
SECTION 03361 ARCHITECTURAL FORM LINERS

Dayton Superior , plastic and elastomeric architectural form liners.

This section is based on a system of Dayton Superior, which is located at:
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Miamisburg, OH 45342
Tel: 800-800-7601 ext. 4950
Fax: (847) 954-4307
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Web: daytonsuperior.com

Dayton Superior offers the widest selection of form liners for architectural concrete in the industry. This section covers more than 200 standard form liner textures in four different form liner materials. Material can also be supplied to meet custom specifications upon request.

SECTION 03121 - FORM LINERS

PART I GENERAL

1.1 SECTION INCLUDES

Select paragraphs below applicable to project.

- A. Plastic form liners.
- B. Polyurethane form liners.

1.2 RELATED SECTIONS

Delete sections below not relevant to this project; add others as required.

- A. Section 03120 - Architectural Cast-In-Place Concrete Forms.
- B. Section 03300 - Cast-In-Place Concrete.
- C. Section _____ - _____

1.3 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's catalog data, detail sheets, and printed instructions.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inspect the materials upon delivery to assure that specified products have been received.
- B. Store liners in closed shipping crates until needed on work site; protect from sunlight, dirt, and debris.
- C. Once attached to formwork, store form liners on edge. Avoid striking face with heavy, sharp, or heated objects that could cause permanent damage.



PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Dayton Superior, 721 Richard St., Miamisburg, OH 45342. 800-8007601 ext. 4950, Fax: 847-954-4307, E-mail: info@daytonsuperior.com, Website: daytonsuperior.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600

Delete paragraph above or below; coordinate with Division I requirements.

- C. Substitutions: Not permitted.
- D. Provide all form liners from a single manufacturer.

2.2 MATERIALS

Select form material(s) from the four paragraphs following, deleting those not required for the project. Select on the basis of the specific application and the number of uses required.

Generally, SPS Plastic is an inexpensive alternative for single use applications. Thermoformed ABS plastic form liner exhibits good impact resistance and includes an ultraviolet inhibitor allowing 5 to 10 reuses. Dura-Tex[®] form liner is an economical polyurethane allowing stripping from complex designs and up to 40 reuses. Elasto-Tex[®] is a premium polyurethane form liner exhibiting exceptional durability, tear strength, flexibility to allow stripping from slight undercuts or complex designs, and resiliency to maintain pattern details; Elasto-Tex form liners allow up to 100 reuses. In all cases, reuse is subject to pattern configuration, proper handling, and job site conditions.

- A. SPS Plastic: Polystyrene.
- B. ABS Plastic: Premium quality ABS.
- C. Dura-Tex: Polyurethane elastomer
- D. Elasto-Tex: Premium polyurethane elastomer
- E. Form Release: as specified hereinafter.



Retain subparagraphs below as required for the project. Consult manufacturer for types and brand names of required materials.

- F. Silicone Caulking: _____
 - G. Adhesive: _____
 - H. Solvent: _____
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Retain either or both of the two subparagraphs below for attachment of form liner to plywood. Nails may enhance the finished look of wood patterns.

- I. Staples: $\frac{9}{16}$ inch (14.3 mm) or $\frac{3}{4}$ inch (19.1 mm), depending on pattern thickness.
 - J. Screws, nails or other fasteners: _____
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Consult manufacturer for additional materials required for the specific installation and insert below.

- K. _____
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2.3 PRODUCTS

Select standard product(s) and pattern(s) from preceding pages 7-42 and note by pattern name and product code.

PART 3 EXECUTION

3.1 PREPARATION

Delete the following paragraphs if polyurethane form liners are not specified.

Polyurethane form liners are slightly oil absorbent when new. It is recommended that an initial spray of form release be brushed in to help “season” and clean the pattern.

- A. Work neutral-type Dayton Superior form release into all areas of form liner, especially pattern recesses.
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Delete the paragraph above and retain the paragraph below if superplasticizers or micro silica are specified for the concrete.

