

# PERMAFLEX<sup>®</sup>

## WATERPROOFING SYSTEM FOR MODIFIED BITUMEN ROOFS

### 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 to Republic identifying total area to be coated, along with pictures of close up surface conditions, seams, and all details including any repairs to seams, protrusions, and general conditions of the existing roof along with a completed Notice of Award, prior to Republic's acceptance of the project.

#### 1.04 Product Storage And Handling

- A. Storage of Materials:
1. Store in accordance with manufacturer's recommendations.
  2. Store emulsion materials so that they will not freeze.
- 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.

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

#### 2.01 Coating System

##### A. PERMAFLEX

##### 1. Description

PERMAFLEX is a water-based, non-fibered, polymer modified, elastomeric asphalt emulsion roof coating formulated to provide a flexible, waterproof, elastic film for the protection of existing asphalt roofs. PERMAFLEX will resist the effects of weather, water, and building movement.

##### 2. Performance Requirements

Weight per gallon (ASTM D 1475)	8.3 ± 0.2 lbs.
Specific gravity (ASTM D 1475)	1.00 ± 0.02
Elongation @ 77° F (ASTM D 412)	800% ± 100%
Flexibility @ 0° F (ASTM D 1737)	Passes 1/4 inch mandrel
Tensile Strength @ 77° F (ASTM D-412)	68 psi

Dry time (ASTM D 1640)	24 hrs
Flash point (ASTM D3978)	None
VOC Content (ASTM D3960)	50 g/l
Clean up	Water (followed by mineral spirits)

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## 2.02 Accessory Materials

- A. REPUBLIC WB Primer is a water-based asphalt primer for asphalt built-up and modified bitumen roofs.
- B. PERMAFAB is a 100% stitchbonded polyester fabric used as a reinforcement fabric for flashing and surface break repairs.
- C. GEOGARD Seam Sealer is a gray single component, urethane industrial maintenance coating for waterproofing metal building seams and sealing fastener heads, as well as sealing joints in copings, flashings, vents, protrusions etc.
- D. ALUMANATION 301 is an industrial, maintenance, self-priming, aluminum coating formulated with selected high solids, asphaltic liquids, non-drying oils, a blend of natural and synthetic fibers, and fine aluminum pigment.

## PART 3 – Execution

### 3.01 Preparation for Coating

#### A. Cleaning

- 1. Remove all loose granules, dirt, dust, debris, etc., by mechanical brush, stiff broom, vacuum, power washing, etc. All surfaces must be clean and dry.
- 2. Flashings, blisters, and other damaged areas must be repaired and allowed to cure for 48-72 hours prior to applying PERMAFLEX to the entire roof.
- 3. Check for adhesion and compatibility of any remaining, tightly adhered, existing coating with PERMAFLEX. 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.

#### B. Priming

- 1. Smooth surface modified bitumen requires priming prior to the application of PERMAFLEX. Granular surfaced modified bitumen does not require priming if the majority of the granules are still intact.

#### C. Flashings

Repair all flashings using PERMAFAB polyester fabric embedded into GEOGARD Seam Sealer or PERMAFLEX using the following detail. *If flashings are damaged beyond repair, flashing must be replaced with granular modified bitumen cap sheet. The membrane should be installed per the manufacturer's written specification to bring the flashings back to a water tight condition.*

- 1. Cant strips should be provided at vertical surfaces to receive flashing.
- 2. Apply PERMAFLEX to all areas at a minimum of 24 wet mils thickness.
- 3. Embed fabric 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 PERMAFLEX at a minimum of 32 wet mils thickness over the fabric and a minimum of 2" beyond edges in each direction.
- 5. Install metal counter flashing as required.
- 6. After proper cure period, coat all vertical flashings with ALUMANATION 301 at the rate of 1-1/2 gals./100 sq. ft. (24 wet mils).

#### D. Blisters

- 1. Make an X-cut of sufficient size and completely open blister by folding back flaps, sponge out water and allow area to dry. *If flaps are brittle, cut them off. If a blister needs to be removed it will need to be replaced with granular modified bitumen cap sheet. The membrane should be installed per the manufacturer's 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 with PERMAFLEX / PERMAFAB / PERMAFLEX or GEOGARD Seam Sealer / PERMAFAB / GEOGARD Seam Sealer.*
- 2. Apply GEOGARD Seam Sealer to the inside of the blister.
- 3. Replace flaps and apply PERMAFLEX or GEOGARD Seam Sealer at 24 wet mils thick and 8" wider than the blister area.
- 4. Embed fabric cut about 6" wider than the blister area. Brush for proper adhesion and removal of all voids.
- 5. Apply a top coat of PERMAFLEX or GEOGARD Seam Sealer at 32 wet mils over the fabric and a minimum of 2" beyond edges.

#### E. Splits

- 1. Apply PERMAFLEX or GEOGARD Seam Sealer at 24 wet mils over the area - 8" beyond the width of the split in each direction.

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2. Cut fabric 6" wider than the split on each side and embed in the PERMAFLEX or GEOGARD Seam Sealer.
3. Apply a top coat of PERMAFLEX or GEOGARD Seam Sealer at 32 wet mils over the fabric and a minimum of 2" beyond edges.

**NOTE:** If splits are extensive and continuous in one direction, determine cause before proceeding as more extensive repairs may be indicated.

## F. Fishmouths

1. Cut fishmouth to provide a smooth edge and apply PERMAFLEX or GEOGARD Seam Sealer at 24 wet mils.
2. Cut fabric to size and embed into PERMAFLEX or GEOGARD Seam Sealer.
3. Apply a 32 wet mils top coat of PERMAFLEX or GEOGARD Seam Sealer over the fabric and a minimum of 2" beyond edges.

## G. Roof Penetrations

1. The base of all circular roof penetrations, i.e. stacks, vents, etc., and curb penetrations must be sealed using PERMAFAB embedded into PERMAFLEX or GEOGARD Seam Sealer in a three-course application.

## H. Drains

1. Remove existing clamping ring and clean membrane under surface of clamping ring. 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.
2. If using PERMAFLEX, apply Republic WB Primer at 100-200 sq. ft./gal. (8-16 wet mils) covering all existing membrane. Allow to cure.
3. Apply PERMAFLEX or GEOGARD Seam Sealer at 24 wet mils covering all existing membrane.
4. Cut a 40"x40" section of PERMAFAB fabric and embed into wet PERMAFLEX or GEOGARD Seam Sealer without wrinkles.
5. Apply a second coat of PERMAFLEX or GEOGARD Seam Sealer at 32 wet mils and allow to cure.
6. Reinstall clamping ring and all drain bolts.

## I. Modified Bitumen Seams

1. All modified bitumen seams must be 3-coursed with 4" PERMAFAB fabric embedded into either PERMAFLEX or GEOGARD Seam Sealer in a 6" wide application. A 3-course combination consists of sealer/fabric/sealer. In typical situations, one (1) gallon of PERMAFLEX or GEOGARD Seam Sealer will cover approximately 30-40 lineal feet of seams in a 3-course combination.
2. If using PERMAFLEX and felts or plies are dried out, apply REPUBLIC WB Primer at the rate of 100-200 sq. ft./gal. prior to the application of PERMAFLEX.
3. If using GEOGARD Seam Sealer, allow to cure 24-48 hours.
4. If using PERMAFLEX, allow to cure 48-72 hours, depending on temperature and humidity.

## 3.02 PERMAFLEX

### A. Modified Bitumen

1. Clean surface.
2. Repair flashings, blisters, and other damaged areas.
3. Apply WB Primer at the rate of 200-400 sq. ft./gal. Allow WB Primer to dry to foot traffic. When WB Primer has been applied longer than 72 hours prior to PERMAFLEX application, WB 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 PERMAFLEX.
4. Then apply PERMAFLEX at the rate of 3 1/2 gal./100 sq. ft.
5. \*Option 1: Broadcast granules @ approximately 70 lbs. per 100 sq. ft.
6. \*Option 2: As soon as system can bear foot traffic (minimum of 14 - 21 days), apply SOLARGARD ULTRA at the rate of 1 gal./100 sq. ft.
7. \*Option 3: After 30 days, apply ALUMANATION 301 at the rate of 1 gal./100 sq. ft.
8. Coat all vertical flashings with ALUMANATION 301 at the rate of 1 1/2 gals./100 sq. ft.
9. Do not permit traffic on completed roof surfaces unless absolutely necessary, and only after complete cure.

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## 3.03 The Protective Coating

### A. General

For optimum results, the protective coating must not be applied to wet or damp surfaces, and postponed if rain is imminent. Recommended application is by spray equipment. MIX WELL BEFORE USE utilizing power assisted equipment. DO NOT THIN!

### B. Spray Equipment Recommendation

**Pumps:** Graco King 45:1, Graco Bulldog 30:1 or gas powered equivalents. Graco GH733, HydraMax 350 or GMax 7900 or other manufacturer's 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 @ 2000–3000 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	.043	.047	.051	.055	.059
10" – 12"	539	543	547	551	555	559
12" – 14"	639	643	647	651	655	659
14" – 16"	739	743	747	751	755	
16" – 18"	839	843	847	851	855	
Flow Rate	1.60 gpm	1.98 gpm	2.37 gpm	2.79 gpm	3.25 gpm	3.74 gpm

\* Graco Heavy - Duty RAC Switch tips (GHDXXX) Grey

\* Additional tip sizes are available between .039 - .059.

\* 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 Clean Up

- As work progresses, it is essential to keep equipment in clean, working condition. If spray equipment is used, flush lines with clean water followed by mineral spirits to keep metal parts from corroding. General clean-up with same.
- Do not allow the PERMAFLEX to remain in the spray equipment overnight.
- 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 for details regarding available warranties on the PERMAFLEX<sup>®</sup> System.

