

07140-1 Liquid Applied Waterproofing Membrane System

Poly Rubber Gel SPECIFICATION GUIDE: LIQUID APPLIED WATERPROOFING MEMBRANE

SECTION 07140

LIQUID APPLIED WATERPROOFING MEMBRANE SYSTEM

Specifier Notes: This guide specification is written according to the Construction Specifications Institute (CSI) Format. The section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Specifier Notes: RE-SYSTEMS GROUP, USA Poly Rubber Gel Waterproofing System is a single component, polymer-modified, cold applied, liquid waterproofing membrane ideal for horizontal and vertical waterproofing applications. This heavy bodied, liquid membrane is ideal for immediate application to newly stripped, below grade concrete walls and for use with insulated concrete forms. It is also suitable for below grade masonry block walls, split slab construction, plaza decks, planters, elevator pits, and blind side applications.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Application of single component, cold applied liquid waterproofing membrane.

1.02 REFERENCES

- A. ASTM D 1709 - Standard Test Methods for Impact Resistance of Plastic Films by the Free Falling Dart Method.
- B. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- C. ASTM C 836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
- D. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- E. ASTM D 1353 - Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products.
- F. ASTM E-154-88 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- G. ASTM D 56 - Standard Test Method for Flash Point by Tag Closed Cup Tester.
- H. ASTM C 1135 - Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
- I. ASTM D 751 - Standard Test Methods for Coated Fabrics.

J. ASTM D-412-98 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers.

K. ASTM D 2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.

1.03 SUBMITTALS

A. Submit Product Data for each type of waterproofing specified, including manufacturer's printed instructions for evaluating and preparing the substrate, technical data, and tested physical and performance properties.

B. Project Data - Submit Shop Drawings showing locations and extent of waterproofing, including details for substrate joints and cracks, sheet flashing, penetrations, and other termination conditions.

C. Samples – Submit representative samples of the following for approval:

1. Waterproof Membrane Material.
2. Protection Course Material.
3. Prefabricated Drainage Mat *as required*.
4. Structural Mesh Material *as required*.
5. Geo-textile and detailing sheet *as required*.

D. Installer Certificates – Submit certificates signed by manufacturer certifying that Installers comply with requirements under the "Quality Assurance" Article.

1.04 QUALITY ASSURANCE

A. Refer to Section 1.03 SUBMITTALS. Include items A., B., C. & D.

B. Installer Qualifications: Installer must be licensed, certified in writing and approved by membrane manufacturer RE-Systems Group, USA for the installation of the Turbo-Seal Waterproofing System.

C. Membrane Manufacturer shall have available an in-house technical staff to assist the contractor, when necessary, in application of the products and final inspection of the assembly.

D. Membrane Manufacturer Qualification: Membrane Manufacturer must show evidence that the specified polymer rubber has been manufactured by the same source for ten (10) years and successfully installed on a yearly basis for a minimum of ten (10) years on projects of similar scope and complexity.

E. Pre-Installation Conference(s): At least one pre-installation conference shall be held at the job site with the appropriate parties to discuss project conditions as they relate to the installation of the waterproofing system.

1.05 DELIVERY, STORAGE, AND HANDLING

A. All of the materials on site shall be a specified product.

B. All components of the waterproofing system shall be provided by the same manufacturer.

C. Deliver materials to site in manufacturer's original, unopened containers and packaging.

D. Each product and component shall have name, size, manufacturing date, and manufacturer's name and location.

E. Store materials in a clean area in accordance with manufacturer's instructions.

F. Protect materials during handling and application to prevent damage or contamination.

G. Discontinue application during rain and resume work after the area is acceptably dry and ready for application.

H. When viscosity increases to an unacceptable level due to cold temperature, use a warming method recommended by the manufacturer to reduce viscosity. Addition of a solvent is strictly prohibited.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Product not intended for uses subject to abuse or permanent exposure to the elements.

