

GENERAL GUIDELINE SPECIFICATION

GEOGARD[®]

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: 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: GEOGARD contains solvents that may be irritable to some individuals; consult MSDS for GEOGARD Base Coat and Finish Coat for precautionary information.

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

2.01 Coating System

A. GEOGARD

1. Description

GEOGARD is a fire resistant two-coat polyurethane elastomeric coating system. The system consists of a single component, high performance, modified aromatic urethane base coat and a single component, high performance, modified aliphatic urethane white finish coat.

2. Performance Requirements

	GEOGARD Base Coat	GEOGARD Finish Coat
Weight per gallon (ASTM D 1475)	11.0 ± 0.2 lbs	8.8 ± 0.2 lbs.
Specific gravity (ASTM D 1475)	1.32 ± 0.02	1.06 ± 0.02
Solids by weight (ASTM D 1333)	74% ± 1%	69% ± 1%
Solids by volume	65 ± 1%	51% ± 1%
Elongation @ 77°F (ASTM D 2370)	450%	250%
Flexibility @ 0°F (ASTM D 1737)	Passes 1/8" mandrel	Passes 1/8" mandrel

	GEOGARD Base Coat	GEOGARD Finish Coat
Tensile strength (ASTM D 2370)	320 psi	3480 psi
Shore "A" hardness (ASTM D 2240)	37	80
Dry time (ASTM D 1640)	Cure 48 hrs.	Cure 24 hrs.
Flash point (ASTM D 3278)	100°F	80°F
Clean up	Republic Thinner #1 or Xylene	Republic Thinner #1 or Xylene

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2.02 Accessory Materials

- A. PERMAFAB is a 100% stitchbonded polyester fabric used in repairing blisters, fishmouths, splits, and as reinforcement for flashing details.
- B. DURATHANE is a premium-grade, moisture-cured, one component, polyurethane sealant, for use in sealing existing roof penetrations and termination bars, etc.
- C. REPUBLIC THINNER #1 is an aromatic petroleum solvent used for clean-up of the GEOGARD System.
- D. GEOGARD LO Base Coat is a high solids, low VOC, low odor, aromatic urethane base coat that can be substituted for GEOGARD Base Coat and used in conjunction with GEOGARD Finish Coat as a restoration system. Contact Republic Technical Service for application information.
- E. GEOGARD Primer is a single component industrial maintenance product utilized to promote inter-coat adhesion by reactivating GEOGARD products.

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. Flashings, blisters, and other damaged areas must be repaired and allowed to cure for 24 hours prior to applying the GEOGARD Base Coat to the entire roof.
 - 3. Check for adhesion and compatibility of any remaining, tightly adhered, existing coating with GEOGARD Base Coat. A test application is the best method of determining compatibility with and adhesion to a previously coated surface. Contact Republic's Technical Department for further information.
 - 4. Prevent mechanical units from distributing solvent fumes into the building.
- B. Flashings
 - 1. All tight flashing seams need to be addressed by coating the seams of the flashings with GEOGARD Base Coat at 2 gal./100 sq. ft (32 wet mils), 4 inches wide, centered over the flashing seams.
 - 2. All faulty or failed flashings must be repaired using PERMAFAB and GEOGARD Base Coat 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.*
 - 3. Cant strips should be provided at vertical surfaces to receive flashing.
 - 4. PERMAFAB should be unrolled and cut to a maximum length of ten feet prior to setting in place.
 - 5. Apply GEOGARD Base Coat to all areas at 1 gal./100 sq. ft (16 wet mils).
 - 6. 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.
 - 7. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges in each direction.
 - 8. Install metal counter flashing as required.
- C. Blisters
 - 1. Make an X-cut of sufficient size and completely open blister by folding back flaps, sponge out water and allow area to air dry. *If flaps are brittle, cut them off. 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 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 (Base Coat / PERMAFAB / Base Coat):*
 - 2. Apply GEOGARD Base Coat at 1 gal./100 sq. ft. (16 wet mils) to the inside of the blister.
 - 3. Replace flaps and apply GEOGARD Base Coat at 1 gal./100 sq. ft. (16 wet mils) and 8" wider than the blister area.
 - 4. Cut PERMAFAB 6" wider than the blister area in each direction and embed in the GEOGARD Base Coat, brush for proper adhesion and removal of all voids.
 - 5. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and taper a minimum of 2" beyond edges in each direction.

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6. Coverage rates for finished repair (base coat / fabric / base coat) is approximately 30 lineal ft./gal. Rates can vary depending on size of repair.

D. Splits

1. Apply GEOGARD Base Coat 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 GEOGARD coating, brush for proper adhesion and removal of all voids.
3. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and taper a minimum of 2" beyond edges in each direction. Feather out edges.
4. Coverage rates for finished repair (base coat / fabric / base coat) is approximately 30 lineal ft./gal. Rates can vary depending on size of repair.

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

E. Alligatoring

1. Apply GEOGARD Base Coat at 1 gal./100 sq. ft. (16 wet mils) over entire area and 8" beyond the width of the alligatored area in all directions.
2. Cut 40" PERMAFAB wider than the alligatored area in each direction and embed in the GEOGARD coating, brush for proper adhesion and removal of all voids.
3. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and taper a minimum of 2" beyond edges in each direction.

