



**AmericanBiltrite**  
Flooring

## FLOOR PREPARATION

### FOR ALL AMERICAN BILTRITE FLOORING PRODUCTS

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#### SITE CONDITIONS

1. Thorough inspection and preparation of subfloors is mandatory to ensure a satisfactory installation. No resilient flooring installation should be started before the installer is completely familiar and satisfied with the subfloor conditions. Serious defects should always be reported immediately to the responsible authority.
2. Ensure that heating, ventilation and/or air conditioning (HVAC) in the installation area is operative for a minimum of 7 days prior to, during and following the installation.
3. The room temperature, subfloor, flooring and adhesive must also be maintained at a temperature of 21°C (70°F) for 48 hours prior to, during and following the installation. A fluctuation of +/- 3 °C (5 °F) within this range is acceptable.
4. Both flooring and adhesive must be acclimatized 48 hours prior to installation. Flooring should be removed from the pallet 24 hours prior to installation and stacked no more than 3 cartons high with at least 10 cm (4 inches) of airflow around the cartons. Do not leave boxes close to heat or cooling ducts or in direct sunlight.
5. Loose-lay flooring in the room. Identify the different lots and place the flooring to ensure uniform color and overall appearance requirements are met.
6. Flooring products with arrows on the back should be installed with the arrows all pointing in the same direction.
7. American Biltrite adhesive systems must be used to install our flooring (see Adhesive Quick Check Chart).
8. Contact American Biltrite or one of its distributors about questions regarding preparation of subfloor prior to installation of our products.

#### A. CONCRETE SUBFLOORS

##### General Conditions

1. Follow ASTM F 710 "Standard practice for preparing concrete floors to receive resilient flooring".
2. Concrete subfloors should be made of a good standard mix as recommended by the Portland Cement Association, using clean sand and crushed stone. A loose, sandy or scaly surface or evidence of a white, powdery surface is unacceptable.
3. Concrete subfloors suitable for the installation of American Biltrite flooring must be dry, clean, smooth, level and structurally sound. They must be free from old adhesive, dust, solvent, paint, wax, oil, grease, asphalt, sealing and curing compounds and other foreign substances.
4. Fill or level cracks, grooves and other irregularities. Where filling or leveling is required, the use of a good quality cement-based underlayment is recommended.
5. If a gypsum-based self-leveling underlayment, skim coat and/or floor patch is required, only the one recommended by American Biltrite shall be used (refer to the technical bulletin to this effect).
6. Concrete curing agents, surface hardeners and similar products should not be used on the subfloor unless the manufacturers of these products guarantee that they will not affect the bonding process. If these products have been used without the manufacturer's guarantee, they must be removed before American Biltrite flooring is installed. In many cases, these agents form a surface film of oil, wax or resin that impairs the bond between the concrete and the adhesive. The use of underlayment, leveling and patching compounds is no guarantee against excess moisture (including hydrostatic pressure) or concrete deficiencies.
7. Excess Moisture: American Biltrite does not guarantee any product performance against excess moisture (including hydrostatic pressure) under any circumstances. The use of a permanent, effective moisture barrier is recommended for all concrete floors in contact with the ground.



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8. Important notice: do not use chemical adhesive removal products. Using them will void the American Biltrite adhesive system warranty.
9. If the following situations occur on site, refer to the "Remediation System" document:
  - Moisture level is higher than the recommended specification.
  - Sealers, curing agents or hardeners were used in/on the concrete.
  - Chemical abatement was used to remove the old flooring.
10. It is the responsibility of the flooring contractor to determine whether or not the concrete is suitable for covering.

