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NAVFAC IGS-07132 (MAY 2002)  
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Preparing Activity: LANTNAVFACENGCOM Based on UFGS-07132N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

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SECTION 07132

ELASTOMERIC SHEET WATERPROOFING  
05/02

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NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

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NOTE: This guide specification covers elastomeric waterproofing, sheet-applied, and is intended for use where local practice and experience indicates that protection against hydrostatic pressure or conditions of excessive dampness can be achieved by using elastomeric waterproofing. Typical applications include but are not limited to wall and foundation waterproofing, waterproofing promenades and parking decks, waterproofing beneath shower pans, kitchens, toilet facilities, janitorial rooms, and indoor swimming pools.

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NOTE: The following information shall be shown on the project drawings:

1. Extent of membrane waterproofing, flashing, and counterflashing, pipe and conduit penetrations, and junctions at walls and floors.

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Comments and suggestion on this specification are welcome and should be directed to the technical proponent of the specification. A listing of the technical proponents, including their organization designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer

choices or locations where text must be supplied by  
the designer.

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PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ITALIAN NATIONAL ASSOCIATION FOR UNIFICATION OF STANDARDS (UNI  
NORMS)

- |                |   |
|----------------|---|
| UNI 4157       | (1987) Building - Bitumen for Roofing - Sampling and Acceptance Limits  |
| UNI ISO 4892-1 | (1994) Plastics - Methods of Exposure to Laboratory Light Sources - Part 1: General Guidance  |
| UNI 4916       | (1974) Tests on Elastomers and Plastics - Determination of Shore A and D Hardness   |
| UNI 6825       | (1971) Waterproofing of Roof Coverings - Glass Fiber Webs to be Impregnated with Bituminous Materials - Requirements and Test Methods |
| UNI 7092       | (1972) Tests on Plastics. Determination of the Density (Mass Density) of non Cellular Plastics  |
| UNI 8202/8     | (1988) Building - Water Proof Sheets - Determination of Tensile Strength  |
| UNI 8202/9     | (1988) Building - Water Proof Sheets - Determination of Tear Resistance   |
| UNI 8202/15    | (1984) Building - Water Proof Sheets - Determination of Cold Bending  |
| UNI 8202/23    | (1988) Building - Water Proof Sheets - Determination of Water Vapor Permeability  |
| UNI EN 28510/1 | (1993) Adhesives - Peel Test for a Flexible-Bonded-to-Rigid Test Specimen Assembly - Part 1: 90° Peel                                 |

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- |           |  |
|-----------|--|
| ISO 11339 | (1993) Adhesives - 180 Degree Peel Test for Flexible-to-Flexible Bonded Assemblies |
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1.2 SUBMITTALS

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NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item is required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

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Submit the following in accordance with section entitled "Submittal Procedures".

SD-03 Product Data

Elastomeric waterproofing sheet material G, [\_\_\_]

Protection board

Primers, adhesives, and mastics

Include description and physical properties; application details; recommendations regarding shelf life, application procedures; requirements for protective covering; and precautions for flammability and toxicity.

SD-06 Test Reports

Elastomeric waterproofing sheet material

Certify compliance with performance requirements specified herein.

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver and store materials out of the weather, in manufacturer's original packaging with brand name and product identification clearly marked. Do not permit uncertified materials in the work area.

1.4 ENVIRONMENTAL CONDITIONS

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**NOTE: When waterproofing will be installed indoors protected from the weather, delete requirements for outdoor environmental conditions. Also, in geographical areas where the specifier determines it is routine to utilize artificial means of maintaining the surface and ambient temperatures above 4 degrees C, include the conditions for waiver in the project specifications.**

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Do not apply waterproofing during inclement weather or when there is ice, frost, surface moisture, or visible dampness on the surface to receive waterproofing and when ambient and surface temperatures are 4 degrees C or below. [The restriction on the application of waterproofing materials when ambient and surface temperatures are below 4 degrees C will be waived if the Contractor devises a means, approved by the Contracting Officer, of maintaining the surface and ambient temperatures above 4 degrees C.]

