Today's resilient floor coverings do not contain asbestos. In the past, some of these products, including sheet vinyl backing, vinyl composition tile, asphalt tile and lining felts may have contained asbestos fibers that were firmly encapsulated or locked in the products to provide durability. In order to assure protection of yourself and others on the job site, the following warning should be strictly observed.

**WARNING**

**DO NOT SAND, DRY SWEEP, DRY SCRAPE, DRILL, SAW, BEADBLAST, OR MECHANICALLY CHIP OR PULVERIZE EXISTING RESILIENT FLOORING, BACKING, LINING FELT, ASPHALTIC "CUT-BACK" ADHESIVE, OR OTHER ADHESIVE. THESE PRODUCTS MAY CONTAIN **ASBESTOS FIBERS** AND/OR **CRYSTALLINE SILICA**, AVOID CREATING DUST. INHALATION OF SUCH DUST IS A CANCER AND RESPIRATORY TRACT HAZARD. SMOKING BY INDIVIDUALS EXPOSED TO ASBESTOS FIBERS GREATLY INCREASES THE RISK OF SERIOUS BODILY HARM. UNLESS POSITIVELY CERTAIN THAT THE PRODUCT IS A NON-ASBESTOS CONTAINING MATERIAL, YOU MUST PRESUME IT CONTAINS ASBESTOS. REGULATIONS MAY REQUIRE THAT THE MATERIAL BE TESTED TO DETERMINE ASBESTOS CONTENT AND MAY GOVERN THE REMOVAL AND DISPOSAL OF MATERIAL. WHENEVER POSSIBLE, EXISTING FLOORING SHOULD BE LEFT IN PLACE AND THE NEW FLOOR INSTALLED OVER THE TOP. IF YOU MUST REMOVE OLD FLOORING MATERIAL, CONTACT YOUR RETAILER OR CONGOLEUM CORPORATION INSTALLATION DEPARTMENT, P.O. BOX 3127, MERCERVILLE, NJ 08619, FOR A COPY OF RECOMMENDED WORK PRACTICES. THESE PRACTICES SHOULD BE FOLLOWED.

---

**IMPORTANT NOTICE**

**FEDERAL, STATE AND LOCAL GOVERNMENT AGENCIES’ REGULATIONS**

Various federal, state, and local government agencies have regulations governing the removal of in-place asbestos containing material. If you contemplate the removal of a resilient floor covering that contains (or is presumed to contain) asbestos, you must review and comply with all applicable regulations.

**RECOMMENDED WORK PRACTICES FOR THE REMOVAL OF RESILIENT FLOOR COVERINGS.**

Copies of the Resilient Floor Covering Institute (RFCI) Recommended Work Practices for the Removal of Resilient Floor Coverings are available from:

RESILIENT FLOOR COVERING INSTITUTE
401 East Jefferson Street
Suite 102
Rockville, MD 20850
(301) 340-8580

Please note that these Recommended Work Practices are subject to change as new practices are incorporated. It is your responsibility to determine that the Recommended Work Practices you use are those in effect.

**CAUTION**

**PAINTS CONTAINING LEAD**

Certain paints may contain lead. Exposure to excessive amounts of lead dust presents a health hazard. Refer to applicable federal, state and local laws and “Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing” (September, 1990) or subsequent editions published by the US Department of Housing and Urban Development regarding:
- appropriate methods for identifying lead-based paint and removing of such paint; and
- any licensing, certification and training requirements for persons performing lead abatement work. (Use only qualified or certified lead abatement contractors to remove lead-based paint).

**MOLD AND MILDEW ISSUES**

Prior to removing an existing floor following the RFCI Recommended Work Practices for Removal of Resilient Floor Coverings (unless state or local law requires other measures), if there are visible indications of mold or mildeew or the presence of a strong musty odor in the area where resilient flooring is to be removed or installed, the source of the problem should be identified and corrected before proceeding with the flooring work. In virtually all situations, if there is a mold issue, there is or has been an excessive moisture issue. Visible signs of mold or mildeew (such as discoloration) can indicate the presence of mold or mildeew on the subfloor, on the underlayment, on the back of the flooring, and sometimes even on the floor surface. If mold or mildeew is discovered during the removal or installation of resilient flooring, all flooring work should stop until the mold or mildeew problem (and any related moisture problem) has been addressed.

In areas where flooding has occurred, it is recommended that damaged flooring be removed following the RFCI Recommended Work Practices for Removal of Resilient Floor Coverings (unless state or local law requires other measures). Any underlayment and subfloor should be allowed to thoroughly dry and, if necessary, cleaned, disinfected, and otherwise remodeled consistent with the U.S. Environmental Protection Agency (EPA) guidelines referenced below. Any structural damage or signs of mold or mildeew must be corrected before reinstalling resilient flooring. This may include for example replacement of the underlayment and/or subfloor.

For water damage caused by leaking fixtures, the source of the moisture leak must be located and corrected. Any structural damage must be repaired and any signs of mold or residual moisture must be addressed before replacing the resilient flooring in the affected area.

To deal with mold and mildeew issues, you should refer to the EPA guidelines that address mold and mildeew. Depending on the mold and mildeew condition present, those remediation options range from cleanup measures using gloves and biocide to hiring a professional mold and mildeew remediation contractor to address the condition. Remediation measures may require structural repairs such as replacing the underlayment and/or subfloor contaminated with mold and mildeew as a result of prolonged exposure to moisture.

The EPA mold guidelines are contained in two publications “A Brief Guide to Mold, Moisture and Your Home” (EPA 402-K-02-003) and “Mold Remediation in Schools and Commercial Buildings” (EPA 402-K-01-001). Appendix B of the “Mold Remediation in Schools and Commercial Buildings” publication describes potential health effects from exposure to mold, such as allergic and asthma reactions and irritation to eyes, skin, nose and throat. These publications can be located on EPA’s website at www.epa.gov/iaq/molds/

**CANADIAN RESIDENTS**

The referenced work practices for the removal of old resilient flooring and adhesive residues are intended for use in the United States. These practices have not been reviewed with either National or Provincial officials in Canada to determine their applicability when asbestos containing or presumed to be asbestos containing materials are encountered.

These work practices are recommended when removing resilient floor covering and its associated adhesives that have been determined not to be asbestos containing.

You must contact your local, provincial or national officials to determine the acceptable work practices for the removal of resilient floor coverings and associated adhesives that have been determined to contain asbestos or are assumed to contain asbestos.

For alternatives to removal of any in-place resilient floor covering materials, please see page 7 (Section E — Existing Flooring).
# CONGOLEUM PROFESSIONAL INSTALLATION GUIDE

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I. GETTING STARTED

A. THE INSTALLER’S ROLE
As a floor covering installer you are the direct link between the retail store and its customers. You play an important role for completing a successful, trouble-free, long lasting flooring installation and making a satisfied customer for the store. Keep in mind that a satisfied customer will lead to additional jobs for the retail store because of word-of-mouth advertising, which will enhance your reputation and job security.

Get your jobs started right by being certain that the material you will be installing is the correct design, color and length. Check the flooring for any damage or defects. Remember, any defect is much easier to correct before the flooring is installed.

B. APPEARANCE
First appearances will create a lasting impression on the consumer, either neutral, good, or bad. Always arrive as close as possible to the scheduled time, well-groomed and wearing neat, clean, durable clothing. A professional appearance will give the customer the confidence that your workmanship will be as expected.

C. CONDUCT
Refrain from playing radios, smoking, or using vulgar language. Do not talk negatively about other stores, products, manufacturers, etc., with customers. Additionally, always respect the homeowner’s property.

D. SAFETY
Safety for yourself and others on the job site is your responsibility. The following are a number of things that you should pay particular attention to:
- MATERIAL SAFETY DATA SHEETS (MSDSs) provide the flooring installer with any information that may be required for products which may contain hazardous materials. Floor covering products do not have MSDSs due to the fact that they are classified as “articles” and not chemicals. MSDSs are available for adhesives, seam sealers, and other products used to install or maintain Congoleum floor coverings. MSDS, where applicable, are available for Congoleum brand installation and maintenance products by calling or writing your Congoleum distributor or Congoleum at the address or phone number listed on the inside front cover.
  - Always use correct lifting practices.
  - Keep knives in pouches with the point down while working.
  - Use only UL® approved electrically powered tools.
  - Use heavy-duty extension cords and keep them in good repair.
  - Wear non-conducting rubber-soled shoes and use a ground fault interrupter (GFI) when using power equipment in damp or wet areas.
  - Wear protective equipment when appropriate, such as safety glasses, respirators, dust masks, knee pads, gloves, etc.
  - Keep work areas free of obstructions, such as tools, and dispose of scrap materials promptly and properly to eliminate tripping.

E. JOB COMPLETION
As a final touch when the job has been completed, give the consumer a copy of the Congoleum Consumer Flooring Guide and answer any questions they may have regarding the maintenance of their new floor. Additionally, it is important to inform them about preventive care, e.g., proper floor protectors, casters, etc. on furniture legs. This information and Congoleum warranties are included in the Consumer Flooring Guide, which is available at no charge at flooring retailers, by calling 800-274-3266 or writing Congoleum at:
Consumer Affairs Department
P.O. Box 3127
Mercerville, NJ  08619-0127
609-584-3601
II. SUBFLOOR AND UNDERLAYMENT RECOMMENDATIONS

A. GENERAL INFORMATION

The information for subfloor preparation which follows pertains to Congoleum DuraStone and resilient sheet and tile products. For subfloor and underlayment recommendations for DuraCeramic, see “Installation of DuraCeramic” Section IX, pages 41 through 49.

Congoleum flooring can be installed over properly prepared concrete subfloors on all grade levels, suspended wood floors, metal, terrazzo, ceramic tile, marble and most single-layer, non-cushioned, old resilient floor covering (See Figure 1, Grade Level Illustration). Congoleum flooring is not recommended over existing resilient tile installed below grade.

The subfloor and existing flooring material must be in sound condition, smooth, dry and free of extraneous material that will inhibit bonding or cause discoloration.

Asphalt saturated or any other type of lining felt is not recommended as an underlayment under any circumstances.

Do not write on the subfloor with an ink pen, felt-tipped marker or wax crayon; use a lead pencil only. Petroleum and solvent-based products, or pigmented materials on or in the subfloor can permanently stain resilient floor coverings. Remove these materials prior to installation of the floor covering.

B. RECOMMENDED SUBFLOOR PATCHING MATERIALS

Congoleum recommends using portland cement-based patching compounds and underlaments with a minimum compressive strength of 3,500 psi for filling, smoothing or leveling subfloor imperfections. The use of gypsum-based compounds has been discouraged due to problems related to discoloration and adhesion failure over on- or below-grade concrete. These products may be suitable for use over dry suspended subfloors in residential applications where sheet flooring products are installed.

C. CONCRETE SUBFLOORS

1. RECOMMENDATIONS

Congoleum flooring products are recommended for installation over concrete subfloors on all grade levels. Concrete must be clean, dry, smooth, structurally sound, and free of paint, varnish, adhesive, oil, grease, solvents, and other extraneous materials including curing and parting compounds, sealers, and surface hardeners that will inhibit bonding.

Congoleum flooring is not recommended for installation where excessive water vapor, hydrostatic pressure, or alkaline conditions exist. Installation or service failures due to these conditions are not the responsibility of Congoleum Corporation. Congoleum will not warrant or assume liability for such failures.

Conduct moisture and bond tests over concrete floors to determine if they are sufficiently dry before proceeding with installation (See Number 9, this section, Moisture And Bond Tests).

2. NEW CONCRETE

New concrete floors should be constructed, finished, and cured in accordance with the American Concrete Institute (ACI) 302 “Guide For Concrete Floor And Slab Construction” (Class 2 or 4) with a minimum compressive strength of 3,500 psi (246 kilograms per square centimeter). Allow new concrete to cure and dry for a minimum of six weeks before conducting moisture tests. Install flooring after the concrete has been tested and found to be sufficiently dry enough for covering.

3. SUSPENDED CONCRETE

Suspended concrete floors will require a much longer drying time if constructed on a steel or plastic pan. Resilient flooring may be installed when tests confirm that the concrete is sufficiently dry.

4. ON- AND BELOW-GRADE CONCRETE

Concrete floors must be constructed with an effective moisture/vapor barrier over an approved aggregate drainage pad. Normally, a 6 mil (.15mm) polyethylene sheet or equivalent is used for this purpose. The membrane must remain intact and not be ruptured during the concrete pour.

Congoleum makes no recommendations for using topically applied moisture barriers or sealers because of the uncertainty of their effectiveness and compatibility with Congoleum flooring systems and products.

5. LIGHTWEIGHT, AGGREGATE, AND CELLULAR CONCRETE

These concrete floors with a wet density of 100 pounds per cubic foot (1,602 kilograms per cubic meter), or greater, and a minimum compression strength of 3,000 psi (211 kilograms per square centimeter) are generally suitable for covering with Congoleum flooring products. If the concrete subfloor has a wet density of less than 100 pounds per cubic foot (1,602 kilograms per cubic meter), the surface can be made suitable to install Congoleum flooring products by covering with a standard topping mix to a minimum of 1” (2.5cm) thick.
6. PREFORMED PLANKS OR SECTIONS
This type concrete subfloor must be covered with a concrete topping mix to a minimum of 2" (5.1cm) in thickness. Trowelable underlayments or patching materials are not satisfactory for leveling joints between planks or sections, because movement will crack or loosen these types of leveling materials.

7. CURING AND PARTING COMPOUNDS
Curing and parting compounds, surface hardeners, and sealers are known to interfere with the adhesive bond to concrete. If these products have been used and they contain soap, oil, wax, or silicone, they must be removed. After removal, a Bond Test should be conducted to determine if a satisfactory bond of the adhesive to the concrete will be achieved.