B. Membrane can be applied to green concrete.

C. Membrane can be applied with minimal surface preparation.

D. Membrane can be applied without primer.

E. Ambient temperature shall be within manufacturer's specifications. (Greater than +0°F/- 18°C.)

1.07 WARRANTY

A. Various warranties are available differing in terms and conditions. Contact RE-Systems Group, USA for exact warranty terms and conditions to meet the specific project requirements.*

B. Warranties available from the manufacturer: *(Edit to project requirements)**

1. Material Warranties; excludes labor.

Duration: 2-, 5-, 10-, 15-, 20- year

2. Re-Assurance Warranty; includes labor and material.

Duration: 5-, 10-, 15-, 20- year

*Contact RE-Systems Group, USA for exact warranty terms and conditions.

PART 2 PRODUCTS

2.01 POLY-RUBBER GEL

A. Poly Rubber Gel shall consist of composite HDPE sheet (Turbo-Sheet), poly-rubber gel (Turbo-Seal P), *geo-composite mesh (miracle mesh) and water-soluble film (water soluble protection sheet) as required*

B. Poly-Rubber Gel: Cold Fluid-Applied Waterproofing shall be a single component, polymer modified, waterproofing system composed of poly-rubber gel (a non-Newtonian, thixotropic gel) and ancillary products as manufactured by the Re-Systems Group (www.re-systemsgroup.com). No substitutions permitted

C. Poly-rubber gel waterproofing systems shall have the following performance properties:

1. Self-healing at water pressures up to 160 psi.
2. Self-adhering and completely bonded to the entire surface of the substrate with no voids or discontinuity.
3. Resistant to chemical attack.
4. Not affected by wet/dry cycling.
5. Contains less than 1 per cent volatile organic compounds (VOC).
6. Non-toxic and non-flammable.
7. Seamless.
8. Waterproofing poly-rubber gel contains 25% recycled materials.
9. One-part gel material.
10. Applied without primer.
11. Waterproofing poly-rubber gel remains flexible and never completely cures.

D. The poly-rubber gel waterproofing systems components shall have the following physical properties:

Turbo-Seal P:

PROPERTY	RESULTS	TEST METHOD
Solids Content	75%	ASTM D1353
Resistance to Decay	0% moisture permeation and weight change	ASTM E-154-88
Puncture Resistance*	2200g (4.85lbs)	ASTM D 1709
Flash Point	> 200°F	ASTM D56
Tensile Strength*	190 ± 0.11 lbs/in.	ASTM D-412-98
Elongation %	394%	ASTM C1135
Hydrostatic Pressure Resistance*	169 ± 3 lbs/in ²	ASTM D-751
Adhesion to Concrete	Rating of 1 (Excellent)	ASTM D-412-98
Crack Bridging Flexibility	No cracks	ASTM C-836-89
Moisture Permeability*	.0185 perms	ASTM E-96-80
Viscosity	150,000 cP**, 3,100,000 cP***	ASTM D2196

*Classification based on composite system with reinforced HDPE Turbo-Sheet. ** Pump/application mixed condition ***Static surface condition

HDPE Turbo sheet 16 mil reinforced Protection Sheet/Vapor Retarder with geo-composite backing:

Classification	A	ASTM E 1745
Water Vapor Permeance	.0185 perms	ASTM E 96
Tensile Strength	190 lbf/in	ASTM E D 882
Puncture Resistance	2200 grams	ASTM D 1709

E. **as required** Geocomposite mesh (Miracle Mesh) applied to the poly-rubber gel prior to concreting shall have the following properties:

1. Mesh size: approximately 1/2 inch by 1/2 inch +/- 1/16 inch

2. Mesh thickness .075" +/- .005"
3. Nominal hole size: 1/2" - 80 percent open area nominal
4. MD breakload > 17lb / strand
5. TD breakload > 15lb / strand
6. Color: UV stabilized black