PART 2 PRODUCTS

2.1 MANUFACTURERS

The following Manufacturers make products that comply with this specification

- a. SEBERG S.r.l.  
Via delle Noci  
24048 - Treviolo (Bergamo)  
Tel. 035/203098  
Fax 035/203133
  
- b. CICRESPI S.p.A.  
Via Trieste, 11  
20060 Liscate (Milano)  
Tel. 02/95754259  
Fax 02/9587203
  
- c. FLAG  
Via Industriale  
dell'Isola  
24040 (BG)  
Tel. 035/4940949

Fax 035/4940649

d. ADRIA PLAST S.p.A.  
Via Ripamonti, 89  
I-20141 Milano  
Tel. 02/2909  
2945-29092.1  
Tlx 315432  
Fax 02/5390169

## 2.1 MATERIALS

Provide one of the types of elastomeric waterproofing sheet material and related primers, adhesives, and mastics as specified herein. Ensure compatibility of waterproofing materials within a specific type, with each other, and with the materials on which they will be applied. Materials shall conform to the applicable performance requirements cited below when tested in accordance with the referenced publications.

### 2.1.1 Waterproofing Membrane

Elastomeric sheet shall be a single sheet synthetic plastified polyvinyl chloride membrane, obtained by cast or extrusion process, and, when required, provided with an internal reinforcing fiber glass-mat or with an external layer of polyester felt.

## 2.3 PLASTOMERIC MEMBRANE SHEETING

In addition to the following requirements, provide plastomeric sheeting not less than 1.5 mm thick on vertical surfaces and not less than 1.125 mm thick on horizontal surfaces.

### 2.3.1 Plastomeric Sheeting Performance Requirements

- a. Tensile Strength, UNI 8202/8: 14.1 MPa minimum;
- b. Ultimate Elongation, UNI 8202/8: 200 percent minimum;
- c. Tear Resistance, UNI 8202/9: 56.9 N/mm width minimum;
- d. Water Vapor Transmission, 26.7 Degrees C, Permeance, UNI 8202/23:  
14.3 x 10<sup>-7</sup> g/Pa sq. meter maximum;
- e. Cold Brittleness, Degrees C, UNI 8202/15: -17.8 degrees C maximum;
- f. Accelerated Aging, UNI ISO 4892-1: No visible deterioration after 400 hours; and
- g. Exposure to Fungi and Bacteria in Soil, Minimum 16 Weeks:  
Unaffected.

### 2.3.2 Vertical Surfaces

#### 2.3.2.1 Adhesive for Vertical Surfaces

Asphalt, rubber-based or polyurethane base solvent type as recommended by the plastomeric sheet membrane manufacturer. Lap shear strength, ISO 11339, requirements for adhesive are as follows:

- a. Aged One Week at 23.9 Degrees C: 70 kPa minimum; and
- b. Aged 2 Weeks in Water at 23.9 Degrees C: 49 kPa minimum.

### 2.3.3 Horizontal Surfaces

#### 2.3.3.1 Plastomeric Sheet Membrane

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**NOTE: Use plastomeric sheet membrane with backing asphalt glass felt for improving the adhesion of sheet glued to the substrate. To be used on a sloped structural slab or on a structural slab subject to heavy and continuous vehicular traffic. Use plastomeric sheet membrane with an internal layer of fiberglass reinforcement to increase dimensional stability when structure is subject to heavy stresses.**  
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[Factory laminated to an asphalt glass felt, UNI 6825] [Factory laminated to an internal layer of glass fabric reinforcement] providing a minimum overall thickness of not less than 1.125 mm.

#### 2.3.3.2 Asphalt

UNI 4157, Type as specified in the plastomeric sheet membrane manufacturer's printed recommendations.

### 2.3 CHLORINATED POLYETHYLENE SHEETING

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**NOTE: Specify 1.0 mm thickness for general waterproofing purposes. Specify 0.75 mm thickness for shower and safe pan waterproofing.**  
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Uncured, chlorinated-polyethylene, synthetic elastomeric sheeting of [0.75] [1.0] mm minimum nominal thickness.