8. RADIANT-HEATED SUBFLOORS
Congoleum flooring products may be installed over radiant-heated subfloors. The maximum temperature recommended during normal use varies by flooring product type as listed below:
- Tile and planks, 85˚F (29˚C).
- Sheet products, 90˚F (32˚C).
During the installation of the floor covering, the temperature of the subfloor should be limited to 70˚F (21˚C) for 24 hours before, during and for 48 hours after installation of the flooring product.

NOTE: Congoleum AD-72 Adhesive must be used when installing Forum Plank and Endurance Plank over radiant-heated subfloors.

9. MOISTURE AND BOND TESTS

- MOISTURE TESTS — Before starting flooring installations on concrete subfloors, moisture tests must be conducted. The tests should be done in areas least subject to drying out. Several tests should be done on large installations. A test available to determine if excessive moisture exists in concrete floors is:

  The Anhydrous Calcium Kit

  This kit has been designed to produce qualitative and quantitative results.

  Emission of moisture through the subfloor should not exceed 3 pounds (1.36kg) for residential products or 5 pounds (2.27kg) for commercial products per 1,000 square feet (92.9 square meters) per 24 hours. Anhydrous Calcium Test Kits may be available from Congoleum distributors, or can be ordered from:

  Taylor Tools  Vaprecision
  5045 Paris Street  3211 W. MacArthur Blvd.
  Denver, CO 80239  Santa Anna, CA 92704
  (303) 371-7667  1-800-449-6194

  NOTE: Moisture tests indicate moisture conditions at the time of the test. They cannot predict long-term moisture conditions with on-and below-grade concrete floors.

- BOND TESTS — Bond tests should be conducted over concrete subfloors or questionable surfaces where flooring is to be applied. Use the flooring material(s) and recommended adhesives for the installation. Install a 2' x 2' (61cm x 61cm) section of flooring following recommended installation procedures. Remove the flooring after 72 hours. Bonding to the subfloor is considered satisfactory if the flooring cannot be removed intact without using great force.

10. ALKALI TESTING
Alkali salts can be carried to the surface of concrete floors during curing or where excessive moisture conditions exist. These deposits can permanently damage flooring and create adhesive bond failures. Therefore, testing should be done to assure that an alkaline condition does not exist. The suitability of the slab can be determined with the use of pH testing paper. It is suitable to install the flooring if the pH is under 10.

If the pH test reading is 10 or over and the concrete is dry, it may be possible to remove surface alkali or neutralize it. The first step to make the slab suitable for the flooring installation is to remove the deposits by wet sanding with heavy-grit sandpaper. Vacuum the floor and allow to dry. Retest using pH paper. If the test result continues to be 10 or over, the slab must be neutralized. In order to accomplish this, mop the surface with a 1-part white vinegar to 1-part water solution. Then rinse thoroughly with clean water. Remove the water with a wet vacuum and allow the slab to dry. Retest to assure the pH has been neutralized.

CAUTION
Utilize proper health and safety precautions when sanding or grinding. Avoid creating dust; use an OSHA-approved respirator and wear safety glasses.

11. SELF-LEVELING CEMENTITIOUS UNDERLAYMENTS
Congoleum recommends the use of polymer-modified, self-leveling portland cement-based underlayment with a minimal compressive strength of 3,500 psi or 246 kilograms per square centimeter (ASTM C-109-modified).

The recommendations and guarantees regarding suitability as acceptable subfloors for resilient flooring are the responsibility of the manufacturer and installer of the underlayment and not Congoleum.

12. CONCRETE SUBFLOOR PREPARATION
Remove loose dirt and dust from the subfloor by sweeping or vacuuming. Smooth all rough or depressed areas, cracks, and score marks with a latex-modified portland cement patching compound.

- POWDERY OR SCALY SURFACES — Concrete surfaces that are powdery or scaly will need to be prepared, normally, by beadblasting or scarifying. Then level the surface with a latex-modified portland cement-based underlayment.

- OLD RESIDUAL ADHESIVE — Any old residual adhesive must be removed or covered over for the preparation of Congoleum flooring. Vinyl composition tile can be installed with cut-back adhesive over residual cut-back adhesive which has first been wet scraped to a thin film following recommended practices.
NOTE: Some previously manufactured asphaltic “cut-back” adhesives may contain asbestos. Other flooring adhesives may contain crystalline silica. Refer to the warning statement on the inside front cover. Removal instructions can be found in “RECOMMENDED WORK PRACTICES FOR THE REMOVAL OF RESILIENT FLOOR COVERING”. Information for obtaining this publication can be found on the inside front cover of this manual.

The use of solvent-based adhesive removers is not recommended because a solvent residue may be left in the subfloor. The residue can adversely affect the new adhesive and floor covering product.

An alternate method for removal may be to cover over the residual adhesive with a cementitious underlayment such as Ardex K15, Ardex SD Self-Leveling Underlayment, (Ardex, Inc., 630 Stoops Ferry Road, Coraopolis, PA 15108) or Mapei Plani/Patch and Plani/Patch Plus (Mapei, 1144 East Newport Center Drive, Deerfield Beach, FL 33442). Consult the underlayment manufacturer for recommendations.

NOTE: All warranties and performance guarantees for the underlayment are the responsibility of the underlayment manufacturer and not Congoleum.

13. CONSTRUCTION, CONTROL, AND EXPANSION JOINTS

■ CONSTRUCTION AND CONTROL JOINTS — Construction and control joints should be cleaned of any debris and then filled level with a latex-modified portland cement patching compound.

■ EXPANSION JOINTS — Do not fill and install flooring over expansion joints, because slab movement may crack or buckle the patching material. The flooring should be cut to the joint and then covered with a metal expansion joint cover. Select a cover that will provide a smooth transition to avoid a tripping hazard.

14. PAINT REMOVAL

CAUTION
CERTAIN PAINTS MAY CONTAIN LEAD. EXPOSURE TO EXCESSIVE AMOUNTS OF LEAD DUST PRESENTS A HEALTH HAZARD. REFER TO THE CAUTION STATEMENT ON THE INSIDE FRONT COVER OF THIS MANUAL.

All paint must be removed from concrete surfaces. If it has been determined that the paint does not contain lead, then it can be removed, depending on the type of paint, with a solution of trisodium phosphate and hot water or by grinding with a concrete or terrazzo grinder.

CAUTION
Utilize proper health and safety precautions when sanding or grinding. Avoid creating dust; use an OSHA-approved respirator and wear safety glasses.

Do not use solvent-based paint removers. Residual solvents left in the concrete can adversely affect the floor covering and the adhesive.

D. WOOD SUBFLOORS / UNDERLAYMENTS

1. GENERAL CONDITIONS

■ WOOD SUBFLOOR CONSTRUCTION — The construction of wood subfloors on which resilient flooring will be installed should meet the following requirements:
  - Double-layer construction and a minimum of 1” thick (2.5cm); Figure 2 is an example.
  - The long dimension of the panels should be installed perpendicular to the floor joists or trusses.
  - Stagger underlayment end joints by at least 16” (40.6cm).
  - Offset joints from the panels below by at least 2” (5.1cm).
  - Allow at least 18” (45.7cm) of well-ventilated air space below structural supports.
  - The subfloor must be structurally sound, not springy.
  - Wood subfloors constructed over a crawl space should have a sheet of polyethylene with a minimum of 4 mils (.1mm) thickness laid over the ground to reduce water vapor emissions.

Fig. 2. Typical subfloor structure

NOTE: Congoleum flooring products are not recommended for installation over wood floors applied directly over on-and below-grade concrete. This includes wood floors constructed on joists laid over on-or below-grade concrete (sleepers).

■ STRIPWOOD FLOORS — Even if stripwood subfloors are made completely smooth, there is a possibility that the board outlines will telegraph through the flooring material after the adhesive has dried. Show-through can also occur at a later time because of expansion and contraction of boards due to seasonal changes. The only way to eliminate this possibility is to install underlayment, as follows:
  - Double-layer tongue-and-groove stripwood floors with boards up to 3” (7.6cm) wide should be covered with a minimum 1/4” (6.4mm) thick underlayment.
  - Rough, single-layer and double-layer stripwood floors with boards wider than 3” (7.6cm) should be covered with a minimum 1/2” (1.3cm) thick underlayment.
• With either case, the long dimension of the panels should be installed perpendicular to the boards with the end joints staggered.

2. UNDERLAYMENTS/GENERAL INFORMATION

Underlayment, as referenced in this manual, can either be an integral part of the subfloor as in the top panel in a double-layer subfloor, or as an additional panel used to make the existing subfloor suitable to receive new floor covering.

Any recommendations in this manual regarding underlayment are intended to be only a guide. Congoleum does not warrant underlayment performance. Failure of Congoleum flooring products that are traceable to a lack of performance by the underlayment is not the responsibility of Congoleum. Regardless of the type underlayment used, the responsibility for warranties and guarantees for the underlayment rests with the underlayment manufacturer, and not Congoleum.

Congoleum recommends that flooring retailers and installers secure installation instructions and written warranties from the supplier or manufacturer of the underlayment product being used before starting the installation.

Following are a number of items that must be taken into consideration regarding underlayment panels and their installation.

• The minimal recommended thickness for underlayment panels is 1/4” (6.4mm).

• The underlayment must be designed and recommended for resilient flooring installation and be smooth to the extent that any texture or surface grain will not telegraph through the finished floor.

• Install the underlayment as recommended by the manufacturer.

• Adhesives should not be used to install underlayment panels unless it is known they will not stain resilient floor coverings.

• The underlayment should resist indenting from impacts and static loads and not contain any staining substances, e.g., edge sealers, patching materials, marking inks, solvents, adhesives, dyes, paints, surface voids filled with factory-applied synthetic patching compounds, pieces of bark or other wood chips or strands that will stain which may, or may not, be readily visible.

• Allow underlayment panels to acclimate to environmental moisture conditions (See “Note” below) and then install immediately before laying the finished flooring. This will eliminate damage from the elements and other trades.

NOTE: If the moisture content of underlayment panels varies from the installation environment, ridging (from panel growth) or tunneling (from panel shrinkage) can be apparent in the finished floor.

3. SUITABLE UNDERLAYMENTS

APA RATED PLYWOOD UNDERLAYMENTS — Veneer plywood panels with the American Plywood Association (APA) trademark, that include one of the following grade designations, are suitable underlaments for all Congoleum flooring products.

<table>
<thead>
<tr>
<th>Grade (1, 2)</th>
<th>Exposure/ Durability Classification</th>
<th>Look for these Special Notations In Panel Trademark(3)</th>
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</thead>
<tbody>
<tr>
<td>APA Underlayment</td>
<td>Exposure 1</td>
<td>Sanded Face</td>
</tr>
<tr>
<td>APA C-C Plugged Exterior</td>
<td>Exterior</td>
<td>Exterior</td>
</tr>
<tr>
<td>APA Underlayment C-C Plugged</td>
<td>Exterior</td>
<td>Exterior</td>
</tr>
<tr>
<td>APA A-C</td>
<td>Exterior</td>
<td>Exterior</td>
</tr>
<tr>
<td>APA B-C</td>
<td>Exterior</td>
<td>Exterior</td>
</tr>
<tr>
<td>APA A-D</td>
<td>Exposure 1</td>
<td>&quot;</td>
</tr>
<tr>
<td>APA B-D</td>
<td>Exposure 1</td>
<td>&quot;</td>
</tr>
<tr>
<td>APA Underlayment A-C</td>
<td>Exterior</td>
<td>Sanded Face</td>
</tr>
<tr>
<td>APA Underlayment B-C</td>
<td>Exterior</td>
<td>Sanded Face</td>
</tr>
</tbody>
</table>

(1) Veneer-faced, 19/32” (15.1mm) or thicker panels or APA-Rated Sturd-I-Floor, Exposure 1 or Exterior marked “Sanded Face”, or APA Marine Exterior plywood may also be used for underlayment under vinyl or other thin resilient finish flooring.

(2) Specific plywood grades and thicknesses may be in limited supply in some areas. Check with your supplier before specifying.

(3) Recommended for use under resilient finish flooring.

(4) “Plugged crossbands (or core), “plugged inner plies” or “meets underlayment requirements” may be indicated as an alternate designation in or near trademarks.


The following installation recommendations are intended only as a guide for APA plywood underlayment.

• Follow any recommendations regarding underlayment panel installation made previously in this manual (See Number 2, this page).

• The subfloor over which the underlayment will be installed must be smooth, dry, properly fastened and free of joint swelling, warping, or delamination.

• Position the edges of plywood panels net (lightly butted) without excessive tightness.

• Fasten the underlayment using 3d (1 1/4”) ring-shank nails for plywood panels up to 1/2” (1.3cm) thick. Narrow crown chisel point staples may be used in lieu of nails on panels up to 3/8” (9.5mm) thick.

• Position the fasteners every 3” (7.6cm) around edges and 6” (15.2cm) in the body of the sheet. Place fasteners so they do not penetrate framing (joists).

In structures where the joists and subfloor are of thoroughly seasoned material, drive fasteners flush with the underlayment surface. In new construction where joists and subfloor materials were subjected to wet weather or where the materials are of unseasoned lumber, to prevent nail popping, it is advisable to use staples set 1/32” (.8mm) below the surface to fasten the underlayment. If it is necessary to use nails, set the heads 1/32” (.8mm) below the surface; filling nail holes is not recommended.

• Sand any uneven joints level and fill any gaps between joints in excess of 1/32” (.8mm) with a recommended latex patching compound prior to flooring installation.
OTHER SUITABLE UNDERLAYMENTS

- NON-APA UNDERLAYMENTS — Other types of plywood panels, e.g. fir or birch plywood, may be suitable in certain applications. Consult the panel manufacturer or supplier for recommended applications, installation procedures and warranties.

- LAUAN PLYWOOD UNDERLAYMENT — With the large number of suitable underlayments available, Congoleum discourages the use of lauan plywood. If, however, no other suitable underlayment is available, lauan plywood meeting the following specifications can be used:
  - The panels must be Type I (exterior glue also designated as “P”) for underlayment use.
  - The recommended grades are:
    - BB (Best)
    - CC (Second best)
    - OVL (Overlay, minimal grade)

The use of lauan plywood panels is limited to residential applications only.