- B. Work reactive-type Dayton Superior form release into all areas of form liner, especially pattern recesses.
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Retain the paragraph below for all polyurethane form liners.

- C. Apply Dayton Superior form release to form liners before each use and within the same day that concrete is placed.
 - 1. Use form release sprayer and vary spray angle to ensure complete coverage of all pattern features.
 - 2. Use a brush for complete coverage deep or rough patterns.
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Retain the paragraph below if repair of cuts or tears of polyurethane form liners will be allowed on the project.

- D. When possible, repair cuts or tears with Resi-Chem® P-1241 adhesive.
 - 1. Work adhesive around edges of cut or tear and weight the area while adhesive is setting.
 - 2. After setting, lightly sand residual adhesive to avoid gloss-producing spot in the concrete.
 - 3. Repairs are subject to approval by the architect.
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3.2 INSTALLATION

Architectural form liners can be attached to modular forming systems, job-built plywood forms, or precast beds. Select the procedure(s) for attaching form liners from the paragraphs below, deleting those not required.

Concrete mix design (workability, pressure, color, set, and strength) will affect the use of form liners. Place concrete using a pump or conveyor with drop chute to avoid segregation. Place in two foot (610 mm) lifts and do not move material horizontally (horizontal movement may result in visible flow lines in the finished surface).

- A. Attachment - Handset Systems; Plastic Form Liners:
 - 1. Apply foam tape to plate or sill supporting formwork to prevent grout leakage at base of plastic form liner.
 - 2. Assemble and brace the architectural side of the formwork first; attach form liner before setting ties or opposite formwork side.
 - 3. Apply foam tape to back side of form liner along all edges; allow foam tape to extend beyond the edge when the form liner will be jointed.
 - 4. Work with one sheet at a time; position form liner against formwork so that edges, pattern, and joints are square.
 - 5. Staple form liner on 3 inch (76 mm) centers and around all tie locations; using adequate electrical power, drive staple heads flush with surface.
 - 6. Position foam tape behind the joint of two pieces and press
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down firmly.

Delete the following subparagraph unless ribbed pattern is specified.

7. Insert grout seal block to support joint and prevent grout seepage.
 8. Insert grout seal blocks as required to seal tie holes, fill voids in boxouts and open-ended patterns, or support especially deep patterns.
- B. Attachment - Gangform Systems; Plastic Form Liners:
1. Level and square formwork so that attachment can be made in a horizontal plane; mark dimensions so that edges, patterns, and joints are square.
 2. If required, attach strongbacks to the formwork holding the form liner.
 3. Apply foam tape to back side of form liner along all edges; allow foam tape to extend beyond the edge when the form liner will be jointed.
 4. Work with one sheet at a time; position form liner against formwork so that edges, pattern, and joints are square.
 5. Staple form liner on 3 inch (76 mm) centers and around all tie locations; using adequate electrical power, drive staple heads flush with surface.
 6. Position foam tape behind the joint of two pieces and press down firmly; make attachment.
 7. Insert grout seal blocks as required to seal tie holes, fill voids in boxouts and open-ended patterns, or support especially deep patterns.
- C. Attachment - Handset Systems; Polyurethane Form Liners:
1. Assemble and brace the architectural side of the formwork first; attach form liner before setting ties or opposite formwork side.
 2. Work with one sheet at a time; position form liner against formwork so that edges, pattern and joints are square.
 - a. Attach form liner with box nails (or staples) at approximately 6 inches (152 mm) on center.
 - b. Attach top edge and one side of form liner to formwork; check overall dimensions and position.
 - c. Complete the attachment using box nails (or staples) at approximately 12 inches (305 mm) on center in both directions throughout the field of the form liner and at 6 inches (152 mm) on center along the perimeters.
 3. Apply compressible adhesive-backed foam tape to form liner edges; firmly butt edges. Compress joints as tightly as possible without buckling or distorting the pattern.
 4. Dress joints and edges with a power rotary rasp or sander to match pattern features as closely as possible.
- D. Attachment - Gangform Systems; Polyurethane Form Liners:
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1. Level and square formwork so that attachment can be made in a horizontal plane; mark dimensions so that edges, patterns, and joints are square.