#### 2.3.1 Chlorinated Polyethylene Sheeting Performance Requirements

- a. Tensile Strength, UNI 8202/8: 10.3 MPa minimum;
- b. Percent Elongation, UNI 8202/8: 400 percent minimum;
- c. Specific Gravity, UNI 7092 plus or minus 0.05;

- d. Tear Resistance, UNI 8202/9: 30.6 N/mm minimum;
- e. Shore A Hardness, UNI 4916, 10 Second Interval Before Reading: 74 plus or minus 10;

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**NOTE: Specify first number for general waterproofing. Specify the second for shower and safe pan waterproofing.**  
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- f. Water Vapor Transmission, 37.8 Degrees C Permeance, UNI 8202/23, [5.72] [3.43] x 10<sup>-7</sup> g/Pa sq. meter maximum;
- g. Low Temperature Brittle Point, UNI 8202/15, 0.5 mm thickness: No failure at -45.6 degrees C;
- h. Exposure to Fungi and Bacteria in Soil, Minimum 16 Weeks: Unaffected;
- i. Accelerated Environmental Resistance
  - (1) Aging, 7 days at 121 degrees C in forced convection oven
    - (a) Elongation Retained: 300 percent minimum; and
    - (b) Weight Loss: 3 percent maximum.
  - (2) Alkali, immersed 30 days at 60 degrees C in 10 percent NaOH
    - (a) Elongation Retained: 300 percent minimum; and
    - (b) Weight Loss: 3 percent maximum.
  - (3) Hydrocarbon resistance, immersed 24 hrs. at 50 degrees C in U.S.P. Mineral Oil
    - (a) Elongation Retained: 300 percent minimum; and
    - (b) Weight Loss: 2 percent maximum.

2.4.2 Solvent Welding Agent and Adhesive

As recommended by the elastomeric sheet material manufacturer's printed installation instructions. Bond strength when tested in accordance with UNI EN 28510/1 at 23.9 degrees C for one week shall be a minimum of 1.75 N/mm of width, and after 2 weeks shall be a minimum of 1.23 N/mm of width.

2.4 PROTECTION BOARD

Premolded bitumen composition board, 3 mm minimum thick or other composition board compatible with the sheet-applied membrane.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

Before starting the work, verify that surfaces to be waterproofed are in satisfactory condition. Notify the Contracting Officer of defects or conditions that will prevent a satisfactory application. Do not start application until defects and conditions have been corrected.

3.2 SURFACE PREPARATION

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**NOTE: A paragraph should be added to Section 03300, "Cast-In-Place Concrete," to the effect that curing compound containing wax or oil should be removed prior to application of waterproofing.**  
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Ensure surfaces to be treated are clean, dry, smooth, and free from deleterious materials and projections. [Thoroughly wet holes, joints, cracks, and voids in [masonry] [concrete] with water and fill with Portland cement mortar, strike flush, and permit to dry.] Cut off high spots or grind smooth. Finish top surfaces of projecting masonry or concrete ledges below grade, except footings, to a steep bevel with Portland cement mortar. Sweep surfaces to be covered before applying waterproofing to remove dust and foreign matter. Cure concrete by a method compatible with the waterproofing system.

3.3 APPLICATION

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**NOTE: Delete requirements for cant strips if cant strips are not required.**  
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Follow manufacturer's printed installation instructions. [Where indicated, mop continuous cant strips in place at vertical and horizontal corners before installing the waterproofing membrane. Do not use untreated wood or wood fiber cants.] When using solvent welding liquid, avoid prolonged contact with skin and breathing of vapor. [Provide adequate ventilation.] Carry waterproofing of horizontal surfaces up abutting vertical surfaces as indicated and cement solid to the substrate. Avoid wrinkles and buckles in applying membrane and joint reinforcement.

- a. Non-Self-Adhering Membrane: Unroll membrane and allow to remain flat for at least one-half hour before application. Apply an asphalt concrete primer prior to application of asphaltic adhesive. Where solvent adhesive is applied, allow major portion of solvent to evaporate so that bonding adhesive does not stick to a dry finger touching it. Apply elastomeric waterproofing membrane in a full bed of adhesive at a uniform coverage rate in accordance with the recommendations in the membrane manufacturer's printed instructions. [Where membrane on horizontal surfaces are to receive concrete fill, apply adhesive in 100 mm wide strips at 600 mm on center.] Pull membrane tight without stretching. As soon as adhesive is fully set and dry, recheck lap splices. Where

openings or fishmouths appear, reseal and reroll lap splices.