NOTE: The risk of obtaining unsatisfactory lauan panels for underlayment has increased in recent years due to the wide variety of species and grades available in the marketplace. Some of these species have been known to cause discoloration and adhesion failure.

- NPA UNDERLAYMENT GRADE PARTICLEBOARD
  Only National Particleboard Association approved grades of particleboard underlayment are suitable for certain Congoleum floor coverings. Its use is limited to the application of perimeter fastened, felt-backed products.

- UNTEMPERED HARDBOARD — Only untempered hardboard manufactured for underlayment is suitable for installing certain Congoleum products. Its use is limited to the application of perimeter fastened, felt-backed products.

- FIBER, CEMENT, AND CEMENTITIOUS UNDERLAYER PANELS — Cementitious and composite panels, designed as underlayments for resilient floor covering, may require specific installation and fastening systems that vary from typical wood panel underlayment. Consult the manufacturer or supplier for recommendations.

4. NON-RECOMMENDED UNDERLAYMENTS

The following underlayment are unsuitable as underlayments for resilient flooring products:

- Chipboard
- Waferboard
- Oriented strand board
- Tempered hardboard
- Most particleboard
- Wood veneer and other composition panels not recommended for underlayment use (examples: treated and fire-retardant plywood).

5. UNDERLAYMENT FASTENERS

The recommended fasteners for underlayment panels are non-coated ring-shank nails or narrow crown staples. Resin, rosen, or cement-coated nails are not generally designed for underlayment fastening and are not recommended because they have been known to stain resilient floor covering.

The quickest method for fastening 3/8” (9.5mm) and thinner underlayment panels is the use of narrow crown staples applied with a manual or pneumatic stapler. For underlaminents thicker than 3/8” (9.5mm), ring-shanked nails should be used. With all underlayments, the fastener should penetrate the underfloor by 3/4” (1.9cm), but not protrude through the underfloor by more than 1/8” (3.2mm). If the underlayment is being installed over an old floor covering, the thickness of the flooring should be taken into consideration when selecting nail and staple length. Following are guidelines for staple placement:

- APA underlayment grade plywood – Place fasteners every 6” (15.2cm) in the body of the sheet and 3” (7.6cm) apart at the perimeter approximately 3/8” (9.5mm) from the panel edge.
- Lauan plywood – Place fasteners every 4” (10.2cm) in the body of the sheet and 2” (5.1cm) apart at the perimeter approximately 3/8” (9.5mm) from the panel edge.
- Other underlayments – Follow the panel manufacturer’s recommendations for fastener placement.

6. GLUED FLOORING SYSTEMS

Glued flooring systems such as APA-Rated STURD-I-FLOOR are commonly used in residential construction to increase subfloor rigidity. The panels, normally 3/4” (1.9cm), are glued with construction adhesive and nailed to joists or trusses.

- FULLY ADHERED FLOORING PRODUCTS — Where Congoleum flooring will be installed fully adhered to the subfloor, a minimum 1/4” (6.4mm) thick underlayment must be applied over the glued panels.

- PERIMETER ADHERED FLOORING PRODUCTS — Where resilient sheet products will be installed by perimeter installation methods over a glued flooring system, it may be suitable to install the flooring without applying an underlayment panel. A provision is that the glued panel has remained in good condition during construction. The subfloor must be free of any delamination or other deterioration from exposure to weather, be free of any paints, solvents, marking inks, etc., and not contain surface damage.

NOTE: Some construction adhesives formulated with solvents or dark processing oils can stain resilient floor coverings, even when covered with 1/4” (6.4mm) underlayment. Congoleum recommends that high-quality, nonstaining, solvent-free, construction-grade adhesive, or light-colored PVA woodworking-type adhesive be used for fastening glued flooring systems.

7. LIGHTWEIGHT CONCRETE OR GYPSUM TOPPING OVER WOOD SUBFLOORS

Lightweight concrete and gypsum toppings are
frequently used in residential multi-family homes over suspended floors to reduce noise transmission and provide fire resistance. These materials are recommended by the manufacturer as an underlayment for resilient and other types of finished flooring. They must be applied in accordance with the manufacturer’s recommendations and allow to dry prior to covering. The surface shall be prepared with a primer/sealer if recommended by the manufacturer.

Prior to installation of finished flooring, conduct moisture and bond tests to confirm that the underlayment is dry and suitable adhesion can be achieved. Do not install flooring over a dusty surface. Most of these underlayments are pumpable materials with good leveling properties but are not always classified as self leveling. Check the floor for unevenness; remove high spots and fill low spots to achieve a smooth flat surface. Cracks in lightweight concrete/gypsum topping that are directly over subfloor panels may indicate excessive subfloor movement and should be checked, and corrected if necessary. Consult the underlayment manufacturer for details and additional information. Ardex GS4 Self Leveling Underlayment is recommended for correcting damaged existing gypsum toppings and wood subfloors. For additional information, contact Ardex at (724) 203-5000.

All recommendations and guarantees as to the suitability and performance of these products for resilient floor coverings are the responsibility of the manufacturer or installer of the system.

NOTE: Gypsum-based toppings are not recommended as a subfloor by Congoleum for commercial installations or where tile products are installed.

E. EXISTING FLOOR COVERINGS

Congoleum flooring products may be installed over many existing resilient and other types of floor coverings.

1. RESILIENT FLOOR COVERING

Whenever possible, it is desirable to leave the existing resilient floor in place, with the last alternative being removal. If removal of resilient flooring is considered, refer to the “WARNING”, “IMPORTANT NOTICE” and “MOLD AND MILDEW ISSUES” statements in the front of this manual.

NOTICE

Installers who plan to use work practices detailed in the RFCI booklet to remove intact and non-friable asbestos-containing floor coverings are required to complete an 8-hour training program. This and other requirements will be found in the RFCI booklet. Congoleum strongly recommends that you obtain this booklet, be completely familiar with its content, and acquire the training required before attempting to remove any existing resilient flooring product. Even with training, check for compliance with local, state and federal laws.

Congoleum flooring products may be installed directly over existing resilient flooring following the installation system recommended for the new product being installed. The existing flooring must meet the requirements and conditions that follow:

It must be:
- single layered.
- firmly bonded to a suitable substrate such as wood underlayment or concrete.
- smooth, not textured or embossed.
- free of any evidence of substrate moisture, hydrostatic pressure, or alkaline salts.
- clean and have old wax, floor finish, polish, grease, dirt, etc., removed with a liquid stripping solution such as Congoleum 3003 Polish Remover or Congoleum C3095 Stripper/Polish Remover. The existing floor must be thoroughly rinsed and allowed to dry before installing new floor covering.

All sheet flooring seams and tile joints in the new floor should offset the seams and joints in the old floor by at least 6” (15.4 cm).

Do not cover over:
- old flooring that is foam-backed or has a thick cushion.
- resilient tile installed below grade.
- self-adhesive tile.
- old rubber tile, unless it is checked for excessive indentation before installing new floor covering (old rubber tile can have various degrees of hardness).

SHEET FLOORING OVER EXISTING RESILIENT FLOORS — Congoleum sheet flooring may be installed over existing floor covering if the old floor meets the criteria stated above. However, if the existing floor is textured or embossed, the following alternatives can be used in lieu of removal:
- Level textured or embossed floors smooth with a portland-cement based, latex-modified embossing leveler.
- Cover existing resilient flooring installed over suspended wood subfloors with a recommended underlayment panel.

NOTE: Installation of a new floor over an existing floor, or an existing floor prepared with embossing leveler, may reduce the indentation resistance of the new floor.

TILE AND PLANK FLOORING OVER EXISTING RESILIENT FLOORS — Tile and Plank flooring may be installed over a single layer of existing flooring, provided it is clean, dry, fully adhered, securely bonded, non-textured, in good condition and is not a self-adhering product. Please refer to details on page 57 regarding adhesive recommendations and temperature restrictions. Otherwise, the existing floor must be covered with a recommended underlayment panel (if the existing floor is over wood) or removed. If removal is considered, refer to the “WARNING” and “IMPORTANT NOTICE” statements in the front of this manual. The use of an embossing leveler is not recommended for plank installations.
NOTE: Installation over existing flooring may reduce the indentation resistance of the new floor.

■ UNDERLAYMENT OVER EXISTING RESILIENT FLOORS — A recommended underlayment should be installed whenever possible in lieu of removal of an existing flooring installed over a wood subfloor. New underlayment, however, should not be installed over heavily cushioned floor coverings that are 3/32” (2.4mm) thick or heavier, as an up/down movement may occur at joints creating underlayment joint show-through in the new, finished floor. Thick, cushioned floor coverings require removal before installing new underlayment. If removal is considered, refer to the “WARNING” and “IMPORTANT NOTICE” statements in the front of this manual.

2. TERRAZZO, CERAMIC TILE, AND MARBLE
Congoleum residential and commercial products can be installed over these substrates on all grade levels. The existing floor should be securely bonded to structurally sound subfloors and show no evidence of moisture. Abrade the surface, fill joint and grout lines, and any uneven areas level and smooth with a latex-modified portland cement underlayment.

3. FLOATING FLOORS - LAMINATES, WOOD, AND PERIMETER ADHERED RESILIENT FLOORING
Congoleum flooring products are not recommended over existing perimeter fastened sheet flooring or floors which “float” and are not firmly anchored to the underfloor. An example is a tongue and groove laminate floor glued together in sections without any fasteners holding it in place against the underfloor.

F. METAL SURFACES
Steel, stainless steel, aluminum, copper, brass, and bronze can be covered with all Congoleum residential or commercial products. The metal surface must be abraded and thoroughly cleaned. All rust, oxidation, and other contamination such as oil, grease, dirt, etc., must be removed.
## III. INSTALLATION OF RESILIENT SHEET FLOORING PRODUCTS

### A. SPECIFICATIONS/RECOMMENDED USE — RESILIENT SHEET FLOORING PRODUCTS

The following are specifications and other information which will be helpful when installing Congoleum resilient sheet flooring products:

#### RESIDENTIAL INSTALLED

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<thead>
<tr>
<th>Wearlayer Type</th>
<th>Overall Gauge (Nominal)</th>
<th>Wearlayer Gauge (Nominal)</th>
<th>Widths Available</th>
<th>6'</th>
<th>12'</th>
<th>Weight (lb.) per P.S.Y.</th>
<th>Recommended Use</th>
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<tbody>
<tr>
<td>Xclusive</td>
<td>Natural-Gloss, Vinyl Resin and Urethane</td>
<td>Reinforced with Nylon and Aluminum Oxide</td>
<td>12'</td>
<td>—</td>
<td>80-160</td>
<td>4.1 ASTM F1303; Type I, Grade 2</td>
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<td>Ultima</td>
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<td>Reinforced with Nylon and Aluminum Oxide</td>
<td>12'</td>
<td>—</td>
<td>80-160</td>
<td>3.5 ASTM F1303; Type I, Grade 2</td>
<td>✓</td>
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<tr>
<td>Bravada</td>
<td>Natural-Gloss, Vinyl Resin and Urethane</td>
<td>Reinforced with Nylon and Aluminum Oxide</td>
<td>12'</td>
<td>—</td>
<td>80-190</td>
<td>3.0 ASTM F1303; Type I, Grade 2</td>
<td>✓</td>
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<td>Highlight</td>
<td>High-Gloss, Vinyl Resin and Urethane</td>
<td>6’ &amp; 12’</td>
<td>40-100</td>
<td>80-190</td>
<td>2.6 ASTM F1303; Type I, Grade 3</td>
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<td>AlumaTEC Polymer Based Reinforced with Aluminum Oxide</td>
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<td>6’ &amp; 12’</td>
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<td>2.5 ASTM F1303; Type I, Grade 3</td>
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#### COMMERCIAL

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<th>Wearlayer Gauge (Nominal)</th>
<th>Widths Available</th>
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<th>12’</th>
<th>Weight (lb.) per P.S.Y.</th>
<th>Recommended Use</th>
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</thead>
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<tr>
<td>Flor-Ever Plus</td>
<td>Satin-Gloss, Vinyl Resin Composition</td>
<td>Reinforced with Aluminum Oxide</td>
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<td>.020’</td>
<td>12’</td>
<td>—</td>
<td>80-160</td>
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<tr>
<td>Specifications</td>
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<td>Foundations</td>
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<td>.050’</td>
<td>6’</td>
<td>30.80</td>
<td>—</td>
<td>5.5</td>
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</tbody>
</table>

* All products listed above pass N.B.S. Smoke Density testing (ASTM E662-450 or less) required in hospitals and nursing homes. All products listed above pass Critical Radiant Flux (ASTM E648-0.45 w/cm² or greater).

* All products listed areFlorescore Certified for indoor air quality performance. FloorScore certified hard surface flooring products are an alternative compliance to LEED credit EQ4.3 Low-Emitting Materials: Carpet Systems.

### B. WHITE SHIELD BACKING

Congoleum residential and commercial resilient sheet floors are produced on Congoleum White Shield felt backing. White Shield felt, which is manufactured by Congoleum, sets the standard in the industry. It is flexible, and highly resistant to cracking and breaking. This backing can be installed on suspended wood subfloors, and concrete subfloors on all grade levels.
C. INSTALLATION SYSTEMS BY PRODUCT

The following chart lists all Congoleum resilient sheet products that are recommended for permanent installation and the various systems recommended for installation.