#### Conducting Moisture and pH Tests on Concrete Subfloors

1. Test the subfloor using the tests outlined below:
  - a. ASTM F 1869, Anhydrous Calcium Chloride test.
  - b. ASTM F 2170, test Relative Humidity (RH) using in situ probes.
  - c. ASTM F 710, pH levels.
  - d. Refer to the latest ASTM versions for specific testing, guidelines and safety procedures.
2. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  - a. Purpose: this test is designed to measure the moisture emission at the surface of a concrete slab.
  - b. Areas should be tested as follows: conduct 3 tests for the first 93 sq. m (1,000 sq. ft.), then 1 test for every additional 93 sq. m (1,000 sq. ft.) as outlined in the most recent edition of ASTM F 1869.
  - c. Maximum allowable readings vary depending on the adhesive system chosen. Refer to Adhesive Quick Check Chart for the maximum level allowed for each adhesive.
3. ASTM F 2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
  - a. Purpose: this test is designed to measure the percentage of relative humidity in a concrete slab.
  - b. Areas should be tested as follows: conduct 3 tests for the first 93 sq. m (1,000 sq. ft.), then 1 test for every additional 93 sq. m (1,000 sq. ft.) as outlined in the most recent edition of ASTM F 2170.
  - c. Maximum allowable readings are 80% RH.
4. Both ASTM F 1869 and F 2170 tests must be carried out; the RH test is especially important for on or below grade concrete slabs, as it is more related to potential hydrostatic pressure from the ground than the calcium chloride test.
5. Test procedures may vary from one test material supplier to another. Follow the instructions carefully when conducting the test.
6. ASTM F 710, pH levels.
  - a. Purpose: new concrete floors or where moisture is present may be susceptible to elevated pH levels due to excess alkaline salts. All adhesives are subject to deterioration resulting in bond failure in the presence of alkaline conditions.
  - b. Conduct one pH test for every 93 sq. m (1,000 sq. ft.) throughout the area.
  - c. Levels should be between 8 and 10 pH.



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7. When pH is over 10 or below 7, neutralize the floor using carbonated water. Use the minimum required amount spread on the surface and leave for a period of 5 -10 minutes then dry.
  - a. Make sure the room is well ventilated.
  - b. Allow concrete to dry thoroughly for at least 24 hours.
8. Re-test the floor for pH levels and repeat the neutralizing process if necessary. You should read between 8 and 10. If not, repeat.
9. It is the responsibility of the flooring contractor to determine whether or not the concrete is sufficiently dry for covering and that pH levels meet specifications.
  - a. Record all moisture and pH test results in the project log.
  - b. Results of the test must be made available upon request to American Biltrite.

#### **New Concrete Subfloors**

1. New concrete slabs must be properly cured and meet moisture vapor emission requirements before installation. Depending on atmospheric conditions, type of concrete and/or possible excess water content, the rule of thumb for a slab to cure is one month by inch of concrete.
2. Floors containing lightweight aggregate or excess water, and floors made with steel or plastic pan forms may need a much longer drying time, and should not be covered with resilient flooring unless completely dry.
3. Some lightweight concrete subfloors are not strong enough for resilient tile unless 25 mm (1") or more of regular concrete is added to the surface. This layer should be added as per the recommendations outlined by the Portland Cement Association.

#### **Existing Concrete Subfloors**

1. For best results, old concrete floors should be prepared to conform as closely as possible to new concrete floors.
2. The subfloor must be firm and free from old adhesive, moisture, dust, solvent, paint, wax, oil, grease, asphalt and sealing compounds.
3. Level the floor by filling cracks, uneven and rough areas with a good quality cement-based underlayment.
4. Conduct the appropriate moisture and pH tests. To take an adequate pH reading, the surface must be freshly sanded to ensure no carbonation has occurred. Take the reading and report it in the logbook. Clean the dust left from the sanding.

#### **On or Below Grade Concrete Subfloors**

1. Concrete slabs that touch the ground or that do not have at least 46 cm (18") of cross-ventilated air space underneath require special attention to control moisture level.
2. Unless they have an efficient permanent barrier, bonding failure may result from excess moisture. The moisture barrier must prevent all changes in moisture levels after the original test has been accepted.