F. **as required** Water-Soluble Film (Water soluble protection sheet)

1. Soluble resin composed of:
 - a. 90 percent polyvinyl alcohol (PVA, PVOH, PVAL), polymerization degree: 1,700 to 1,800
 - b. Hydrolyzation degree: minimum 86 percent
 - c. 10 percent plasticizers and organic additive
2. Water Soluble biodegradable without toxic residue
3. Stable at normal environmental conditions

2.02 ACCESSORIES

- A. Concrete Repair Materials: Materials approved by manufacturer.
- B. Seaming Tape: Turbo-Tape, 16 mil laminated rubberized asphalt to polyethylene film or suitable alternate approved by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine all surfaces to receive the waterproofing assembly to verify it is acceptable and proper for the application of the membrane. Refer to RE-Systems Group, USA Application Guidelines manual.
 1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
 2. Verify that substrate is visibly dry and free of ponded water.
 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean, dust free, and dry substrate for waterproofing application. *Note: Surface primer is unnecessary*
- B. Surfaces must be clean, relatively smooth and free of standing water.
- C. Patch all holes and voids and smooth out any surface misalignments.
- D. Remove and patch all concrete form ties.
- E. Close off deck drains and other penetrations to prevent spillage and migration of waterproofing fluids.
- F. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from substrate.
- G. Mask adjoining surfaces not receiving waterproofing to prevent spillage affecting other construction.
- H. Waterproofing membrane can be applied to green concrete.

Specifier's Note: Either one or both of the following application methods may be used depending on project requirements

3.03 APPLICATION **HORIZONTAL AND VERTICAL**

A. Detailing/Flashing

1. Prepare detailing and flashing in accordance with the manufacturer's standard guideline details.
2. Complete all detailing and flashing before installing the membrane over the field of the substrate.

B. Membrane Application

1. Apply the rubberized membrane at a rate to provide a continuous, monolithic coat of 90 mil minimum (approximately 2.3 mm).

C. Protection Layer Application:

1. Embed the Turbo-Sheet into the membrane.
2. Overlap adjoining sheet edges (dry) a minimum of 2"-3" (50.8 mm - 76.2 mm) to ensure complete coverage.
3. Tape all seams.
4. The completed membrane/protection assembly must be covered with subsequent topping materials as soon as possible; within 24 hours of application. If final topping material, for whatever reason, can not be applied within 24 hours, arrangements must be made to protect membrane from extended exposure to UV.

3.04 APPLICATION **BLIND SIDE**

A. Base Sheet Application

1. Apply Turbo-Sheet against the prepared soil retention system (wood lagging, sheet piling, gunite, shotcrete, etc.). fasten membrane to retention system with large head nails, staples, or other manufacturer approved method.
2. Overlap adjoining sheet edges (dry) a minimum of 4" (50.8 mm - 76.2 mm) to ensure complete coverage.
3. Tape all seams.

B. Membrane Application

1. Apply the rubberized membrane at a rate to provide a continuous, monolithic coat of 90 mil minimum (approximately 2.3 mm).

C. Structural Mesh Application

1. Mechanically fasten Miracle Mesh into Turbo-Seal membrane against base sheet.

D. Water Soluble Film Application

1. After other components have been installed, apply water soluble film as shown on contract drawings and as recommended by manufacturer.

2. Pour concrete directly against water soluble film as soon as possible; within 24 hours of application. Water soluble film and waterproofing assembly must be protected from UV and exposure to ambient environmental conditions if site conditions and schedule will not allow concrete to be poured within 24 hours.

3.05 WATER TEST

A. If feasible, it is strongly recommended that the deck area or portions thereof be water tested by means of electronic testing or ponding water to a minimum depth of 2" (50.8 mm) for a period of 48 hours to check the integrity of the membrane installation.

B. VERIFY that the structure can support the dead load weight of a water test before testing.

C. If leaks should occur, the water must be drained completely and the membrane installation repaired.

3.06 JOB COMPLETION

A. Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects must be corrected.

B. Clean up all debris and equipment.

END OF SECTION