### Installation Systems

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<th>Product</th>
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<tr>
<td>Xclusive</td>
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<td>3044</td>
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<td>Ultima</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
<td>SU106</td>
<td>Insert</td>
</tr>
<tr>
<td>Bravada</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
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<tr>
<td>Highlight</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
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<td>Pacesetter</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
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</tr>
<tr>
<td>Concept</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
<td>SU80/SU92</td>
<td>Insert</td>
</tr>
<tr>
<td>Prelude</td>
<td>Your Choice</td>
<td>3044</td>
<td>Overlap and Double Cut</td>
<td>SU80/SU92</td>
<td>Insert</td>
</tr>
</tbody>
</table>

| **COMMERCIAL**  |                    |          |                |              |                          |
| Flor-Ever Plus  | Fully Adhere*      | 3044     | Overlap and Double Cut | SU80/SU92    | Insert                   |
| Specifications  | Fully Adhere**     | 3044     | Recess Scribe  | SU80/SU92    | Top Seal/ Heat Weld      |
| Foundations    | Fully Adhere**     | 3044     | Recess Scribe  | SU80/SU92    | Top Seal/ Heat Weld      |

* The insert seam sealer application refers to inserting the slotted fin of the applicator into the seam cut to achieve a chemical weld from top to bottom. By comparison, a top sealing application is achieved by applying seam sealer only on the top surface of the seam cut.
** These products can be perimeter adhered in residential installations only if the subfloor is concrete.

D. GENERAL INFORMATION

For the best installation results, the information which follows are requirements for installing Congoleum resilient sheet flooring products:

- Congoleum resilient sheet products are designed to be installed in enclosed areas where temperatures will not fall below 55°F (13°C) or go above 100°F (38°C).
- Store the flooring on a smooth, level floor or rack with continuous, rigid support in a clean, dry, interior area where it is protected from the elements. Stand 6’ wide rolls on end, whenever possible, and secure them from falling. Ideal long-term storage temperatures range from 50°F (10°C) to 85°F (29°C).
- The subfloor, flooring material, and adhesive should be conditioned at a constant temperature between 65°F (18°C) and 85°F (29°C) for 48 hours prior to, during, and for 48 hours after installation. Thereafter, maintain room temperature between 55°F (13°C) and 100°F (38°C).
- Material may be pre-cut for installation, but must be rolled face out around a continuous rigid tube until ready for installation.
- Install sheets in the order they are taken from the roll. Install rolls, if using more than one, in consecutive roll number order.
- Do not write on the backing with an ink pen, felt-tipped marker, or wax crayon; use a graphite pencil only.
- Flooring laid out and fitted to the room should be adhered within 4 hours. **NOTE:** Seam edges can curl if sheets are allowed to lay unadhered for an extended period of time.
- Avoid creasing or folding the flooring material because the backing could break or a permanent crease could be made in the flooring surface.
- When moving appliances, furniture, or other heavy objects over the floor, always roll or slide these items on strips of 1/4” (6.4mm), or thicker, hardboard or plywood. This includes carts or dollies with wheels.
- It takes about 48 hours for the adhesive to dry. Protect the new flooring in adhered areas from heavy furniture (such as sofas, tables, and chairs) by placing a wide furniture rest under each leg during this time frame. Furniture rests are recommended on a continuing basis.
- Congoleum resilient sheet flooring products are not recommended for installation on ramps. However, they can be installed fully adhered on treads and risers on stairs, provided that a slip-resistant stair-nose molding (generally metal or rubber) is utilized on the leading edge of the tread.
• Visually inspect the floor covering prior to installing. Do not install material with obvious defects.

E. CONGOLEUM 3044 RESILIENT SHEET ADHESIVE
See the following chart for the properties of the adhesive recommended for installing Congoleum resilient sheet flooring products.

Properties of 3044 Adhesive

<table>
<thead>
<tr>
<th>Properties of 3044 Adhesive</th>
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<tbody>
<tr>
<td><strong>Advantages</strong></td>
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<td><strong>Shelf Life</strong></td>
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<td><strong>Sizes</strong></td>
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</table>

3044 — WARNING: Eye and skin irritant. Mineral spirits — CAUTION: Flammable materials; read and follow cautionary statements on labels.

F. INSTALLATION OF WHITE SHIELD FELT-BACKED PRODUCTS
Most Congoleum floors with White Shield felt backing can now be installed by the Your Choice Installation System. This system provides you with options for installing the flooring either fully adhered or perimeter fastened over approved wood subfloors, concrete, and properly prepared existing resilient flooring products.

The Your Choice Installation System is not recommended for commercial applications. Flor-Ever Plus, when used in commercial installations should be installed by the Fully Adhered System. Foundations and Specifications can be installed by the Perimeter Fastening System in residential applications only if the subfloor is concrete or concrete covered with an existing floor. Flooring installed in commercial applications must be fully adhered.

1. YOUR CHOICE INSTALLATION SYSTEM (FULLY ADHERE OR PERIMETER FASTEN)

   - FULLY ADHERED INSTALLATION SYSTEM – The Fully Adhered System is recommended when installing White Shield felt-backed products on self-coved installations, complicated room layouts, and where a lot of net fitting is required, as well as all other installations where the subfloor is in sound condition.

   - PERIMETER FASTENING INSTALLATION SYSTEM – Congoleum floors that utilize the Your Choice Installation System can be installed Perimeter Fastened. This feature often provides several advantages including quick, easy installation, better subfloor masking properties, lower adhesive cost, ease of repair in addition to lower future replacement costs. While there is no substitute for proper subfloor preparation, the Perimeter Fastening System reduces the likelihood of underlayment joint telegraphing and show-through of design embossing on floors that were prepared with embossing leveler. The subfloor must be smooth in all areas, particularly where adhesive will be applied.

2. FITTING
The products can be fit using the freehand, direct scribbling or pattern scribbling methods. (See “Fitting Flooring to the Room”, Section VII, pages 28 through 35). NOTE: The factory selvage edge may contain printed information that should be trimmed off. Do not take the material from one temperature extreme to another, e.g., laying it in direct sunlight for trimming, then transferring it to the room.

3. ADHESIVE AND APPLICATION
Congoleum 3044 Premium Flooring Adhesive is the only adhesive required for installing floors with White Shield backing. Use 3044 for fully adhered or perimeter fastened floors over all approved substrates; including wood, concrete, existing flooring, and embossing levelers.

On perimeter fastened floors apply a 4” to 6” band of adhesive around the room perimeter where staples are not used and an 8” band centered under the seam. Apply the adhesive to the subfloor with a notched trowel. The recommended notch size for floors installed fully adhered or perimeter fastened is 1/16” wide, 1/32” deep and 1/32” apart (1.6mm wide, 0.8mm deep and 0.8mm apart) as shown in Figure 3.

For Specifications and Foundations, over porous surfaces, use a trowel with notches that are 1/16” wide, 1/16” deep and 1/16” apart (1.6mm wide, 1.6mm deep and 1.6mm apart) as shown in Figure 4.

Proper adhesive application is critical. Too little adhesive can lead to bonding problems. Too much adhesive can cause an uneven dimpled appearance in the finished floor and increase the potential for permanent indentation from furniture or foot traffic.
4. FULLY ADHERED INSTALLATION SYSTEM

- After subfloor preparation has been completed, carefully remove all dirt and debris from the subfloor with a vacuum cleaner, a broom, or a brush with fine bristles (Figure 5).

- Pre-cut the floor covering to fit the room allowing extra length and width (generally 3” or 7.6cm) for fitting. When seams will be required, additional flooring must be added to match the design.

- Position the material in the room allowing enough flooring to fit into doorways, closets, alcoves, etc. Be certain that the design has been aligned squarely with the walls in the room.

- If the room is not square, allow the run-off of the design to fall in the most inconspicuous area of the room. Use caution to avoid kinking or distorting the floor covering while handling.

- Fit the flooring to the room using an appropriate fitting method (See “Fitting Flooring To The Room” Section VII, pages 28 through 35).

- After the sheet of flooring has been completely fitted to the room, the next step is to apply adhesive on the subfloor, one-half of the sheet at a time.

- Lap back, or tube, the flooring to expose approximately one-half of the subfloor below the sheet. The sheet of flooring cannot be allowed to shift during the adhesive application process. One way to help prevent shifting is to place a 100-pound (45 kilogram) floor covering roller or other weighted object on the flooring to keep it in place.

- The adhesive must be spread on 100% of the exposed subfloor with no voids, puddles, or thin spots. Uniform coverage can be maintained by using a clean, properly notched trowel. The adhesive should be spread in a straight line to where the flooring laps or tubes back on itself.

- If the subfloor is a nonporous type, it is desirable to allow “open-time” (maximum of 10 minutes) before placing the flooring into the wet adhesive. The “open-time” allows the adhesive to develop tack and body, and will help to keep air bubbles, or pockets, from forming.

  CAUTION
  
  Do not let the adhesive film over because this will reduce the adhesive bond.

- Place the flooring into the adhesive by gently rolling it forward. This will help to eliminate trapped air.

  Do not flop or drop the flooring into the adhesive because this could cause it to shift and make removal of trapped air more difficult and time consuming.

- After the flooring material has been placed into the wet adhesive, it must be rolled immediately with a 3-section, steel, 100-pound (45 kilogram) or heavier flooring roller. Rolling flattens the adhesive ridges formed by the notched trowel, and embeds the backing tightly against the subfloor into the wet adhesive. (Figure 6)

- Start rolling in the center of the sheet. Roll the flooring in both directions being certain that no trapped air remains between the sheet of flooring and subfloor. In areas where the large roller cannot reach, a wall or hand roller should be used to complete the process.

  NOTE: Do not short-cut the rolling procedure, because omission could lead to adhesive ridge telegraphing (on smooth materials particularly) or poor adhesion. Additionally, if rolling with the floor covering roller is eliminated, there is a possibility of permanent indentations caused by furniture.

- After the flooring has been rolled, small gas bubbles, normally 2” (5.1cm) or less in diameter, will occasionally appear in the floor covering. These small air pockets or gas bubbles occur when the subfloor cannot absorb the vapor from the adhesive as it is drying. Nonporous subfloors, such as existing resilient or very smooth concrete floors, are the most prone to developing this condition. Gas bubbles will generally completely flatten and disappear within a few hours; puncturing to press out air is rarely required. If puncturing is necessary, use a sharp needle, push out the air, and seal the puncture with a drop of the recommended seam sealer.

5. PERIMETER FASTENING INSTALLATION SYSTEM

Congoleum flooring products with White Shield felt backing as listed on the chart on page 10 can be installed perimeter fastened when the requirements below are met.

- PREPARATION AND FITTING — Flooring products that utilize the Your Choice Installation System can be installed over suspended wood floors, concrete,
and most properly prepared old resilient floors. Flor-Ever Plus, Specifications, and Foundations can be perimeter fastened in residential applications only if the subfloor is concrete or concrete covered with existing resilient flooring.

- The room temperature and flooring must be a minimum of 65°F (18°C) for 48 hours prior to, during, and for 48 hours after installations. This is particularly critical during cooler seasons. Conditioning makes it more flexible and easier to install.
- The flooring should not be distorted before or during installation. To prevent distortions, store and transport material on a level, flat surface, tightly rolled, face out, around a continuous rigid tube at least 4” (10.2cm) in diameter.
- Do not roll the material face in before taking it into the room for installation. If you must roll it face in, unroll it immediately after taking it into the room and let it recover for at least 15 minutes before perimeter fastening.
- Although the Perimeter Fastening Installation system reduces the likelihood of subfloor show-through, it will not hide such items as protruding staples, nailheads, or grit (Figure 7). The subfloor requires thorough cleaning to remove all traces of grit and dirt.

**NOTE:** When installing flooring perimeter fastened, it is especially important that they are installed flat without buckles or waves.

- When ready for installation, unroll the floor in the room, being careful to avoid folding or kinking it. To avoid kinking it, keep the flooring low while positioning it.
- After the material is positioned in the room, make relief cuts at inside and outside corners so it will lay flat.
- When extending into alcoves or another room, make sure the flooring is straight, not bowed. You can extend a string along a continuous grout line to make sure the floor is straight.
- Where finished trim will be used, fit the floor with a 1/16” gap between the edge of the sheet and the wall. Where no finished trim will be used, fit the floor flush or net to the walls. Tight or compression fitting is not recommended as it will cause a buckle to form after the floor is adhered.
- Fit the flooring to the room using an appropriate fitting method. (See “Fitting Flooring to the Room”, Section VII, pages 28 through 35).
- After fitting the material to the room, fasten the entire perimeter with adhesive or staples. If using a combination of adhesive and staples, complete the adhered areas first.

Congoleum 3044 is the only adhesive needed on fully adhered or perimeter fastened floors regardless of whether the subfloor is porous or nonporous. Adhesive is required under all seams, at net fitted areas, in front of cabinet toe spaces, around floor vents, and over concrete or other hard surfaces.

- **ADHESIVE APPLICATION** — To adhere the flooring, roll the edge of the sheet back, taking care to avoid bending or creasing it. Spread a 4” to 6” (10.2 cm to 15.2 cm) band of adhesive along the perimeter. Remove any excess adhesive at the edge of the band to avoid ridges in the finished floor. Roll the flooring back into the wet adhesive immediately after completing each section. Push any minor fullness that may have developed, out toward the wall. Then roll the adhered area with a 100-pound (45 kilogram) floor covering roller. If using a wall roller or a steel hand roller, be sure to apply uniform pressure to avoid a lumpy appearance caused by moving the adhesive around.

- **STAPLES** — Staples are actually preferred in areas where finish trim will be installed. The minimum size staple should have a 1/2” (12.7mm) crown with a 3/8” (9.5mm) leg. Use the longest staple length that can be seated tightly to the floor surface. Staple every 2” (5.1cm) along the wall and 1/4” (6.4mm) away from the edge of the sheet. After the floor has been fastened, reinstall trim.

Any minor fullness can be removed by warming the area with a heat gun and then covering it with a board or other flat object until it cools.

- **SEAMING** — If seaming is required, use the overlap and double cut seam method, the same as used for installing floors fully adhered.