#### **Suspended Concrete Subfloors**

1. Suspended concrete subfloors, whether old or new, must comply with all of the conditions listed previously in this section.



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2. However special attention should be paid to some of the variations of normal suspended concrete floors.
  - a. Low-density concrete is an unsuitable underlayment for resilient flooring.
  - b. Concrete poured in metal or plastic pan forms is inconvenient due to the lengthy curing and drying time required.
  - c. Also, when low-density concrete made with aggregate is combined with pour-in-pan construction, additional care must be taken before the resilient flooring is installed. At all pan construction sites, moisture tests must be done to ensure that the levels are within limits.
3. Note: when suspended slabs have been exposed to exterior elements (i.e. variations in temperature and/or humidity), adhesion of American Biltrite rubber flooring to the suspended subfloor may be adversely affected.

#### **Radiant Heated Concrete Subfloors**

1. American Biltrite flooring may be installed over radiant heated subfloors; however the maximum temperature must never exceed 29 °C (84 °F).
2. The requirements that apply to suspended or on grade concrete floors also apply to floors with radiant heating systems.
3. If radiant heated floors have been allowed to cool after installation, moisture may have permeated the concrete subfloor. It is therefore recommended that the floor temperature be increased gradually to ensure that moisture and temperature changes do not adversely affect adhesion.
4. Note: if installing Marathon Rubber Flooring, keep in mind that rubber is a natural insulator and will act as a heat barrier.
5. To choose the proper adhesive, consult the Adhesive Quick Check Chart.

## **B. WOOD SUBFLOORS**

#### **General Conditions**

1. American Biltrite does not approve of the use of particle board, flake board, wafer board or chip board underlayments under its flooring, as their quality and performance vary widely.
2. Some particle boards are suitable for use as underlayment, but the particle board manufacturer should provide a guarantee to this effect.
3. American Biltrite does not recommend installing any of their products on wood subfloors unless they are made from two layers of staggered construction grade plywood that is at least 9.5 mm (3/8") thick per layer, minimum two layers thick.
4. The wood subfloor must be dry, smooth, and free from vertical movement, horizontal expansion, old adhesive, moisture, paint, oil, dirt, grease and wax.

#### **Plywood Type and Installation**

1. Install two layers of plywood with cross-joints staggered at least 40 cm (16") apart. Fasten to subfloor using angular (ring-grooved) or screw nails that will penetrate 3 cm (1-1/4") into the subfloor. Fasten at 15 cm (6") intervals throughout the board and at 7.5 cm (3") intervals along the edges. Work out from the center of the board towards the edges to eliminate any irregularity. Leave a space the thickness of a dime between the boards. Fasteners should not be driven more than 1.6 mm (1/16") below the surface of the wood.
2. Lightly sand any surface roughness, particularly at joints and around nails.



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3. Use a Portland cement-based compound to level or patch wood subfloors.
4. Open Wood Joists:
  - a. Install 16 mm (5/8") plywood over joists 40 cm (16") or less apart and 19 mm (3/4") plywood over joists up to 60 cm (24") apart.
  - b. Block under plywood seams running perpendicular to the joists.
  - c. Fasten to the joists with angular (ring-grooved) or screw nails that will penetrate 32 mm (1 1/4") into the joists.
  - d. Fasten at 7.5 cm (3") intervals along all edges and at 15 cm (6") intervals over the joists.
5. 2 x 4 x 1 Installation:
  - a. This plywood is a combination subfloor and underlayment plywood panel.
  - b. When 2 x 4 x 1 tongue and groove plywood is 28 mm (1 1/8") thick, it does not require blocking or bridging when properly installed over open wood joists 120 cm (48") apart or less.
  - c. Use 6 cm (2 1/2") ring grooved nails or screw-type nails spaced 7.5 cm (3") on center at all bearings.
  - d. Note: the above thickness of underlayment grades of 2 x 4 x 1 plywood applies to Douglas fir. If softwood plywood is used, the next heavier thickness should be installed.