Caution: Adhesives will not provide adequate attachment if formwork contains residual form release.

2. Roughen formwork face and back side of form liners to accept adhesive; clean dust and debris from both surfaces with solvent.
3. Snap lines on form for positioning.
4. Position form liner and roll back more than half onto itself; work with one sheet at a time.
5. Prepare adhesive according to manufacturer's instructions; spread uniformly on formwork face and back of form liner, checking edges and corners to ensure application to these areas.
6. When adhesive is tacky, slowly roll form liner back onto formwork face, eliminating air pockets between surfaces.
7. Position edges and corners, securing with wood tack strips for dimensional stability.
8. Roll back other half and apply adhesive to formwork face and back of form liner, checking edges, corners, and center adhesive line to ensure application to these areas.
9. When adhesive is tacky, slowly roll form liner back onto formwork face, eliminating air pockets between surfaces.
10. Position edges and corners, securing with wood tack strips for dimensional stability.
11. Allow 48 hours for complete setting.

Delete the following subparagraph if joints are not required.

12. Apply adhesive to form liner edges and butt edges firmly; compress joints as tightly as possible without buckling or distorting pattern.
13. Evenly weight down form liner to assure consistent adhesion to formwork face.
14. Dress joints and edges with a utility knife or sander to match pattern features as closely as possible.

E. Attachment - Plywood; Polyurethane Form Liners:

If a second underlayment is attached to forms, and form liner attached to it, $\frac{1}{2}$ inch (12.7 mm) or $\frac{3}{4}$ inch (19.1 mm) uncoiled plywood should be used. If the form face is not sacrificial, the best method of attachment is with minimum $\frac{1}{4}$ inch (6.3 mm) Tee Nuts placed at 1 foot (305 mm) on center for $\frac{1}{2}$ inch (12.7 mm) plywood, 2 feet (610 mm)



on center for $\frac{3}{4}$ inch (19.1 mm) plywood. A washer is required on the back side of a plywood face sheet form.

1. Roughen formwork face and back side of form liners to accept adhesive; clean dust and debris from both surfaces with solvent.
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Caution: Adhesives will not provide adequate attachment if formwork contains residual form release.

2. Allow form liner to overhang edges $\frac{1}{32}$ inch (0.8 mm) when joints are required on the gang.
 3. Position form liner and roll back more than half onto itself; work with one sheet at a time.
 4. Prepare adhesive according to manufacturer's instructions; spread uniformly on formwork face and back of form liner, checking edges and corners to ensure application to these areas.
 5. When adhesive is tacky, slowly roll form liner back onto formwork face, eliminating air pockets between surfaces.
 6. Position edges and corners, securing with wood tack strips for dimensional stability.
 7. Roll back other half and apply adhesive to formwork face and back of form liner, checking edges, corners, and center adhesive line to ensure application to these areas.
 8. When adhesive is tacky, slowly roll form liner back onto plywood face.
 9. Position edges and corners, securing with tack strips for dimensional stability.
 10. Allow 48 hours for complete setting.
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The plywood with form liner attached is ready for mounting to formwork following the steps above.

11. Mark dimensions so that edges, patterns, and joints are square when mounting.
 12. Attach plywood with form liner to gangform; drive screws into plywood from back of form face at 12 inch (305 mm) centers, capturing $\frac{3}{4}$ of plywood thickness.
 13. Once mounted, dress joints and edges with a utility knife or sander to match pattern features as closely as possible.
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Polyurethane form liners can be attached to plywood at the factory according to customer specifications. The process is similar to the plywood attachment specified above. A choice of bolts, strapping, or banding is available for subsequent mounting to formwork.