- Install the first sheet, leaving the seam edge and approximately 12” to 18” inches at the ends of the sheet near the seam unfastened.
- Match the design of the next sheet at the seam. Then fit and adhere or staple this sheet along the perimeter as with the previous one, leaving 12” to 18” unfastened at the ends.
- Position a 3” piece of scrap flooring material face down, centered under the seam to protect the subfloor.
- Cut the seam with a sharp utility knife following a metal straight edge. Cut the seam in the center of a grout line whenever possible.
- Remove the selvage pieces and turn the flooring back to expose the subfloor.
- Apply a 4” to 6” band of adhesive at the ends, and an 8” band centered under the seam.
• Place the sheet that was on the bottom during the seam cutting process into the adhesive and roll up to the seam edge. Then tuck the other sheet into place, using extreme care to avoid getting adhesive into the seam cut.

• Roll the seam area using a floor covering roller. Then level the seam edges using a seam roller.

• Clean the seam and apply the recommended seam sealer.
IV. SEAMING OF RESILIENT SHEET FLOORING PRODUCTS

A. MATCHING DESIGNED FLOORS FOR SEAMING

There are two methods of matching designs for seaming within the Congoleum product line. They are:

1. METHOD 1 — REVERSE SHEETS

Reversing sheets means that seams are made by utilizing the same side (selvage) of the sheet.

- Many designs in the Congoleum resilient sheet flooring line will be seamed by the reverse sheet method. In order to assure a proper design match, Congoleum prints matching information in the selvage. Designs requiring sheet reversal will have I’s imprinted at intervals in one selvage where the design repeats; there will be C’s on most opposite edges. In addition to the I and C reference marks, the words “Reverse Sheets” will also be printed at intervals.

- Reverse the sheets of flooring material to be seamed and align I to I, or C to C (Figure 8). When the I’s or C’s are placed together and the selvages overlapped, the design will be accurately aligned at its match points.

2. METHOD 2 — DO-NOT-REVERSE SHEETS

- Some designs, because of their configuration, will not allow sheets to be reversed for seaming. In these cases, “Do-Not-Reverse” has been imprinted in the selvages; opposite sides of the sheet are utilized for seaming.

- Most designs will have an arrow imprinted in each selvage that, when aligned, is the design match point (Figure 9).

B. CALCULATING ADDITIONAL MATERIAL TO ACQUIRE A DESIGN MATCH AT SEAMS

Additional flooring material is required to match designs at seams on other than the first sheet installed. The amount of material required will vary, depending on the design, and whether the specification is for Reverse Sheets or Do-Not-Reverse Sheets for seaming. Use the following guidelines to estimate the additional material needed to match designs at seams:

1. REVERSE SHEETS SPECIFICATION

- When a design which specifies sheet reversal at seams is being installed, the length of the first sheet should be calculated by adding 3” (7.6cm) to the net size required. **NOTE:** On some design types it may be desirable to add more than 3” (7.6cm) so that the design can be centered in the room.

- The second and succeeding sheets should have the length of the design match added to the size required for the room.

Example: The room size is 12’ x 13’9”, the material is 6’ wide and the design match is 18”. The first sheet should be 6’ x 14’ long (13’9” + 3”). The second sheet should be 15’3” long (13’9” + 18” for the match).

2. DO-NOT-REVERSE SHEETS SPECIFICATION

- Designs which specify non-reversal of sheets for seaming should be calculated by adding 3” (7.6cm) for fitting to the net size required for the first sheet.

- The second and successive sheets should be calculated by going to the next multiple of the design match over the net size required.

Example 1: The room size is 12’ x 13’9”, the material is 6’ wide, and the design match is 18”. The first sheet should be 14’ long (13’9” + 3”). The second sheet should be 15’0” long. **NOTE:** The next lower multiple of the design match is 13’6” which is too short. Therefore, an additional design must be added to extend the length past 13’9” which makes the length required 15’0”.

Example 2: The room size is 12’ x 12’2”, the material is 6’ wide and the design match is 18”. The first sheet should be 12’5” long (12’2” + 3”). The second sheet should be 13’6” long. **NOTE:** The next lower multiple of the design repeat is 12’, which is too short. An additional design match must be added to extend the length past 12’2” which makes the length required 13’6”.

C. MINIMIZING DESIGN MATCH RUN-OUT

It is not unusual to experience minor design run-out when 2 or more sheets are laid together for seaming. The longer the sheet, the more pronounced the run-out can be. Design run-out can normally be brought completely onto match, or minimized to the extent that it is unnoticeable. Most designs have been created to allow some matching tolerance at seams.

The procedure for bringing the design onto match varies by product construction as follows:

- It is important that the sheets are installed on the subfloor in the sequence that they are cut from the roll.
• The length of the design repeat on the sheet cut from the outer laps of the roll could be slightly shorter than the design repeat on the sequential sheets.

• Reverse rolling (roll with backing out) the longest sheet (the second sheet cut off the roll) will relax the tension on the wearlayer from having been rolled in a smaller diameter than the first sheet, and bring the design onto match (note that the flooring should not be allowed to remain rolled face-in for more than 10 minutes because it will cause the edges to curl).

• If the sheet with the longest repeat is installed first (second piece cut off) and the next sheet to be installed is running short (first piece cut off) in design repeat, there is little that can be done to correct the situation.

• Some benefit is obtainable by rolling the sheet with the short match very tightly into a small diameter with the wearlayer out.

Other steps which are beneficial for bringing designs onto match are:

• Cut the individual sheets in advance of the installation and lay them out in a work area matched as they will be installed on the job. Roll all sheets with the wear surface out into the same size diameter for storage and transporting to the job site. Install the sheets as they were taken from the roll. Since the sheets were prematched, little run-out should occur. Any minor adjustments can be corrected by reverse rolling the sheets with the design match running long.

• Start matching in the center of the seam. Allow any run-out to be distributed to each end of the seam.

D. SEAMING METHODS

Seaming of Congoleum resilient sheet floors will vary by product construction. Two methods are recommended:

• Overlap and Double Cut
• Recess Scribe

See the “Installation Systems” chart on page 10 for seaming methods, seam sealers and seam sealing application by product.

1. GENERAL INFORMATION

The following is seam placement and other seaming procedures that should be followed to produce trouble-free seams in Congoleum resilient sheet products:

■ Place seams in the least conspicuous and least used areas in the room, whenever possible.

■ Seams will be less conspicuous if placed (whenever possible) perpendicular to the normal flow of foot traffic.

■ When an existing resilient sheet floor is being covered over, run seams perpendicular to those in the existing floor. If not practical or possible, seams in the new floor should be at least 6” (15.2cm) from those in the existing floor.

■ When covering over an existing tile floor, place seams of the new resilient sheet floor near the center point of a row of tile (Figure 10).

Fig. 10. On old tile floor, position seams in the middle of a row of tile.

■ Seams should be placed a minimum of 6” (15.2cm) from underlayment joints (Figure 11).

Fig. 11. Flooring seams must be at least 6” (15.2cm) from underlayment joints.

■ On large installations where more than one roll of material is required, precautions should be taken to assure a color match at seams between rolls. In order to do this, it is necessary that the rolls be from the same production run. Additionally, the register number of the rolls should be in sequence.

Each roll has a register number which will be found on the label affixed to the roll wrapper. Follow these guidelines to obtain the best color match between rolls:

– All numbers (or letters) preceding the last three digits must be identical on rolls to be used for the same job. An example of a register number is 26100125.

– If two or more rolls are required on a job, ideally, they should be in numerical sequence as they were packed. In this case, the register numbers would be 26100125 and 26100126. The last three numbers always tell the packing sequence.

– If rolls in exact sequence are not available, the recommended tolerance should be no more than 10 digits between rolls. As an example, it is permissible to use two rolls numbered 26100125 and 26100135.
– If several rolls are used on the same job, the first roll used should either be the highest or lowest number. The next roll and succeeding rolls used should be the closest number to the preceding roll.

– As a final precaution regarding color match, visually check the flooring before installing.

■ When seaming designs with embossed mortar or grout lines wider than 5/32” (4.0mm), the seam should be cut in the center of the embossed line as in Figure 12.

■ On designs with narrow embossed lines, 5/32” (4.0mm) or less, cut the seam along the top edge or shoulder of the embossing. Leave the embossed line on the top sheet when cutting the seam and completely remove it from the bottom sheet (Figure 13).

■ Another area for seam cutting is in the land area about 1/8” (3.2mm) from the edge of embossed mortar lines or grout joints as in Figure 14. This method will be necessary for seaming 6’ wide flooring slat from 12’ materials where there is only one selvage edge and more than one seam is required. This seaming method may also be utilized on designs with thin embossed lines 5/32” (4.0mm) or less in width.

■ Note Figure 15 — Cutting the seam in the fashion pictured here is NOT RECOMMENDED because the wearlayers do not meet, creating a high/low condition and a weak seam sealer weld. The potential for seam openings is high.

2. OVERLAP AND DOUBLE CUT SEAMING PROCEDURE

This method of seam cutting is recommended for cutting seams in White Shield felt-backed products except Specifications and Foundations (see chart on page 10).

■ FITTING AND ADHERING SHEETS
  • After determining the best placement of seams in the room, mark the subfloor with a graphite pencil where each seam will fall. Then, snap parallel chalk lines (use white chalk) on either side approximately 12” (30.5cm) from the seam location; these will act as guides for adhesive spreading (Figure 16).
• Start by fitting the first sheet to the room. After fitting is complete, lap one-half the sheet back and spread the recommended adhesive on the subfloor to the first chalk line leaving a dry zone at the seam edge (Figure 17).

• Place the flooring into the wet adhesive and roll in both directions with a 100-pound (45 kilogram) floor covering roller. **NOTE:** If long sheets are being installed, the adhesive should be covered intermittently with the floor covering and rolled in both directions with the floor covering roller.

• Position the next sheet to match the design (if required); follow the guidelines on page 15 to correct any design run-out. Many designs will have embossed lines or mortar joints where the seam will be made. It is imperative that the top sheet be aligned precisely with respect to the bottom sheet in order to acquire the proper width of the mortar joint or line after the seam is cut.

• One method for determining the correct width is to make a notch in the selvage approximately every 6’ (1.8 meters) as illustrated in Figure 18. The notch should be made no deeper into the selvage than the outer edge of the mortar joint or line. The notch will then allow for a visual alignment. Use this method of determining width of mortar and grout joints only if you will be seaming in the middle of the embossed area (most designs).

• Another method for determining the proper width of the mortar joint or line is to carefully determine the width (match) of a design unit in the body of the sheet. Then double the dimension to measure the distance between two design units at the seam line (one design unit on each side of the seam). This should be done about every 6’ (1.8 meters) throughout the length of the seam.

• After the design at the seam has been accurately matched and the flooring fitted to the room, adhere and roll the second sheet the same way as the first. There is now a 2’ (61cm) wide dry zone (unadhered area) below the seam, which is now ready to be cut.

**CUTTING SEAMS** — A utility knife should be used for cutting seams in White Shield backed products.

• Always use a new blade to cut seams.

• Place a scrap of flooring material 2” (5.1cm) to 3” (7.6cm) wide, face down, in the dry zone centered under the seam (Figure 19). This will add slight fullness to the seam cut and help prevent damage to the subfloor below.

**ADHERING THE SEAM AREA**

• After cutting the seam, remove the scrap cut-off pieces.

• Lap the flooring back to expose the dry zone, avoiding a sharp crease at the adhesive line.
• Spread adhesive on the subfloor in the dry zone with the recommended trowel being careful not to overlap previously applied adhesive (Figure 21). Be especially careful that adhesive is not applied excessively to the point that it will be forced into the seam cut when the sheets are placed together. One way to minimize the potential for getting adhesive into the seam is to comb the adhesive lines perpendicular to the seam line and allow a few minutes for adhesive to flash off. DO NOT ALLOW ADHESIVE TO SKIN OVER.

• After the adhesive has been spread on the subfloor in the dry zone, place the sheet which was on the bottom during seam cutting into the wet adhesive.

• Then tuck the other sheet into place by bending the edge slightly (Figure 22). Avoid scraping adhesive from the subfloor into the seam cut. Should this occur, carefully lift the edges of each sheet and remove the adhesive with a clean, damp cloth.

• Roll the 2’ (61cm) wide area which has been spread with adhesive with the 100-pound (45 kilogram) floor covering roller and then use a steel hand roller to bring the wearlayers level at the seam cut (Figure 23).

• Clean the surface of any adhesive or foreign material with a damp (not wet) sponge or cloth. Allow the area to dry, and the seam is now ready to be sealed.

NOTE: Seams in Xclusive featuring Scotchgard™ Protector must be prepared prior to applying seam sealer by lightly abrading the seam area with the 3M Scotch-Brite® pad and dowel pin found in the SU106 Seam Sealer Kit.

SEAMING 6’ WIDE MATERIAL SLIT FROM 12’ WIDTH — Some 6’ wide White Shield backed products are slit from 12’ wide flooring. This means that only one side will have a true selvage. The seaming specifications on multiple seam installations will vary from one seam installations.

• One seam only: Install designs with “Reverse Sheet” specification in rooms requiring only one seam by following the procedure detailed earlier. Be certain to seam the side of the sheet with the true factory selvage. (Align C to C or I to I and overlap the sheets to match the design).

• Multiple seams: In rooms where there is more than one seam, install the first 2 sheets reversed by seaming the factory selvages together. Install the third and alternating sheets (or fill pieces) reversed by overlapping the slit edges 2 full design units (one on each sheet of flooring). This method creates waste, but it positions the seam in an inconspicuous area (allows the seam to be cut in the center of an embossed line, Figure 24).

NOTE: As an alternative to installing 6’ wide material in rooms where more than one seam is required, consideration should be given to installing 12’ wide floor covering.
• **Optional Method:** An optional method can also be used when installing designs with “Reverse Sheets” specifications on jobs with multiple seams or with small fill pieces. This optional method requires installing the flooring following Do-Not-Reverse seaming specifications.

Position the slit edge over the factory selvage and visually match the design so that it repeats consistently across the sheets (Figure 25).

Cut the seam 1/8” (3.2mm) into the field area (beyond the embossed line) as shown in Figure 26. Do not cut the seam along the edge of the mortar line because this will create a high/low condition weakening the seam weld.