#### Wood Subfloors Over Crawl Space

1. Where wood subfloors are located over a crawl space, there must be at least 46 cm (18") of cross-ventilated air space between the ground and the floor joists.
2. Heavy asphalt-saturated felt paper or polyethylene film laid on the ground is effective in controlling high humidity due to the escaping ground moisture where cross ventilation is provided.

#### C. TERRAZZO, CERAMIC, NATURAL/AGGLOMERATED MARBLE OR GRANITE

1. Caution: terrazzo, ceramic, natural/agglomerated marble or granite are non-porous floors that require special attention to secure proper adhesion to the flooring.
2. The glazed and polished surface finish causes the problem. Often the floor is treated with sealers and wax as well, which can build up. Remove glaze, polished finish, sealers and wax by sanding or bead blasting.
3. Ensure that the surface is free of dirt, dust, debris or any other substances that will prevent bonding.
4. Use a Portland cement-based underlayment and follow the manufacturer's recommendations for subfloor preparation and priming.

#### D. METAL SUBFLOORS

1. The surface of the metal could be covered with rust, dirt or contaminants.
2. Sand the metal (aluminum, steel, brass, copper and bronze) to create a surface finish that will ensure a good adhesive bond; install the flooring right away after metal surface sanding and cleaning.



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#### E. PREPARATION OF FLOORS WITH EXISTING RESILIENT FLOORING

##### General Conditions

1. American Biltrite flooring cannot be installed over embossed, cushioned sheet vinyl, textured, urethane-coated and foam-containing flooring unless they are covered with approved underlayment (suspended wood subfloors only) prior to installation. Otherwise they must be completely removed including old adhesive.
2. American Biltrite will not accept any responsibility for installation over existing resilient floor coverings. We recommend that all existing resilient material be thoroughly removed prior to installing American Biltrite flooring.

##### Installation Over Existing Flooring

1. As stipulated in the previous section, American Biltrite will not accept any responsibility for installation over existing resilient floor coverings.
2. However, if installation over existing flooring is required, American Biltrite flooring may be installed directly over smooth surface resilient floors that are in good condition, uniformly and completely bonded and that have been properly installed over subfloors of approved construction.
3. Floor Preparation:
  - a. Strip thoroughly to remove all wax and other floor finishes.
  - b. Repair open seams or indentations using a Portland cement-based patching compound prior to installation.
  - c. Offset seams when installing tile over tile.
  - d. American Biltrite recommends that a patch test be conducted prior to installation.
4. Note: some old floor coverings may contain asbestos. See next section for instructions.

##### Removal of Resilient Tiles Floor Covering

1. Consult the Resilient Floor Covering Institute's (RFCI's) recommendations for removal of existing resilient floor coverings.
2. Caution: do not sand, dry sweep, dry scrape, drill, saw, bead blast or mechanically chip or pulverize existing resilient flooring, backing, felt lining, paint, asphalt cutback adhesives or other existing flooring. These products may contain asbestos fibers or crystalline silica. Avoid creating dust as inhalation increases the risk of cancer and respiratory disease. Smokers exposed to asbestos fibers are at greater risk of serious bodily harm. Unless certain that the product is asbestos-free, presume that it contains asbestos. Regulations may require that material be tested to determine asbestos content.
3. Disposal guidelines for materials containing asbestos: Before removing and disposing of a resilient floor covering that contains asbestos, obtain a special permit. Check with local authorities to see what regulations apply. Various environmental agencies have regulations concerning the removal and disposal of materials containing asbestos that could override local regulations.
4. It is important to ensure minimum breakage when removing tiles:
  - a. Wet them with soapy water to reduce dust buildup.
  - b. Remove the tile intact.
  - c. Start by carefully wedging a heavy-duty wall scraper in the seam between two adjoining tiles and gradually lift the edge of one of the tiles up from the floor.
  - d. Do not break off small pieces, but continue to lift the balance of the tile up with the scraper.



