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Scott System Plastic Formliner Application Guide

For use by contractors as an application guide to install plastic formliners.

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READ BEFORE USE

The following recommendations cover the basic use of Scott System formliners in the field. We recommend the following items to ensure positive results.

1. Each shipment must be checked BEFORE signing and accepting any delivery at the jobsite. Note any damage to the crates, pallets, and formliners on the freight line's carriers Bill of Lading (BOL). No claims for damage can be made without a signed and documented delivery ticket / BOL. Please refer to Scott System's terms and conditions for more details.

2. Protect formliners from excess exposure to ultraviolet (UV) rays and freezing temperatures. Indoor storage is recommended. When proper storage is not available, covering formliners with a tarpaulin (tarp) or black plastic is recommended. Store and use formliners at temperatures between 40 degrees F and 140 degrees F.

3. Verify lines and levels of formwork and formliner patterns are within allowable tolerances before use.

4. A release agent must be applied to formliners before use with concrete. Use only approved release agents such as Scott Lease 440 or Cresset 880. No equals are accepted.

5. Thoroughly vibrate the concrete to achieve consolidation and minimize voids. Internally vibrate into the previous lift to avoid construction joints / lift lines. Avoid vibrator contact with the formliner.

6. Remove / strip formliners from concrete within 24 hours after concrete placement if possible. The form can be pulled free and placed back onto the wall for the concrete curing specifications, but the initial strip is recommended to be within the first 24 hours of the pour.

7. Proper cleaning and storage of formliners is required to obtain optimal results. All excess release agent should be blown or wiped off before the form and liner are placed back into service.

Disclaimer: Scott System is a formliner manufacturer providing a component to be used, maintained, and installed by the Purchaser. Scott System has no control over the use of the product when in the care and custody of the Purchaser. Scott System will not be held liable and/or responsible for any claims, delays, back charges, damages, or withheld payments to or from the Purchaser due to the utilization of any products sold.

Limited Warranty: Scott System warranties its products against deficiencies in the physical properties of the materials sold versus the testing and measuring standards set forth by the raw materials manufacturers. The manufacturer's obligation under this warranty shall be limited to replacing or refunding the purchase price of that material supplied.

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Section 1: General Information

Thermoformed formliners are available either in Single-Use High Impact Polystyrene (HIPS) or Multi-Use Acrylonitrile Butadiene Styrene (ABS) Plastic. HIPS can be used to provide a textured concrete surface in a limited application at an affordable price. ABS exhibits excellent impact resistance and contains an ultraviolet shielding compound that reduces the damaging effects of sunlight. Both are rigid plastic liners, which are ideal for precast, tilt-up, or cast-in-place concrete.

Section 2: Materials and Tools

Gloves should be worn when handling the formliner as trimmed edges can be sharp.

The basic materials needed to attach and modify HIPS and ABS Plastic Formliners include:

- Staples for attachment to plywood (9/16" or 3/4" depending on pattern thickness).
- Nails for attachment to plywood (may enhance the finished look of wood patterns).
- Contact cement or an adhesive specific for bonding plastic to metal can be used when a mechanical attachment is not permissible.
- Foam tape, backer rod, or a compressible gasket may be required for seamlines, voids, and modifications.
- Silicone caulking for seamlines, voids, and modifications.
- Scott System recommended form release agent.

The quantities of materials needed will vary with the size of the project and the method of attachment.

The basic tools needed to attach and modify HIPS and ABS Plastic Formliners include:

- Tape measure
- Chalk line
- Circular saw with a carbide-tipped blade, recommended to have a high tooth count
- Power stapler
- Electric drill
- Hammer
- Other hand tools depending on the attachment method
- Sprayer (for form release agent) with a wand extension
- Personal protective safety equipment (PPE)

Section 3: Trimming

Most thermoformed formliners are shipped in standard 4' x 10' sheets. The easiest way to cut plastic is to use a circular hand saw (skill saw) with a fine-tooth finishing plywood blade (around 200 teeth is recommended). If the liner is to be butted against a rustication strip or reveal, the blade angle should be set so that the liner is cut at the same angle as the reveal.

Cutting and drilling should be performed when formliners are securely clamped to a work bench with a cutting guide or drilling template.

Caution: Cutting can create dust and rough edges. The rough edges created by cutting can be addressed with a sander and / or hand planner. Remember to remove all dust and debris from the surface. Sanding can create dust that might be inhaled. Long-term exposure to this dust may be harmful. Workers should wear appropriate safety equipment.

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Section 4: Attaching to Formwork

Note: Means and methods are the responsibility of the Purchaser. We are offering recommendations that will assist in achieving the desired result. Methods may vary for different applications.

1. Before attaching the formliner, first identify the side to be poured against. The side facing the formwork has a smooth and shiny surface; the concrete side has a roughened "hair cell" appearance.
2. Level and square the formwork to ensure proper alignment of the formliners. Dimensions should be marked so that edges, patterns, and joints are square.
3. Apply foam tape to the back side of the plastic formliner along all the edges.
4. Position plastic formliner against the formwork so the edges are square. If desired, formliners can be attached to plywood then the formwork instead of directly to the formwork.
5. Some patterns may require additional backing support depending on the relief depth of the formliner texture and / or width of the formliner pattern. Prior to concrete placement, foam and / or wooden strips can be used to help support the void spaces on the back of the formliner.
6. Once in position, attach use one or more of the following methods:
    - Screws or nails should be spaced approximately 6" to 12" on-center around the perimeter and 18" to 24" in the center. Self-drilling drywall screws are recommended as easy to install.
    - Pneumatic staplers can be used to install however, they do not hold as well as screws or nails and should be spaced closer together.
    - Double-sided form tape can be used for tilt-up jobs. Make sure the casting slab and formliner are clean of all dust, debris and the surfaces are completely dry before applying.
    - When adhering plastic liners to metal forms, use contact cement or an adhesive specific for bonding plastic to metal. As a general rule, glue and adhesives are not recommended. Some have excellent holding power but can be difficult to work on the jobsite.
7. Each subsequent formliner should be carefully aligned and foam tape used at all joints.
8. All butted joints should be taped and / or caulked to reduce leakage.
9. Silicone caulking may also be needed to seal around tie holes, fill voids in boxouts and open-end patterns, or support especially deep patterns.

Section 5: Rustication

Reveals or rustications are recommended at butted joints to cover the seamline between panels. Seamlines will be visible for any pattern that was not specifically designed with the intent to hide seams between panels or mitigated properly in the field. All butted joints should be taped and / or caulked to reduce leakage.

Section 6: Placing Concrete

Some formliners can withstand very heavy pour pressures, but most cannot withstand a rate of pour above 4 to 5 feet per hour. Generally, the deeper the relief depth of the texture the slower the concrete should be poured. If a plasticizer is used, the rate of pour may have to be reduced to limit pour pressures.

Avoid stepping on the formliner as much as possible when casting horizontally for tilt-up applications. All dirt, debris, and water should be removed before pouring concrete.

Vibrating the mass of concrete with the proper equipment is the most common method of consolidated architectural concrete. Proper vibration will reduce air voids, lift lines, and surface blemishes. Avoid contact with the vibrating equipment

against the formliner, this could lead to issues with the finish quality of the concrete. Follow American Concrete Institute (ACI) recommendations for the proper vibration of concrete methods.

Section 7: Form Release and Stripping Formliner

Formliners should be sprayed with a form release before each use and within the same day that concrete is placed. A form release sprayer should be used, and the spraying angle varied to ensure complete coverage of all pattern features.

It is essential that all formliners be stripped with an equal time interval from concrete placement to stripping. Different time intervals will result in inconsistent coloring from different levels of moisture loss. If possible, forms should be stripped within twenty-four (24) hours of concrete placements. Strip formwork so that the form remains as parallel to the concrete face as possible. The force required to strip a form will depend on the surface area of the pattern and on the percentage of the pattern at right angles to the direction of stripping. A low profile pattern will be easier to strip than a high profile pattern. Ribbed fractured textures will require special care to avoid breaking off fins from both concrete and formliner.

Tilt-up panels should not be lifted until the concrete has reached the specified concrete compressive strength. In most cases, the formliner will remain on the slab.

Single use formliner may be discarded after stripping. Multi-use formliner needs to be cleaned with a mild detergent and scrub brush.

Although all thermoformed formliners can be stripped without bonding to the concrete, a neutral, non-staining, and non-reactive agent can be used to aid in stripping and to ease cleanup of the formliner for additional pours. Release agents should be sprayed on formliners as close as possible before concrete placement time. For the best results, the liner should be cleaned after each use and a new coat of release agent applied before each concrete placement.

Section 8: Shipping and Storage of Formliners

SHIPPING: Although careful measures are taken at the factory to protect your shipment, occasionally freight arrives in poor condition. You have the option to refuse shipment if it is damaged. Contact supplier immediately. If your shipment is damaged upon arrival at the job site, please make a note of it on the driver's delivery ticket. Your note must include the nature of the damage, which parts have been damaged, date and time of delivery, contact information, and photographs of the damage. Scott System does not ship torn or damaged goods. Claims need to be made immediately.

STORING: All formliners are sensitive to the effects of sunlight, ultraviolet rays, and extreme weather conditions. Formliners should never be stored outside in direct or indirect sunlight. When not in use or being cleaned, formliners should be stored either indoors or under black polyethylene. Ultraviolet rays may cause the formliner to become brittle or may cause discoloration, which could be translated to concrete surfaces. Formliners should never be exposed to temperatures above 140° F (60° C). Excessive temperatures could cause permanent deformation.

Thank you for your purchase of Scott System Formliners.

Please call us at 518-383-0500 for any assistance with our products.