NOTE: Some designs have a cross-direction match that will not divide equally into 72” (e.g. a design with a 26-1/4” cross-direction match will not be slit at a grout line). If more than one (1) seam is required, 12-foot wide flooring should be considered to avoid excessive waste.

3. **RECESS SCRIBING PROCEDURE**

Recess scribing produces the best quality seams in flooring products with thick, through-chip wearlayers such as Specifications and Foundations.

• Follow the instructions in the “General Information” Section on page 16 for seam placement.

• Position and fit the first sheet to the room; then, to prepare for seaming, trim 1/2” (1.3cm) of selvage off using a selvage trimmer or straight blade utility knife held straight up (Figure 27).

• After the first sheet has been trimmed, lightly mark the subfloor at the sheet edge with a graphite pencil. The line serves as a guide for adhesive spreading. Take care that the edge of the flooring is not marked by the pencil.

• Lap or roll back one-half of the sheet to expose the subfloor. Spread the adhesive on the subfloor to the guide line (Figure 28).

• Roll or lay the flooring into the wet adhesive and roll in both directions with a 100-pound (45 kilogram) floor covering roller.

• Repeat the adhesive application procedure on the other half of the sheet.
• Position and fit the second sheet in the room allowing a 1/2” (1.3cm) overlap at the seam. Remember to reverse the sheets.

**NOTE:** If additional sheets will be installed, prepare the second and successive sheets by trimming the factory selvage as previously described. (B side of sheet as in Figure 29).

<table>
<thead>
<tr>
<th>SHEET 2</th>
<th>SHEET 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>A</td>
</tr>
</tbody>
</table>

---

**Fig. 29.** A side of sheet 2 overlap 1/2” (1.3cm) B side of sheet 2, trim off 1/2” (1.3cm)

Completely adhere the second sheet. Roll with a 100-pound (45 kilogram) floor covering roller to within 2” (5.1cm) of the seam. **The seam must be completed using the following procedure before the adhesive sets up:**

- Set the recess scribing tool to produce a net fit (Figure 30). It is important that the seams are cut net. Fitting too tightly could cause a peaked or curled seam. It is advisable to check the setting for accuracy on scraps of material before scribing the flooring.

- Be certain that the pin in the recess scriber is sharp and adjusted so it only lightly scores the surface of the floor covering. Hold the recess scriber knob against the edge of the bottom sheet and lightly score the top sheet with the pin (Figure 31).

- Place a piece of scrap flooring under the edge of the top sheet to protect the lower sheet from being cut. Keep the scrap out of the adhesive.

- Cut the top sheet of flooring following the score mark with a sharp blade in a utility knife held straight up (90° angle to the flooring surface, Figure 32). A light cut followed by a finish cut will normally produce the best seam appearance.

- Remove the scrap flooring and roll the top sheet into place with a steel hand roller (Figure 33). Be careful not to force adhesive into the seam cut. Wipe the entire length of the seam with a damp cloth or sponge to remove any adhesive on the surface. As a final step, roll the seam with a 100-pound (45 kilogram) floor covering roller (Figure 34), followed by a steel hand roller to level the seam edges.

---

**Fig. 30.** Set recess scribing tool to cut seams net.

**Fig. 31.** Lightly score the surface of the top sheet.

**Fig. 32.** Cut the seam on a 90° angle following the score marks.

**Fig. 33.** Roll top sheet into place with a steel hand roller.

**Fig. 34.** Roll seam with a 100-pound (45 kilogram) floor covering roller.
V. SEAM SEALING

All seams in Congoleum resilient sheet products must be sealed. Seam sealer fuses the wearlayer of the seamed sheets together and locks soil and water out. Seams that have been properly cut, properly adhered to the subfloor with the recommended adhesive, and properly sealed will maintain their original appearance and integrity for the life of the floor covering.

Congoleum has four types of seam sealers. The type use will depend on the composition of the wearlayer. They are not interchangeable. See the “Installation Systems” chart on page 10.

**WARNING**

CONGOLEUM SEAM SEALERS (SU80, SU92, SU102 AND SU106) ARE EXTREMELY FLAMMABLE. AVOID OPEN CONTAINERS. DO NOT SMOKE, EXTINGUISH ALL FLAMES OR OTHER SOURCES OF IGNITION IN AREA. AVOID PROLONGED CONTACT WITH SKIN. PROVIDE ADEQUATE VENTILATION. KEEP AWAY FROM CHILDREN. CAREFULLY READ ALL LABELS ON CANS OR BOTTLES BEFORE USING.

Lighter fluid, mineral spirits, and lacquer thinner are referenced in this section for various uses:

**CAUTION**

Lighter fluid, mineral spirits, and lacquer thinner are flammable materials. Read and follow cautionary instructions on the labels of these products.

A. SU80 AND SU92 SEAM SEALERS

Use SU80 or SU92 Seam Sealer for sealing seams on products with vinyl resin composition, i.e. non-urethane, wearlayers, plus Specifications and Foundations. SU80 and SU92 are identical seam sealers. The only difference is the method of packaging, as shown at right (Figure 35).

1. SU80 Seam Sealer is a complete kit. It contains a TO70 applicator nozzle with cleaning wire, plastic squeeze bottle, and 2 ounces of seam sealer in a glass bottle.
2. SU92 Seam Sealer is packaged in an 8-fluid-ounce metal can (TO70 Applicator Kit is required for sealing seams).

B. TO70 SEAM SEALER APPLICATOR KIT

This kit is required when using SU92 Seam Sealer. It contains two 6-ounce plastic squeeze bottles, two TO70 applicator nozzles, two cleaning wires and instructions (Figure 36).

C. SU102 SEAM SEALER

SU102 is recommended for high-gloss urethane wearlayers on products with a vinyl cushion layer. This seam sealer is a two-part mixture. Fluid labeled Part A and Part B are included in each kit. The entire contents of both bottles must be mixed together prior to use. The kit comes complete with an applicator nozzle, plastic squeeze bottle, and seam sealer.

One kit will be required for each installation with seams; excess seam sealer cannot be saved for reuse.

D. SU106 SEAM SEALER

SU106 Seam Sealer (Figure 38) is recommended for sealing seams in all products with a satin-gloss urethane wearlayer, including Xclusive with Scotchgard™ Protector. SU106 contains seam sealer and an abrasive pad for pre-treating the seams on Xclusive. Pre-treating seams on Ultima and Bravada is not required or recommended.

Note: SU106 Seam Sealer replaces SU105 Seam Sealer
E. CHARACTERISTICS OF SEAM SEALERS

1. SU80 AND SU92 SEAM SEALERS

- Shake the seam sealer one-half hour before use to mix components within the sealer and allow air bubbles to completely disappear. Failure to do so will result in a seam sealer bead that is higher in gloss than the floor covering.
- SU80 and SU92 Seam Sealers will be dry to the touch in 20-25 minutes after application; however, they should be **allowed to dry for at least one hour before foot traffic is permitted on the seam.**
- In times of extremely high humidity, the seam sealer bead can turn hazy after application. The haze will clear up after exposure to normal or low humidity conditions. Another method is to apply a bead of lacquer thinner to the seam sealer bead with a cotton Q-Tip® (as close as possible to the same width as the seam sealer bead). Allow the lacquer thinner to evaporate and the seam sealer bead will clear up. **NOTE:** Do not apply lacquer thinner unless the seam sealer bead is completely dry.
- Small quantities of dried SU80 and SU92 can be removed from the flooring surface with lacquer thinner. Wet a clean, white cloth with lacquer thinner and rub the dried sealer in a circular motion. Turn the cloth frequently. Use a clean place on the cloth each time that has been freshly wetted with lacquer thinner until the sealer is removed.
- The flooring surface will be dulled, but the luster can be restored by using BonAmi® Polishing Cleanser or Soft Scrub® Cleanser on a wet cloth or sponge. After the lacquer thinner has dried completely, rub the dull spot in a circular motion. Rinse the cleanser from the floor covering with clean water, dry the area, and buff with a soft cloth to restore luster.
- SU80 and SU92 Seam Sealers will thicken when exposed to freezing temperatures. The seam sealer is undamaged, and the viscosity can be returned to normal by allowing it to adjust to room temperature.
- Any leftover SU80 or SU92 Seam Sealer can be saved for reuse. However, it should be stored in its original container and not in the plastic squeeze bottle because it will gradually thicken and eventually harden. The plastic bottle and TO70 nozzle should be thoroughly rinsed with lacquer thinner to remove all traces of the seam sealer. Insert the cleaning wire in the nozzle slot to keep it open for future use.
- Do not use SU80 or SU92 Seam Sealers on high-gloss or satin-gloss urethane wearlayers. They will not satisfactorily bond to the flooring and will peel off.

---

**Seam Sealer Recommendation — Resilient Sheet Flooring**

<table>
<thead>
<tr>
<th>Seam Sealer</th>
<th>SU92 (Liquid Only)</th>
<th>SU80 (Kit)</th>
<th>SU102 (Kit)</th>
<th>SU106 (Kit)</th>
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<tr>
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<td>Seal seams on:</td>
<td>Seal seams on:</td>
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<td>Pacesetter</td>
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<tr>
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<td>Foundations</td>
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</tr>
<tr>
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<tr>
<td></td>
<td>(48 cans/ctn.)</td>
<td>(12 kits/ctn.)</td>
<td>(12 kits/ctn.)</td>
<td>(6 kits/ctn.)</td>
</tr>
</tbody>
</table>
2. SU102 AND SU106 SEAM SEALERS

- Mix the full contents of Part A and Part B in the plastic squeeze bottle. Use the seam sealer within 2 hours.
- After application, the seam sealer bead will be tack-free in about 2 hours; however, it should be protected from any disturbance such as foot traffic, dust, or dirt for at least 16 hours.
- Any accidental spillage of SU102 or SU106 Seam Sealer must be cleaned up immediately with a cloth or paper towel dampened with lighter fluid or mineral spirits. They cannot be removed after it dries. Do not use alcohol, lacquer thinner, or any other strong solvent, because these materials can damage or dull the wearlayer of the flooring product.
- Part B of SU102 and SU106 Seam Sealers will become cloudy and thick in cold and freezing temperatures. The seam sealer will not be damaged. Allow the seam sealer to adjust to room temperature prior to use.
- After all seams have been sealed, the remaining seam sealer should be emptied from the plastic applicator bottle into the original glass bottles and disposed of in a safe place. Do not save the mixture for further use.

F. DIRECTIONS FOR SEAM SEALING

1. SEAM SEALING XCLUSIVE

- Seams in Xclusive must be prepared prior to applying seam sealer by lightly abrading the seam area with the 3M Scotch-Brite® pad and dowel pin found in the SU106 Seam Sealer Kit.
- Remove any adhesive in the seam area.
- Place the dowel pin at the center of the nylon pad and fold the edges up to cradle the pin. Hold the pad above the pin firmly between the thumb and forefinger. Start at one end of the seam, apply moderate pressure and rub the seam evenly with 4 back and forth strokes. (Figure 39). Work in small sections (approximately 2 feet long) overlapping each section as you continue down the grout line.

- Clean the seam with a damp, clean white cloth and dry completely prior to applying seam sealer.

2. GENERAL INFORMATION

- Seal all seams immediately after they have been completed. Never leave a seam unsealed over night.
- The seam cut and surrounding area must be clean, dry, and free of adhesive.
- The TO70 nozzle (Figure 40) must be used for applying Congoleum seam sealers. It has a slotted fin to apply the seam sealer and two side fins to aid in keeping the slotted fin vertical during seam sealing.

- Prepare the recommended seam sealer in the plastic squeeze bottle according to directions. Screw the applicator on tightly to prevent leakage. Check the flow of seam sealer on a scrap of flooring to assure that the nozzle is clear and the sealer flows evenly.
- A seam where the wearlayers are not level (e.g., not leveled with a steel hand roller) will affect the application of seam sealer. In many cases, the bead will flow to the low side and there will be no sealer on the opposite side of the seam. The combination of uneven wearlayers and an inadequate weld will contribute greatly to the possibility of a seam failure.
- Seam sealer is not a filler. It will not bridge gaps or openings. Therefore, good seam cutting techniques are required for effective seam sealing.
- Provide good lighting for seam sealing. Since the liquid is clear, it is difficult to judge the volume applied in poor lighting.
- Excessively wide seam sealer beads should not be applied. As a general practice, the maximum width of the bead centered on the seam cut should never exceed 1/4” (6.4mm) for SU102 and SU106, and 1/8” (3.2mm) for SU80 and SU92. A wide, thick bead detracts from the appearance and will take much longer to dry. Additionally, a bead wider than 1/4” (6.4mm) can delaminate the wearlayer at the seam, causing permanent damage to the floor.
- The seam sealer bead must be protected from dust, dirt, and foot traffic until it has cured. One method that can be used to warn against walking on fresh sealer is to tape the trimmed off selvage on the floor, back side up, parallel with the seam. Where traffic, dust or dirt cannot be controlled, the seam...
should be completely covered using a cardboard core. Cut the core in half, lengthwise, and position it centered over the seam sealer bead. Tape the core in position.

3. SEAM SEALING PRODUCTS WITH A VINYL CUSHION LAYER

- Seams in most Congoleum floors are sealed by applying seam sealer throughout the entire thickness of the seam cut, with a 1/8” (3.2mm) to 1/4” (6.4mm) bead centered over the seam. (See Top Sealing Method For Through-Chip Inlaid Products at right.)

- Insert the slotted fin of the TO70 nozzle into one end of the seam (Figure 41) and apply light constant hand pressure on the applicator bottle to control the flow. The bottle and nozzle should be at an approximate 45° angle to the surface of the floor covering. Move slowly, with as few interruptions as possible, and apply a bead of seam sealer 1/8” (3.2mm) wide centered on the seam cut. When sealing, do not exert excessive downward pressure (so as to compress the vinyl cushion) on the side fins against the floor covering.

4. TOP SEALING METHOD FOR SEALING PRODUCTS WITH THROUGH-CHIP INLAID WEARLAYERS

The seam sealer application for products with a through-chip inlaid wearlayer (Specifications, and Foundations) will vary from other Congoleum products.