- b. Protection: Protect membrane over horizontal surfaces from abnormal traffic during installation. Use only equipment with rubber tires. Provide walkway protection where heavy traffic from other trades is expected. Do not store material on membrane.

### 3.3.1 Plastomeric Sheeting

#### 3.3.1.1 Vertical Surfaces

Apply sheeting in sections not longer than 5500 mm. Lap sheets at sides and ends a minimum of 150 mm over the preceding sheet. Reinforce lapped sheets with 300 mm wide strip of plastic sheeting or as recommended by sheeting material manufacturer. Reinforce corner splices and flashing overlaps with 300 mm wide strip of membrane embedded in adhesive. Seal laps and splices in a full bed of adhesive at the rate recommended by the material manufacturer. Roll sheeting and joint strip with [25 to 45 kilogram roller on horizontal surfaces] [and] [150 mm rubber hand roller on vertical surfaces].

#### 3.3.1.2 Horizontal Surfaces

Apply sheeting over horizontal surfaces [with fiberglass-felt side facing the surface to which it is adhered,] in a full bed of asphalt-based adhesive, at the rate recommended by material manufacturer. Lap sheets a minimum of 100 mm over preceding one at sides and 150 mm at ends.

### 3.3.2 Chlorinated Polyethylene Sheeting

Lap sheets at edges and ends not less than 50 mm over the preceding sheet. Before applying welding agent, clean lap and splice areas of membrane in accordance with sheeting manufacturer's printed installation instructions.

### 3.4 FLASHING

Flash penetrations through membrane. Embed elastomeric membrane in a heavy coat of adhesive. Continuous metal reglets shall be installed, horizontally on footing and vertically on intersecting and connecting walls, and as specified in Section 07600, "Flashing and Sheet Metal." Metal reglets shall receive exposed edges of membrane waterproofing. Secure membrane into reglets by lead wedges and fill with cement as recommended by manufacturer of waterproofing materials. Counterflash upper edge of membrane waterproofing and protective covering as specified in Section [07600, "Flashing and Sheet Metal".] [\_\_\_\_\_, "\_\_\_\_\_".]

### 3.5 FIELD QUALITY CONTROL

Notify the Contracting Officer one day prior to date of performing tests. Before concealment, cover plastomeric waterproofing on horizontal surfaces over finished spaces with [75] [100] mm of ponded water for 24 hours. Do not add water after start of 24 hour period. Carefully measure water level at beginning and end of 24 hour period. If water level falls, remove water and inspect waterproofing membrane. Make repairs or replacement as

directed, and repeat test. Do not proceed with work that conceals membrane waterproofing before receiving approval and acceptance of Contracting Officer.

### 3.6 PROTECTIVE COVERING

After installation has been inspected and approved by the Contracting Officer, apply a protective covering to the membrane waterproofing prior to backfilling. Protect vertical membrane waterproofing with a 13 mm minimum thickness of asphalt plank; 13 mm minimum thickness of fiberboard; or 3 mm minimum thickness of compatible water-resistant bitumen type protection board with edges abutting adjacent edges and exposed surfaces covered by a taping system recommended by manufacturer of protection board. Cover horizontal membrane waterproofing with similar protection board and Portland cement mortar not less than 20 mm thick; place uniformly and allow to set before installing subsequent construction.

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**NOTE: Suggestions for improvement of this specification will be welcomed using the Navy "Change Request Forms" subdirectory located in SPECSINTACT in Jobs or Masters under "Forms/Documents" directory or DD Form 1426. Suggestions should be forwarded to:**

**Commanding Officer  
Naval Construction Battalion Center  
NAVFAC 15G/CESO 158  
1000 23rd Avenue  
Port Hueneme, CA 93043-4301**

**FAX: (805) 985-6465/982-5196 or DSN 551-5196**

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