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- e. If the tile constantly breaks, use a commercial hot air blower to heat it sufficiently to warm and soften the adhesive. Handle the hot air blower carefully to avoid burns!
- f. Put the tile in a heavy-duty plastic bag for disposal. Once the first tile has been removed, it will be easier to remove the rest. Use a commercial tile remover or continue with the scraper to remove the rest of the tiles.
- g. Put the tiles in the plastic bag without breaking them.
- h. Wet down the remaining adhesive then scrape it up until only a thin smooth film remains.
- i. Put the residue in the plastic bag(s) with the removed tiles.
- j. When finished, close bags tightly and seal for disposal.

### Removal of Sheet Vinyl Floor Covering

1. Unadhered (loose-lay) or perimeter-adhered sheet:
  - a. Remove any moldings, trim or baseboards that may be holding the flooring in place.
  - b. Use a sharp utility knife to cut a strip about 46 cm (18") wide along one wall and the entire length of the room.
  - c. Gently turn the cut strip over and roll it face out into a tight roll.
  - d. Tie or tape it securely and place it in a heavy-duty plastic bag.
  - e. Clean the exposed floor with a vacuum cleaner fitted with a suitable filter, positioning it so that the exhaust does not blow over the uncleaned area. Do not dry sweep!
  - f. Repeat the above procedure one strip at a time until all of the floor covering has been removed and the floor cleaned. Remove any double-faced tape and dispose of it in the plastic bag.
  - g. Do not dry scrape. Remove any residue by wet scrape, following these instructions:
    - i. Mix 30 ml (1 ounce) of liquid dishwashing detergent with 4 liters (1 gallon) of water and thoroughly wet the residual felt/adhesive areas.
    - ii. Wait a few minutes to allow the solution to soak into the felt.
    - iii. Standing in the cleaned areas, use a heavy-duty wall scraper to scrape up the wet felt.
    - iv. Put the residue in the plastic bag with the rolls of removed floor covering. When finished, close bags tightly and seal for disposal.
    - v. After the floor has been cleaned, allow it to dry and vacuum up any remaining dirt. Position the vacuum cleaner so that the exhaust does not blow on the uncleaned portions of the floor.
    - vi. Carefully remove the dust bag and put it in a heavy-duty plastic bag and seal. Wash hands thoroughly!
2. Adhered sheet:
  - a. Remove any moldings, trim or baseboards.
  - b. With a sharp utility knife, make a series of parallel cuts 15 – 20 cm (6" - 8") apart, parallel to the wall. Cuts should be made through the entire thickness of the flooring to the subfloor and along the entire length of the room.
  - c. Starting at one end of the room, pry up the corner of the first strip, removing the top layer and as much of the felt backing as possible from the floor.
  - d. Fold the top layer back over itself slowly and evenly at an angle (15°-30°) that permits the best separation from the floor.
  - e. After the entire strip has been removed, gently lay it on the floor and turn it over. Roll the strip face out tightly and tie or tape it securely.



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- f. Place it in a heavy-duty plastic bag for disposal.
  - g. Repeat the above procedure on the next two or three strips.
  - h. Do not remove more than four strips at a time before removing the residue on the floor by the wet scraping method described above. Dispose of it with the old tile.
  - i. Once that section is completed, repeat the above procedure until the entire floor covering has been removed. Do not walk on the exposed felt when working. Close full plastic bags and seal.
  - j. When the entire floor has been cleaned of felt, allow it to dry and vacuum up any remaining dirt. Position the vacuum cleaner so that the exhaust does not blow on the uncleaned portions of the floor. Carefully remove the dust bag from the cleaner, put it in a heavy-duty plastic bag and seal. Wash hands thoroughly!
3. The floor is now ready for the installation of the new American Biltrite flooring.

Please note that technical web site documents prevail.