- Because of the wearlayer thickness on through-chip inlaid products, only top sealing is required. Do not attempt to insert the applicator tip into the seam cut.

- Hold the applicator nozzle perpendicular to the seam cut (Figure 42) with the tip, lightly riding on the surface of the flooring material. Starting at one end of the seam, move slowly applying light, constant pressure on the squeeze bottle and apply a bead of seam sealer 1/8” to 1/4” wide (3.2mm to 6.4mm) centered over the seam cut.

NOTE: Seam sealer applied to only one edge can result in seam failure. Check seams for proper seam sealer application.
VI. HEAT WELDED SEAMS — SPECIFICATIONS AND FOUNDATIONS

In addition to sealing seams with a liquid seam sealer on Specifications and Foundations, heat welding of commercial installations is an alternative method of finishing seams. With heat welding, a vinyl rod and the floor covering material at the seam are heated to a sufficient temperature whereby they are fused together. Due to the nature of this procedure, heat welding should only be done by a trained professional.

NOTE: The following procedure is based on a 4mm vinyl heat welding rod. Adjust the procedure accordingly if a different size rod is used.

Follow these procedures for heat welding seams in Specifications and Foundations:

■ Cut and adhere the seam using the recess scribe procedure as described earlier in this manual. The seam can be cut with a maximum 1/64” (0.4mm) opening to provide a guide for the grooving tool. Allow the adhesive to set up for 24 to 48 hours before heat welding.

■ After the adhesive has set, groove out the seam using a power or hand grooving tool (Figures 43 and 44).

■ Adjust the grooving tool to cut a “U” shaped groove 3mm wide, extending two-thirds into the wearlayer thickness (Figure 45).

■ Use a heat welding gun equipped with a standard 5mm, round, speed nozzle (Figure 46) or welding nozzle with integrated welding rod roller (Figure 47). Pre-heat the welding gun to 350°C to 500°C (662°F to 932°F). The temperature will vary depending on the welding speed.

CAUTION
Heat welding equipment operates at high temperatures and can cause severe burns. Handle equipment carefully and use safety precautions to protect yourself and others on the job site. Keep away from combustible, flammable, and explosive substances. Use adequate ventilation when heat welding. Avoid breathing fumes. Refer to the tool manufacturer’s operating manual for additional precautions.
Check the heat setting using a scrap piece of Specifications or Foundations. A small ridge will form on the sides of the welding rod along the groove when properly welded. A low temperature setting, or moving too fast will result in a weak bond. A high temperature setting or moving too slowly can scorch the seam edges.

Position the welding rod along the seam so that it does not interfere with the welding procedure. Starting at one end of the seam, insert the welding rod into the nozzle and force it into the seam groove (Figure 48).

Move slowly at a constant speed applying sufficient heat to properly weld the seam (Figure 49). As you approach the end of the seam, it will be necessary to stop and change direction.

To prepare the joint, cut a tapered groove from the bottom of the rod to the top (will be about 3/8” or 9.5mm long) as shown in Figure 50. Then complete the weld from the wall to the rod in place, starting at the wall and extending to the tapered groove. Overlap the groove and the welding rod in place to join them together.

To finish, remove excess welding rod while warm (not hot) with a sharp spatula knife and spatula guide or trim plate (Figure 51). Allow the welding rod to completely cool, then trim the seam weld again without the spatula guide (Figure 52).

**NOTE: If welding rod is not allowed to cool before final trimming, shrinkage can result in a concave joint. Always use a sharp spatula knife held on a slight angle to produce a smooth finished joint.**
VII. FITTING FLOORING TO THE ROOM

There are several methods that can be utilized to fit resilient sheet floor covering to the room. The most common methods are:

- Freehand fitting
- Direct scribing
- Pattern scribing

A. FREEHAND FITTING

The freehand method of fitting is normally utilized when floor molding is applied to straight walls and for short areas (such as door trim, pipes, and other irregular areas) that require net fitting.

Roll the flooring out in the room (on a diagonal if the job is one piece and the distance between the walls measures less than the width of the flooring material); handle the flooring carefully to avoid folding or creasing. Align the flooring, to the longest, most visible wall in the room. Balance the design in the room keeping any lines in the design as far from walls as possible.

Complete the fitting process by following these steps:

- First, make relief cuts at all outside corners. Keep the knife horizontal with the floor and cut from the top of the material down to the floor/wall juncture until the flooring lays flat (Figure 53).

- Next, make relief cuts at all inside corners by trimming diagonally across the material (Figure 54). Trim the flooring gradually until it fits snugly into the corner juncture.

- Trim the material lapped up straight walls (Figure 55). If a floor molding will be used, trim the floor covering about 1/8” (3.2mm) short of the baseboard. Net fitting can be obtained, if required, by placing the side of the knife blade against the wall with the tip of the knife blade at the floor wall juncture and trimming slowly. Unless one has considerable experience with this type fitting, it is advisable to trim off small amounts of flooring at a time until the desired net fit is achieved.

- At pipes or other irregular shaped objects, push the flooring into a right angle at the floor/object juncture and cut with a utility knife to the floor (Figure 56); make the cut in a grout line in the design whenever possible. Make small relief cuts around the pipe or object until the flooring lays flat without tearing (Figure 57). Trim the excess flooring net to the pipe or object (Figure 58).

Fig. 53. Make relief cuts at all outside corners.

Fig. 54. Gradually trim off pieces of flooring.

Fig. 55. Trim flooring to fit.

Fig. 56. Make cut to floor/object juncture.

Fig. 57. Make relief cuts around pipe or object.
At doorways, which are usually very irregular, the preferred fitting method is to undercut the door trim, cut the flooring slightly long and slide it under the trim. If this is not possible, the fitting procedure is similar to that explained previously. At all places of the door trim where it changes shape, cut from the top of the flooring down to the trim/floor junction (Figure 59). Complete the fitting process by trimming off the excess flooring to obtain a net fit (Figure 60).

**B. DIRECT SCRIBING**

Direct scribing is an accurate method of fitting resilient sheet flooring. However, it can only be used on installations with seams. A scribing tool (dividers or bar scribe) is held at a right angle to the edge of the sheet to be fitted and the wall outline is transferred to the flooring material. The flooring is shifted back and forth until 3 sides of the room are fitted and one side of the sheet is open for seaming.

Position the flooring in the room square with the walls. The side opposite the seam should be flat on the floor with the ends lapped up the walls (Figure 61).

Scribe the wall opposite the seam first. The setting of the scribe is arbitrary. However, the tip of the scribe and the marking pin must be set far enough apart so that the flooring, when trimmed, will fit to the wall in all places. Normally, the scribe should be set for the shortest possible distance to increase accuracy in scribing (Figure 62).

Hold the scribe perpendicular to the edge of the sheet and transfer the wall outline to the flooring material. Any offsets on the wall must be marked on the flooring material.

Once the wall has been scribed, the excess flooring material should be trimmed off following the scribe mark. Shift the flooring against the wall for a snug fit. The flooring will now be lapped up the wall at both ends.

To scribe and fit the ends, 2 marks will be required. Draw a pencil line on the subfloor following the selvage on the seam side of the sheet (Figure 63). The second mark is a perpendicular line (cross line) on the floor covering in the approximate middle of the sheet.
Extend the line onto the subfloor (Figure 64).

Shift the material toward one end until the opposite end falls clear of the wall. Be certain that the selvage of the flooring remains aligned with the pencil line on the subfloor at the selvage. Set the scribe for the distance between the perpendicular marks made on the subfloor and flooring material (Figure 65). With this setting, scribe the wall and any obstructions along the wall. The same procedure is used to fit the opposite side of the sheet.

If there is a doorway with trim on the wall being scribed, set marks will be required at each offset on the trim pieces (Figure 66). The trim should be scribed using the same scribe setting as used for wall areas.

If there is a pipe extending up through the floor, follow this procedure for an accurate fit:

- Use the scribe to make a mark on the flooring in front of the pipe (Figure 67).
- Make set marks on each side of the pipe which extend to the scribe mark (Figure 68).

Fig. 63. Draw a pencil line along selvage.

Fig. 64. Make a perpendicular line on flooring extending onto subfloor.

Fig. 65. Set scribe for distance between 2 lines.

Fig. 66. Make set marks at each offset on trim pieces.

Fig. 67. Mark the flooring in front of the pipe with the scribe.

Fig. 68. Extend set marks on each side of pipe to scribe mark in front of pipe.

- Set the scribe the width of the set marks (Figure 69).
- Use the scribe to make a mark on the flooring toward the back side of the pipe from the first mark made from the front of the pipe. There will now be a square marked on the flooring. Next, draw a line diagonally across the square from each corner to form an X in the center.
Set the scriber from the center of the X to one side of the square (one-half the distance of the square). Scribe a circle with one leg placed on the center of the X mark (Figure 70). Cut out the circle and make a seam (cut) from the back of the pipe to the edge of the flooring.

The second sheet must now be installed (assuming the job is a 2 piece installation). If the design is an overall with no match required, fit the 3 sides as previously described allowing for proper overlap of flooring material in order to make the seam.

When installing the flooring with a pattern, it will be necessary to match the design at the seam. Lay the flooring out in the room according to matching instructions (reverse or do-no-reverse sheets for seaming) so that it is flat and free of obstructions. Both ends should be lapped up the walls and the selvage of the second sheet overlapping the first sheet installed. The amount of overlap is arbitrary. Align grout lines in the design that run perpendicular to the seam. Measure the distance between the seam line (grout line) on the top sheet and the seam line on the bottom sheet. Adjust each end of the sheet to the same distance to acquire a design match.

C. PATTERN SCRIBING

Pattern scribing is an accurate method of fitting when resilient sheet flooring is being installed in rooms or intricate places where no floor molding will be used and the floor covering must be net fitted. When properly executed, pattern scribing will consistently produce perfect net fits.

The steps for the pattern scribe fitting method are:
1. Lay out felt paper.
2. Scribe room outline onto felt.
3. Position felt on floor covering.
4. Transcribe room outline from felt to flooring.

**Step 1: Lay out the felt paper**

Asphalt saturated felt paper is the most popular type of material used for pattern scribing. However, other non-saturated types are available and work well. Whatever material is used, it must be flexible, lay flat, and be dimensionally stable.

The felt should be rough cut to the room perimeter allowing a 1/4” (6.4mm) gap between walls or other vertical surfaces to be fitted. Cut the number of felt strips required for the first sheet of flooring to be installed 1/2” (12.8mm) shorter than the length of the room. This allows for a 1/4” (6.4mm) gap at each end of the room. Position the felt with end curl down (Figure 72) maintaining a 1/4” (6.4mm) gap between the ends and sides of the felt strips at walls. Trim the felt, where required, maintaining 1/4” (6.4mm) gap between it and all areas to be fitted (Figure 73).

In order to keep the felt in place on the subfloor, cut out several oblong windows approximately 2” x 4” (5.1cm x 10.2cm) in each piece of felt (Figure 74). Use wide masking tape to fasten the felt to the subfloor so it will not shift during scribing.
Reference marks should now be made on the felt so that the individual strips can be accurately aligned side-by-side on the floor covering. Do this by making light cuts every few feet across the seams in felt strips with a utility knife (Figure 75).

**Step 2: Scribing room outline to felt**

To scribe the room outline onto the felt, set the legs of the dividers to the desired width (normally approximately 1” or 2.5cm). Make a reference mark of the setting on the felt (Figure 76) so the dividers can be reset if necessary.

Start at an inside or outside corner and begin scribing the wall outline on the felt. The dividers must always be held perpendicular to the area being scribed, whether straight or curved (see example in Figure 77).

At doorways or other irregular shaped objects, place start/stop set marks at each corner of the molding onto the felt using a small square or straightedge as shown in Figure 78. Then hold the dividers perpendicular and scribe each piece of trim as shown in Figure 79.

There is another method of scribing straight areas which is accurate and saves time. This method requires a short, flexible straightedge (or any other type of thin, straight metal). Place the straightedge against the wall and score the felt with a sharp pin (most dividers have removable legs containing the sharp pin) as shown in Figure 80. The advantage of using this method is that when the score marks are transcribed to the flooring from the felt, a sharp utility knife can be used following the straightedge. The flooring is trimmed to size in one operation.
**Step 3: Position felt on floor covering**

After scribing the room outline onto the felt, pick up each individual piece and position it on the flooring. Each strip of felt will be accurately aligned by placing the reference marks (light cuts across felt seams) together (Figure 81). Adjust the felt pattern on the flooring so the design runs straight in the room.

**Step 4: Transcribe room outline from felt to flooring**

Before transcribing the room outline from the felt to the flooring material, check the setting on the dividers. They must be set precisely as they were when the felt was scribed. To transcribe from felt to flooring, follow the scribed line on the felt with the blunt leg of the dividers and at the same time apply enough pressure against the other leg to score the surface of the flooring (Figure 82). At curved areas, take special care that the dividers are held perpendicular with the scribe marks on the felt.

At doorways, extend set marks from the felt to the floor covering (Figure 83). Then transcribe all score marks of the door molding from the felt to the flooring (Figure 84).

An accurate way to trim straight walls is to place a straightedge along the score marks on the flooring and trim off excess material with a utility knife following the straightedge. If a metal straightedge was used to scribe straight walls onto the felt, then it must be used to transcribe the wall outline onto the flooring. Position one side of the straightedge on the score mark on the felt and trim off the excess flooring with a straight blade utility knife following the opposite side of the straightedge (Figure 85).
Seamed Installations

When more than one sheet of flooring is required, it will be necessary to mark the felt so the design on the next sheet of flooring can be matched to the first sheet already in place (overall design is an exception).

The first step is to lay the edge of a strip of felt on the previous sheet installed at the desired seam location. If the design has a grout line, position the edge of the felt even with one side of the line as shown in Figure 86. If the design does not have a continuous grout line, such as in Figure 87, lay the edge of the felt in the design where the seam will be made.

The next step is to secure the felt to the subfloor. Then mark or score the felt in places where elements of the design intersect the seam line. (See Figures 88 and 89).

It is not necessary to mark the felt continuously along the entire seam; make a series of marks approximately every three feet. After the edge of the felt has been marked for design matching, lay out the other strips and scribe the wall outlines onto the felt as detailed previously.

After scribing has been completed, position the felt pattern on the floor covering. Be certain the edge of the felt is placed exactly on the corresponding location in the design on the new sheet as marked on the
installed sheet. Match the marks on the felt with corresponding parts of the design in the second sheet of flooring as shown in Figures 90 and 91.

After matching the felt to the flooring, fasten it in place. Scribe and trim this sheet as detailed for the first sheet.

**Fig. 90.** Match design with mortar joints.

**Fig. 91.** Match design with lines that intersect seam.
VIII. INSTALLING SELF-COVED FLOORING

Self-coved resilient sheet flooring has a number of benefits on residential and commercial installations. Resilient flooring is more durable than, for instance, wood or vinyl cove base and there are no floor/wall junctures or cracks to collect and trap soil.

The key to self-coved flooring is to make an accurate pattern of the room from felt and then transcribe it to the flooring material (previous section). This method will provide an accurate fit and eliminate the possibility of voids between the cove fillet stick and the flooring, to ensure durability and resistance to puncture damage. Additionally, knowledge of inside and outside corner treatment, cap materials, end stops, etc., is required.

The following are the procedures for installing self-coved sheet flooring products.

Subfloor and Wall Preparation

Standard subfloor preparation methods as described earlier for any other fully adhered flooring installation should be followed. The walls should be solid, smooth, and extend unbroken to the subfloor.

Cap Trim Installation

A cap trim for the top of the floor covering is required on self-coved installations. Aluminum cap is generally used. However, vinyl moldings are also available for this purpose.

The height of the cap trim from the subfloor can vary. The distance, however, is usually 4” to 6” (10.2cm to 15.2cm) and is frequently determined by the height of the cabinet toe kick. The cap trim should be installed parallel with the subfloor. The exact distance can be maintained by using a strip of wood cut to the desired height (Figure 92). If minor waviness exists in the subfloor, it is desirable to snap a chalk line on the wall at the predetermined height (Figure 93).

At corners, the cap trim can be mitered (Figure 94) or notched (Figure 95). Notching is the preferred method on outside corners, because it eliminates the possibility of sharp edges. (Figure 96).

The cap trim should be securely fastened to the wall with nails, brads, staples or adhesive (or a combination of both). The use of contact adhesive is a good way to fasten cap trim to concrete walls.

Fig. 92. Use a piece of wood to maintain consistent height of cap trim.

Fig. 93. Snap a chalk line if waviness exists in subfloor.

Fig. 94. Mitered Cap

Fig. 95. Notched Cap

Fig. 96. Notched Cap on Outside Corner
Fitting of Cove Fillet Strip
The radius of the cove fillet strip should be at least 1” (2.5cm). The most common type available is wood; however, there are suitable types of plastic (Figure 97).

Care should be used to acquire an accurate miter of the covestick at corners. They should be tightly butted (Figure 98). Preformed end stops are available, however, if the cap trim is returned to the floor and used as an end stop, the cove fillet strip should be gradually tapered to a blunt point starting 2” to 3” (5.1cm to 7.6cm) from the cap trim (Figure 99). It is permissible to leave small gaps (up to 1/8” or 3.2mm) at joints between pieces of cove fillet strip.

Secure the cove fillet strip in place by driving fasteners about every 12” (30.5cm) into the subfloor or walls (Figure 100). Where the walls and subfloor are concrete, use contact adhesive or flooring adhesive applied with a paint brush to fasten the cove fillet strip in place. This is also an alternate method to using fasteners.

Fitting the felt
Lay out the number of pieces of pattern scribing felt required for the size of the room. At walls, be certain the felt is tight against the cove fillet strip (Figure 101) and continues up the wall to within 1/4” (6.4mm) of the cap trim.

Trim felt about 1/2” (12.8mm) short of the inside corner juncture down to the subfloor as shown in Figure 102.
At outside corners, trim the lapped up felt short of the cap trim, hold the knife at a 90° angle, and then cut the felt net to the corner juncture, from the top down to the cove fillet strip (Figure 103). Then, insert the knife blade into the outside corner miter, hold the felt tightly against the cove fillet strip, and extend the cut to the subfloor (Figure 104). This will allow the felt to fold around the corner and lay flat. The felt at the corner is now in the shape required to transcribe one side of the outside corner.

When scribing an inside corner, hold the dividers perpendicular to the wall (Figure 106). Start at the top and scribe the felt, extending the scribe mark to the bottom of the cove fillet strip (Figure 107). Do this on both sides of the corner.

Scribing Felt Pattern
Where more than one piece of pattern felt is being used, follow the procedure as described in the previous section:

• Make light cut marks across butted felt edges so the strips can be precisely aligned later.
• Set the dividers to the desired width (about 1" or 2.5cm) and mark the setting on the felt to allow for resetting the dividers at a later time, if required.
• Cut out a number of oblong windows in each felt strip and fasten them to the subfloor with wide masking tape.

Make a number of set marks on the felt with a corresponding mark on the subfloor as shown in Figure 105. These marks will then be transferred to the flooring so it can be precisely placed in the room after being cut to fit.

The next step is to scribe to the bottom of the cap trim (Figure 108). It will be necessary to add the distance from the bottom of the cap face to the maximum distance the flooring will slide under the cap when the pattern is transcribed to the flooring. Be certain the scribe setting is changed back to the original setting after transcribing.
Transcribing the Felt Pattern to Flooring
At inside corners, transcribe both sides of the corner using the same divider setting (Figure 109). Although one side of the corner will be long by the thickness of the flooring material, Congoleum products will compress enough to compensate for this extra thickness and make for a tighter fitting corner.

At outside corners, add 1/2” (1.3cm) to the flooring on the straight part of the corner (Figure 110). This will be trimmed to fit later after the flooring has been positioned in the room. For the distance of the cove fillet strip, allow approximately 1/8” (3.2mm) of excess material. Final trimming of this short area will be done after the flooring has been cut to fit and positioned in the room.

Next, square off the flooring material on the opposite side of the corner for the corner fill piece (right angle seam from the cap trim). With many designs, it is possible to position seams in grout lines, or other inconspicuous areas of the design. Use a piece of material for the fill which corresponds to the design in the flooring; an exact match can be obtained (Figure 111). Position the fill piece under the squared-off area to be filled. Follow the edge of the flooring on the top piece to cut seams in the fill piece below (Figure 112). Leave excess flooring at the corner juncture (up to 3” or 7.6cm). Put the fill piece aside for final trimming later.

**NOTE:** The seam for the fill piece should be made on the floor. Try to place the seam in a grout line, or other inconspicuous area, as close to the wall as possible.

Completing the Self-Cove Installation
Remove the felt pattern and position the flooring material in place within the room according to the set marks transferred from the felt (Figure 113).

The next step is to adhere the flooring material one-half of the sheet at a time. Apply 3044 Adhesive to walls with a paint brush and on the subfloor with the recommended trowel. Depending on the temperature and flooring product, it may be necessary to warm coved areas with a heat gun. After the flooring material has been rolled, place the edge at walls under the cap trim and thoroughly roll the coved wall area with a steel hand roller. The final step is to complete the outside corner. It will look as pictured in Figure 114.
**Outside Corner Fill**

At this point, the outside corner has an extension of the flooring past the corner on one side. The other side requires a fill piece (previously cut). Follow these steps to complete the corner:

1. Set the recess scriber for the thickness of the flooring material and scribe the straight section of the corner (down to the cove fillet strip).
2. Hold the knife at a 45° angle to the flooring and trim off this section.
3. At the cove fillet strip, insert the knife blade in the corner miter on a 45° angle and trim off the excess flooring. Insert the knife blade in the corner miter of the cove fillet strip as a guide to trim off the excess material.
4. Leave the balance of the flooring extending onto the subfloor as is.
5. Apply adhesive to the wall and subfloor on the opposite side of the corner and insert the fill piece. Roll the fill piece thoroughly with a steel hand roller.
6. Follow steps 1 and 2 to trim the flooring to fit the corner, except set the recess scriber, so that the pin is directly over the leading edge of the button (Figure 115). Follow step 3 and carefully cut the flooring over the cove fillet strip to achieve a net seam (Figure 116). Where the flooring material overlaps, and extends onto the subfloor, use a small straightedge to make a double-cut seam.
7. To complete the corner, the seams should be sealed using the recommended seam sealer. At the outside corner miter, use a cotton Q-Tip® to apply the seam sealer.
IX. INSTALLATION OF DURACERAMIC
DURACERAMIC OPTIONS AND
DURAPlANK

DuraCeramic is an innovative flooring product with unique installation procedures that vary from traditional ceramic and natural stone. Its proven success has paved the way for DuraCeramic Options, a floor and wall tile with embossed lines through the center of the tile in both directions. The tiles can be installed like DuraCeramic, in a full 16” x 16” format or the embossed lines can be scored with a sharp utility knife and flexed to separate the tile to create an 8” x 8” format. This feature provides opportunities for creating custom floors with coordinating wall, base and backsplash by adding accent colors, borders and insets or combining it with DuraCeramic for different size formats.

DuraPlank comes in 4 1/2” x 36” planks. Use DuraPlank in any room in the home or combine it with DuraCeramic or DuraCeramic Options to create custom borders and insets.

DuraCeramic, DuraCeramic Options and DuraPlank are constructed with a limestone composite base that is fortified with a polymeric resin. That provides toughness and flexibility to resist breaking from normal subfloor deflection, expansion and contraction. This feature permits fast, easy installation using a pressure-sensitive adhesive over a wide variety of wall and subfloor surfaces without extensive preparation.

Premixed Grout can be applied immediately after tile is installed. Do not use cement, epoxy or other premix grouts.

■ Ungrouted floors and walls* are laid with no space at the joints. The joints on an ungrouted floor should be sealed with Congoleum DS200 DuraCeramic Joint Sealer to lock out surface water and aid cleaning. Sealing is highly recommended for all ungrouted floors. Do not use DS200 Joint Sealer on walls or other vertical surfaces.

■ DuraPlank is designed as a flooring product but it can also be installed on the walls to create a durable easy to clean surface. DuraPlank is always installed with no space between the joints. Do not seal the joints with DS200 Joint Sealer or apply grout to joints.

* Do not apply grout or joint sealer to the embossed center lines when installing DuraCeramic Options in a full 16” x 16” format. Apply grout or joint sealer to the tile joints only.

2. REQUIRED INSTALLATION ACCESSORY MATERIALS

■ DS100 DuraSet™ Adhesive – For all approved floor and wall applications
■ DuraCeramic Premixed Grout – For joints on grouted floors and walls
■ DS200 DuraCeramic Joint Sealer - For joints on ungrouted floors only
■ DuraCeramic Installation Accessory Kit- For grouted applications
■ Congoleum UnderFlor – Floating Underlayment System.

3. RECOMMENDED USE

DuraCeramic, DuraCeramic Options and DuraPlank are recommended for residential and light commercial use in dry, interior, heated areas.

Residential

Recommended for use in all areas of the home except countertops, ceilings and wet areas like shower walls and shower floors.

Light Commercial

Recommended for areas receiving light commercial foot and wheel traffic. Install on floors, walls, and facing of counters and merchandise displays.

Retail
• Specialty Shops
• Beauty Salons
• Clothing and Apparel Shops
• Boutiques

Health Care
• Doctors’ Offices
• Dental Offices

Office
• Lobby
• Reception Area
• Conference Room
• Lounge
• Offices
• Restrooms

A. SPECIFICATIONS/RECOMMENDED USE

1. OVERVIEW

Use Congoleum DS100 DuraSet™ Adhesive, for all approved floor and wall applications. Set tiles into tacky dry adhesive for floor applications and semi tacky dry adhesive for wall applications. PL® Polyurethane Construction Adhesive can also be used for wall, backsplash and base applications, (not recommended for flooring applications). Mortar, mastic or other adhesives are not recommended.

Depending on the desired appearance, tiles can be installed with or without grout.

■ Grouted floors and walls* are laid with a 1/16” to 1/4” space at the joints depending on the desired grout line width. Tiles that are scored and separated must be grouted. Congoleum DuraCeramic

16” x 16” DuraCeramic Options with embossed lines

Score and separate into 8” tiles for an 8” x 8” grouted installation.
## 4. INSTALLATION ACCESSORIES INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>DS100 DuraSet Adhesive</th>
<th>DS200 DuraCeramic Joint Sealer</th>
<th>DuraCeramic Premixed Grout</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order Code</strong></td>
<td>DS100</td>
<td>DS200</td>
<td>Use specific color code</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Solvent free, acrylic, pressure-sensitive adhesive</td>
<td>Water-based, flexible acrylic sealer</td>
<td>Premixed sanded, acrylic grout</td>
</tr>
<tr>
<td><strong>Use</strong></td>
<td>Installing tile and plank over all approved floor and wall surfaces</td>
<td>For sealing joints in ungrouted DuraCeramic floors only. Not recommended for walls, vertical surface or plank.</td>
<td>For use with DuraCeramic in grouting joints 1/16&quot; to 1/4&quot; wide. Can also be used for grouting most ceramic, quarry and porcelain floor tile.</td>
</tr>
<tr>
<td><strong>Limitations</strong></td>
<td>Not recommended for ceramic, porcelain, or natural stone.</td>
<td>Not recommended for ceramic, porcelain, or natural stone.</td>
<td>Not recommended for nonvitreous tiles or natural stone, exterior use, shower floors or underwater use.</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>200 to 250 sq. ft. per gallon</td>
<td>320 sq. ft. per 8 oz. bottle</td>
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<tr>
<td><strong>Joint Width</strong></td>
<td>16&quot; x 16&quot; