Chapter 4

Adhesives, tapes and sealants

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### 4.1 Adhesive recommendations

<table>
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<tr>
<th>Product</th>
<th>Porous (absorbent) subfloors (most wood subfloors and some concrete)</th>
<th>Non-porous (non-absorbent) Subfloors (most concrete, ceramic, terrazzo, moisture sealers, metal and existing flooring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Sheet Flooring</td>
<td>AltroFix 30/31 (excessively heavy rolling loads and/or excessively wet areas)</td>
<td>AltroFix 30/31 (excessively heavy rolling loads and/or excessively wet areas)</td>
</tr>
<tr>
<td></td>
<td>EcoFix 20E (dry areas)</td>
<td>EcoFix 20E (dry areas)</td>
</tr>
<tr>
<td>Smooth Sheet Flooring</td>
<td>EcoFix 20E</td>
<td>EcoFix 20E</td>
</tr>
<tr>
<td></td>
<td>Heavy Rolling Loads</td>
<td>Heavy Rolling Loads</td>
</tr>
<tr>
<td></td>
<td>Contact Altro Technical Services</td>
<td>Contact Altro Technical Services</td>
</tr>
<tr>
<td>Altro Walkway 20 SD</td>
<td>AltroFix SD70 Conductive Acrylic</td>
<td>AltroFix SD70 Conductive Acrylic</td>
</tr>
<tr>
<td>Tiles</td>
<td>EcoFix 25E</td>
<td>EcoFix 25E</td>
</tr>
</tbody>
</table>

Most concrete is considered to be non-porous (non-absorbent). To test for porosity, sprinkle a few drops of water on the subfloor, and if it is not absorbed within about one (1) minute, the subfloor should be treated as a non-porous/low absorbency surface. The final determination for subfloor porosity is the responsibility of the flooring contractor.

**Please note:**

1. Adhesive coverage is only an approximation based on experience, manufacturers recommendations, and subfloor porosity. Altro does not warrant nor guarantee actual adhesive coverages.

2. AltroFix 31 is a faster setting polyurethane adhesive and can also be used for repair and small installations of sheet material requiring a quicker set time.

3. Adhesive bond tests must be conducted with the flooring and adhesive specified to determine the compatibility of the adhesive with the prepared subfloor.

4. The moisture rating for all our adhesives is less than 90% Internal Relative Humidity (ASTM F2170).
## Altro adhesives – description chart 02/2015

<table>
<thead>
<tr>
<th>Adhesive</th>
<th>Description</th>
<th>Typical porous installations</th>
<th>Typical nonporous installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>AltroFix 30</td>
<td>2-part Polyurethane (wet set)</td>
<td>Trowel size recommended: 1/32 deep x 1/16 wide x 5/64 apart. Coverage - approx. 150 sq.ft. per gallon</td>
<td>Trowel size recommended: 1/32 deep x 1/16 wide x 5/64 apart. Coverage - approx. 180 sq.ft. per gallon</td>
</tr>
<tr>
<td>AltroFix 31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EcoFix 25E</td>
<td>Acrylic Pressure Sensitive (dry set / wet tacky)</td>
<td>Trowel size recommended: 1/32 deep x 1/16 wide x 1/32 apart. Coverage - 225 to 275 sq. ft. per gallon</td>
<td>Trowel size recommended: 1/32 deep x 1/16 wide x 1/16 apart. Coverage - 250 to 300 sq. ft. per gallon</td>
</tr>
<tr>
<td>EcoFix 20E</td>
<td>Acrylic Hard Set (wet tacky set)</td>
<td>Trowel size recommended: 1/32 deep x 1/16 wide x 5/64 apart. Coverage - 200 to 250 sq.ft. per gallon For very absorbent substrates, please call Tech Services for trowel notch recommendation.</td>
<td>Call technical services for recommendation and double drop method instructions</td>
</tr>
<tr>
<td>AltroFix SD 70</td>
<td>Conductive Acrylic</td>
<td>Trowel Notch: 1/16” x 1/16” x 1/16” Coverage: 200-250 sq. ft per gal.</td>
<td></td>
</tr>
<tr>
<td>Double Faced Tape</td>
<td>Dry, odorless, double-faced tape to be used for adhering coving on walls</td>
<td>Nominal: 1” x 165’ 4” x 165’ 6” x 165’</td>
<td></td>
</tr>
</tbody>
</table>

### Trowel size

Tile notch of 1/32” deep x 1/16” wide x 1/32” apart.  
Sheet notch of 1/32” deep x 1/16” wide x 5/64” apart.  
For any areas of high porosity, please consult Altro technical services.
4.2 Polyurethane adhesives

AltroFix 30 and 31

For installations of Safety Sheet Flooring in areas subjected to excessive spillage of water, floors with a drain(s), extreme temperature change, and extremely heavy rolling loads, AltroFix 30 adhesive is mandatory. AltroFix 31 is an extremely fast setting version of AltroFix 30.

Polyurethane adhesives are suitable for all approved subfloors including properly prepared metal. Polyurethane adhesives are generally not suitable for vertical surfaces due to their low initial grab.

4.3 Acrylic adhesives

EcoFix 20E and 25E

Use in areas not subjected to spillage or heavy use of water, or where drains do not exist.