F. Fishmouths

1. Cut fishmouth to provide a smooth edge and apply GEOGARD Base Coat at 1 gal./100 sq. ft. (16 wet mils) 6" beyond the width of the fishmouth in each direction.
2. Cut PERMAFAB 4" wider than the fishmouth in each direction and embed in the GEOGARD coating, brush for proper adhesion and removal of all voids.
3. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and taper a minimum of 2" beyond edges in each direction.

G. Roof Penetrations

1. All circular roof penetrations, i.e. stacks, vents, etc., and curb penetrations must be sealed using GEOGARD Base Coat with embedded PERMAFAB. Apply GEOGARD Base Coat 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 GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils) over the PERMAFAB and a minimum of 2" beyond edges.

H. Seams - Modified Bitumen

1. All tight seams need to be addressed by coating the seam with GEOGARD Base Coat at 2 gal./100 sq. ft (32 wet mils), 4 inches wide, centered over the seams.
2. All faulty or failed modified bitumen seams must be reinforced with GEOGARD Base Coat and PERMAFAB. Apply GEOGARD Base Coat at 1 gal./100 sq. ft. minimum (16 wet mils) in minimum 6" wide ribbon. Embed 4" PERMAFAB. Brush for proper adhesion and removal of all voids. Apply a second coat of GEOGARD Base Coat at 2 gal./100 sq. ft. (32 wet mils).
3. Coverage rate for seam detail coat is approximately 30-40 lineal ft./gal.

3.02 GEOGARD Waterproofing System

A. General

1. Power wash existing roof. Remove all loose existing coating, dirt, dust, debris, etc.
2. Check for compatibility of any remaining, tightly adhered existing coating with GEOGARD by conducting a test application to determine compatibility with and adhesion to a previously coated surface.
3. Seams, flashings, blisters, and other damaged areas must be repaired and allowed to cure for 24 hours prior to applying the GEOGARD Base Coat to the entire roof.

B. Modified Bitumen

1. Apply GEOGARD Base Coat at the rate of 3 gal./100 sq. ft. (48 wet mils) to the roof surface including previously coated flashings, blisters, splits, seams, etc. Excessive granule may take additional gallons or quantities of GEOGARD Base Coat. GEOGARD Base Coat should leave the surface without any peaks and valleys and provide a smooth monolithic surface.

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2. Allow Base Coat to cure (24 hours). Then apply GEOGARD Finish Coat at the rate of 1 gal./100 sq. ft (16 wet mils). If GEOGARD Base Coat has been down longer than 72 hours prior to the application of GEOGARD Finish Coat, prime the GEOGARD Base Coat with GEOGARD Primer.
3. Do not permit traffic on completed roof surfaces unless absolutely necessary, and only after complete cure.

C. GEOGARD 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 GEOGARD Base Coat and GEOGARD Finish Coat system to specifications. Allow system to cure.
3. In the walkway area, the GEOGARD Finish Coat must be primed with GEOGARD Primer prior to the application of the walkway system.
4. After priming with GEOGARD Primer, apply GEOGARD Base Coat at a rate of 16 wet mils in desired area. Embed 40" PERMAFAB into the wet base coat.
5. Apply GEOGARD Base Coat at a rate of 24 wet mils to encapsulate the PERMAFAB.
6. Immediately broadcast and back roll #20-40 mesh, angular cut, washed silica sand into the wet base coat at the rate of 13 lbs./100 sq. ft.
7. After 24-48 hour cure, apply GEOGARD Finish Coat (in white or standard color) at 16 wet mils.
8. Allow to cure 24 hours before permitting traffic.

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. Failure to comply can result in blistering. In addition, GEOGARD Finish coat must be applied to the base coat within 72 hours of its application. DO NOT THIN!

NOTE: GEOGARD Base Coat and GEOGARD Finish Coat are not recommended for roofs where all plies have become embrittled or where the insulation has become saturated. Not recommended over unweathered asphalt less than two seasons old, tar roofs, and silicone-based coatings. Not recommended for vehicular traffic. Apply at temperatures over 40°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, and/or loss of gloss. 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. GEOGARD Finish Coat must be applied to the base coat within 72 hours of its application otherwise the base coat must be reactivated by applying GEOGARD Primer at a rate of 400 sq. ft./gal. before applying the finish coat. This includes all flashing details as well as all patch and repair work and tie-ins.

B. Application

GEOGARD Base Coat and Finish Coat may be applied by brush, roller, squeegee, or heavy-duty airless spray. MIX WELL BEFORE USE utilizing power assisted equipment. When applying GEOGARD over a previously coated substrate, a test patch is to be applied to determine compatibility and adhesion. DO NOT THIN!

1. 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 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 @ 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).

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* 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	
<i>Flow Rate</i>	<i>1.60 gpm</i>	<i>1.98 gpm</i>	<i>2.37 gpm</i>	<i>2.79 gpm</i>	<i>3.25 gpm</i>	<i>3.74 gpm</i>

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

* Additional tip sizes are available between .039–.059.

* Base coat should be applied with a tip size of .043–.060.

* Finish coat should be applied with a tip size of .039–.049.

* 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.

3.04 Clean Up

- A. 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 pure xylene. General clean-up with same.
- B. Do not allow the GEOGARD to remain in the spray equipment overnight.
- C. 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

- A. 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 GEOGARD® System.



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