dry. Surfaces exhibiting algae growth must be cleaned with a bleach/water solution and rinsed thoroughly.
2. Check for adhesion and compatibility of any remaining, tightly adhered, existing coating with SOLARGARD ULTRA. A test application is the best method of determining compatibility with and adhesion to a previously coated surface. An X-Cut Tape Test is used to determine adhesion of the existing coating to the substrate. Contact Republic's Technical Department for further information.
3. Flashings, blisters, and other damaged areas must be repaired and allowed to cure for 24 hours prior to applying the SOLARGARD Ultra to the entire roof.

B. Flashings

Cracked or damaged flashings can be repaired using PERMAFAB and SOLARGARD ULTRA or SOLARGARD Seam Sealer. Loose or detached flashings should be repaired using conventional techniques.

1. PERMAFAB should be unrolled and cut to length prior to setting in place.
2. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer to all areas at 1 gal./100 sq. ft. (16 wet mils). The coating shall be applied as to extend 2" beyond the PERMAFAB in each direction, feather out edges.
3. Embed PERMAFAB into the coating from 4" onto the roof surface to a minimum of 8" above roof surface. Adjacent pieces should be lapped a minimum of 4". Brush for proper adhesion and removal of all voids.
4. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges in each direction, feather out edges.
5. Coverage rate for finished repair (Ultra/fabric/ Ultra or SOLARGARD Seam Sealer/fabric/SOLARGARD Seam Sealer) is approximately 30–40 lineal ft./gal. Rates can vary depending on size of repair.
6. Install metal counter flashing as required.

All tight flashing seams need to be addressed by coating the seams of the flashings with SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 ½ gal./100 sq. ft. (24 wet mils), 4 inches wide, centered over the flashing seams.

C. Blisters

1. Make an incision in delaminated plies/membrane in a manner to allow the delaminated area to be folded back. Sponge out water and allow area to dry. Trowel a liberal application of SOLARGARD ULTRA or SOLARGARD Seam Sealer into the opening, pressing the delaminated plies into place. *If flaps are brittle, cut them off. Because of the thickness of typical single ply membranes, if a brittle blister needs to be removed it will need to be replaced with granular modified bitumen cap sheet. The membrane should be installed per the manufacturers written specifications, to bring the roof membrane back to level with the existing membrane. Once repair is fully cured, 3-course the perimeter of the repair (ULTRA or SG SS / Permafab / ULTRA or SG SS).*
2. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 gal./100 sq. ft. (16 wet mils) to the inside of the blister.
3. Replace flaps and apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) 8" wider than the blister area.
4. Cut PERMAFAB 6" wider than the blister area in each direction and embed in the SOLARGARD ULTRA or SOLARGARD Seam Sealer. Brush for proper adhesion and removal of all voids.
5. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges in each direction, feather out edges.
6. Coverage rates for finished repair (Ultra / fabric / Ultra or SOLARGARD Seam Sealer / fabric / SOLARGARD Seam Sealer) is approximately 30–40 lineal ft./gal. Rates can vary depending on size of repair.

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D. Splits

1. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 gal./100 sq. ft. (16 wet mils) over the entire area and 8" beyond the width of the split in each direction, feather out edges.
2. Cut PERMAFAB 6" wider than the split in each direction and embed in the SOLARGARD ULTRA or SOLARGARD Seam Sealer coating. Brush for proper adhesion and removal of all voids.
3. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges in each direction, feather out edges.
4. Coverage rate for finished repair (Ultra / fabric / Ultra or SOLARGARD Seam Sealer / fabric / SOLARGARD Seam Sealer) is approximately 30-40 lineal ft./gal. Rates can vary depending on size of repair.

NOTE: If an opening, crack, or cut is located over a stress line, like an insulation board joint, it is best to reinforce the line with PERMAFAB for the full length of the affected sheet, from endlap to endlap ("T" joint to "T" joint) before the first coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer is applied to the cleaned surface.

E. Fishmouths

1. Cut fishmouth to provide a smooth edge and apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 gal./100 sq. ft. (16 wet mils) 6" beyond the width of the fishmouth in each direction, feather out edges.
2. Cut PERMAFAB 4" wider than the fishmouth in each direction and embed in the SOLARGARD ULTRA or SOLARGARD Seam Sealer coating. Brush for proper adhesion and removal of all voids.
3. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges in each direction, feather out edges.
4. Coverage rates for finished repair (Ultra / fabric / Ultra or SOLARGARD Seam Sealer / fabric / SOLARGARD Seam Sealer) is approximately 30-40 lineal ft./gal. Rates can vary depending on size of repair.

F. Roof Penetrations

1. The base of all circular roof penetrations, i.e. stacks, vents, etc., may be sealed using Ultra / fabric / Ultra or SOLARGARD Seam Sealer / fabric / SOLARGARD Seam Sealer.
2. The base of all damaged curb penetrations must be sealed using SOLARGARD ULTRA or SOLARGARD Seam Sealer embedded into PERMAFAB. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 gal./100 sq. ft. (16 wet mils), embed PERMAFAB (cut to size), brush for proper adhesion and removal of all voids. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges.

G. Drains

1. Remove existing clamping ring and clean membrane under surface of clamping ring.
2. Apply Republic Single Ply Primer at 300-400 sq. ft./gal. (4-5 wet mils) covering all existing membrane. Allow to cure.
3. Apply SOLARGARD ULTRA at 1 gal./100 sq. ft. (16 wet mils) covering all existing membrane.
4. Cut a 40"x40" section of PERMAFAB fabric and embed into wet SOLARGARD ULTRA without wrinkles.
5. Apply a second coat of SOLARGARD ULTRA at 2 gal./100 sq. ft. (32 wet mils) and allow to cure.
6. Note: Clamping ring must be reinstalled if rain is in the forecast to ensure rainwater does not enter the building below the membrane at the drain.

H. Seams

1. All tight seams 60 mil or greater need to be addressed by coating the seams with SOLARGARD ULTRA or SOLARGARD Seam Sealer at 1 gal./100 sq. ft. (16 wet mils), 4 inches wide, centered over the seams.
2. All faulty or failed seams must be reinforced with SOLARGARD ULTRA or SOLARGARD Seam Sealer and PERMAFAB. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at a rate of 1 gal./100 sq. ft. (16 wet mils) in a minimum 6" wide ribbon. Embed 4" PERMAFAB. Brush for proper adhesion and removal of all voids. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils).
3. All PIB or Butyl Tape Seams must be reinforced with SOLARGARD ULTRA or SOLARGARD Seam Sealer and PERMAFAB. Apply SOLARGARD ULTRA or SOLARGARD Seam Sealer at a rate of 1 gal./100 sq. ft. (16 wet mils) in a minimum 6" wide ribbon. Embed 4" PERMAFAB. Brush for proper adhesion and removal of all voids. Apply a second coat of SOLARGARD ULTRA or SOLARGARD Seam Sealer at 2 gal./100 sq. ft. (32 wet mils).
4. Coverage rate for seam detail coat is approximately 30 – 40 lineal ft./gal.

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3.02 The Protective Coating

A. SOLARGARD ULTRA Single Ply Restoration System

1. General Note: SOLARGARD ULTRA is prohibited where the insulation has become saturated. Not recommended for vehicular traffic. Apply at temperatures over 50°F. Surfaces must be completely dry. Do not apply when rain is imminent. CAUTION: Application of this product in high humidity or temperatures, or over water saturated substrates can lead to improper curing, surface defects. All surfaces suspect for moisture contamination should be evaluated prior to application. Republic makes no warranty as to appearance or color since application methods and job site conditions are beyond our control and can affect product performance. This includes all flashing details as well as all patch and repair work and tie-ins. Consult Republic's Technical Department for specific job-site recommendations.

B. Application

1. Apply REPUBLIC Single Ply Primer at the rate of 300–400 sq. ft./gallon (4-5 wet mils) to the roof surface including prepared flashings, etc. When REPUBLIC Single Ply Primer has been applied longer than 72 hours prior to application of SOLARGARD ULTRA, REPUBLIC Single Ply Primer may need to be reapplied. All surfaces, which have been primed, must be clean and free of dirt, grease, oil and other foreign matter, which could prevent proper adhesion of SOLARGARD ULTRA.
2. Mix each container of SOLARGARD ULTRA with a power assisted mechanical mixer before use. Mix until coating is smooth and consistent. For pails, a Jiffy Mixer attached to a low speed power drill is recommended. For drums, a 600 Series Drum Mixer is recommended. Do not hand mix.
3. Refer to temperature/humidity chart. Do not apply at temperatures below 45°F or at Relative Humidity above 90% RH.
4. When applying SOLARGARD Ultra over a previously coated substrate, a test patch should be applied to determine compatibility and adhesion.
5. Apply SOLARGARD Ultra over prepared and primed roof at the rate of 2 gal./100 sq. ft. (32 wet mils). The whole surface, when finished, should have SOLARGARD Ultra on it at a rate of 2 gal./100 sq. ft. (32 wet mils). **DO NOT THIN!**
6. Vertical surfaces require a 2 coat application to obtain specified coverage rate without sag of the coating.
7. SOLARGARD Ultra may be applied by brush, 1/2" nap roller or spray equipment.

C. SOLARGARD ULTRA Walkway Application – Traffic Areas

1. In areas where walkways are required, the following method is the only approved walkway option for warranty purposes.
2. Completely install the SOLARGARD ULTRA system to specifications. Allow system to cure.
3. In the walkway area, apply SOLARGARD ULTRA at 16 wet mils. Embed 40" PERMAFAB into the wet coating
4. Apply SOLARGARD ULTRA (in white or desired earth tone color) at 32 wet mils to encapsulate the PERMAFAB.
5. Immediately broadcast and backroll #20-40 mesh, angular cut, washed silica sand into the wet coating at the rate of 13 lbs./100 sq. ft.
6. Allow to cure before permitting traffic.

D. Spray Equipment Recommendation

Application of urethane coatings with spray equipment may require some masking and possible erection of wind screens to prevent over spray and drift damage. Protect surfaces of unrelated areas from coatings and overspray possibility.

Pumps: Graco King 45:1 or gas powered equivalents. Graco GH733, HydraMax 350 or other manufacturers equivalents.

Hose/Pressure: 50'–300' length (depending on spray rig pressure). When using hoses longer than 100' use the next larger hose ID every 50'. Every 50' of hose will reduce the spray pressure of the rig by 10% at the gun tip.

i.e., 300' hose – 3/4" (50/100') to 5/8" (50/100') to 1/2" (50/100') to 3/8" (50')

Good results are generally obtained @ 2500–3500 psi at spray tip.

Gun: Graco Contractor Gun, Graco Contractor FTx gun, Graco Silver Plus or equivalent. (Tip extrusions or pole guns can be used)

*Tip Sizes:

Fan Width (in)	.039	.041	.043	.045	.047	.049
10" – 12"	539	541	543	545	547	549
12" – 14"	639	641	643	645	647	659
14" – 16"	739	741	743		747	749
16" – 18"	839	841	843		847	
Flow Rate	1.60 gpm	1.80 gpm	1.98 gpm	2.17 gpm	2.37 gpm	2.58 gpm

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- * Graco Heavy-Duty RAC Switch tips (GHDXXX) Grey
- * Skill and experience of the spray applicator is important to the success of the coating application. Periodic checking of the film build is necessary to ensure best results.
- * Do not permit traffic on completed roof surfaces unless absolutely necessary, and only after complete cure.

3.03 Material Requirements

3.04 Clean Up

1. As work progresses, it is essential to keep equipment in clean, working condition. If spray equipment is used, flush lines with REPUBLIC THINNER #1 or Xylene. General clean-up with same.
2. At the conclusion of the project, all equipment should be cleaned and returned to its designated location. Disposal of empty, partially full, or full drums should be discussed with the building owner, contractor, or engineer.

PART 4 – File Data

4.01 Enclosures

4.02 Warranty Disclaimer

Please note that if Republic Powdered Metals has been requested to furnish a warranty, the contractor/owner must comply with the conditions for warranty issuance set forth on the reverse side of the warranty document, a sample copy of which is available upon request. Republic Powdered Metals reserves the right to refuse issuance of a warranty pursuant to such conditions.

Contact Republic Powdered Metals, Inc. for details regarding available warranties on the SOLARGARD[®] ULTRA System.



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