4.4 Contact adhesives and double faced tapes

Vinyl cap strips, cove stick, and integral cove may be adhered using a quality neoprene contact adhesive or quality double faced tape.

4.5 Static conductive adhesives

A static conductive adhesive must be used with Altro Walkway 20SD, Altro’s static dissipative safety flooring.

NOTE: Please contact your Altro distributor for the approved static conductive adhesive for specific applications.

4.6 Important adhesive terms

Coverage is the amount of adhesive applied to a given surface. To obtain a good bond, the right amount of adhesive has to be applied with the appropriate trowel, in accordance with the manufacturer’s recommendations.

If not enough adhesive is applied, the bond will be too weak and there will be insufficient contact between the adhesive and the material. If the material is porous and a fluid adhesive is used, the adhesive may be absorbed by the substrate or the material, leaving insufficient coverage for proper bonding. If the surface to be bonded is rough, sufficient adhesive has to be applied to ensure that it penetrates into all the nooks and crannies.

If too much adhesive is applied, water may remain trapped inside and not evaporate properly. As a result, the adhesive will not harden at the proper rate, causing blisters or even ungluing. In addition, too thick an application may result in indentation or pockmark problems.

To obtain the correct coverage, the installer must use the appropriate trowel. Furthermore, the notches of the trowel must not be worn down, which may occur when steel trowels are used on hard substrates. When the notches are worn, the trowel will not apply enough adhesive. Worn-out trowels should be replaced. Renotching is not always a good alternative since labor sometimes costs more than a new trowel.

Pot life applies only to reactive adhesives (epoxy, polyurethane, polyester, and dry-set mortars). The pot life is the length of time that an adhesive remains usable after the components are mixed. Depending on the product formula, the chemical reaction will begin immediately or soon after mixing.

Factors affecting pot life include:

Temperature: The higher the temperature, the shorter the pot life, since heat accelerates the chemical reaction producing hardening.

Size of Mixture: In the case of certain products, an exothermic, or heat-generating reaction occurs, with the amount of heat generated increasing in proportion to the mass of the mixture. If too much product is mixed at one time, the reaction could accelerate substantially, causing the adhesive to set prematurely. Therefore, when working with such products, it is advisable to spread the adhesive in a thin coat. This allows the heat of the reaction to escape, thus prolonging the working time.

Tackifying time is the interval of time between the spreading of the adhesive on the substrate and the installation of the material. During this time, the water begins to evaporate (totally in the case of neoprene cement and partially in the case of a direct gluedown installation). As a result, the adhesive thickens and becomes tacky, producing sufficient cohesion so that the material can be installed without the risk of it lifting.

The tackifying time for various adhesives on the market ranges between 0 and 40 minutes, depending on the type of formula used.
Factors affecting the tackifying time include:

**Temperature and humidity:** If it is hot and dry, water will evaporate rapidly and the material must be installed faster. The opposite is true when it is cool and humid.

**Absorbency of substrate:** If the direct gluedown method is being used to apply an adhesive in emulsion or solution, the installer must verify the permeability of the substrate and the material to ensure that the water is able to evaporate out or be absorbed after installation. If not, blistering may occur.

**Installer must always respect tackifying time.**

Open time begins when the adhesive is spread and ends when it loses its adhesive properties. Therefore, the interval of time during which the material can be installed depends on the tackifying and open time, as shown in the diagram:

Factors affecting the open time include:

**Temperature and humidity:** Heat shortens the open time by accelerating the evaporation of the water. Cold prolongs open time.

**Humidity:** In the case of emulsion adhesives, humidity increases open time by slowing the evaporation of water.

**High absorbent substrates:** High absorbents shorten open time by absorbing more adhesive.

Initial tack is an adhesive's ability to hold the flooring in place as soon as it is installed, so that it does not lift or move. Sufficient initial tack is particularly important for difficult areas such as seams, edges, end-curl, etc. If the adhesive does not have enough initial tack, the material will lift after being installed and the installer will have to roll the area again and/or may have to weight the area down until the adhesive has set.

When an adhesive is first spread, it has little tack, but the tack increases along with the tackifying time.

Setting mechanism is the process in which an adhesive begins to cure.

**Setting mechanisms include:**

**Catalyst:** Two-part polyurethane adhesives - (AltroFix 30/31).

**Water absorption:** Acrylic adhesives - (EcoFix 20E/25E)

**Setting stages:** There are several stages of setting:

- **Adequate:** When the work site can be opened to foot traffic (in general, a few hours after application, except in the case of reactive adhesives).
- **Complete:** When the adhesive has acquired 90% or 100% of its maximum properties, including its maximum pull strength. At this stage, the heat can be turned back on without risk of the material lifting and in the case of wet areas, the floor covering can be thoroughly washed with water if required.
- **Substrate permeability:** When selecting an adhesive, the permeability of the substrate must be taken into account.
- **Porous material on a porous substrate:** This is no problem, since the water can evaporate from both sides.
- **Non-porous material on a porous substrate:** Excess water will be absorbed into that substrate.
- **Non-porous material on a non-porous substrate:** The water MUST be totally evaporated before the material is installed. If not, the adhesive will never set and the water trapped inside may cause blistering. Another solution is to use a reactive adhesive (two-part polyurethane, AltroFix 30/31), which does not require evaporation to set.

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![Diagram](image-url)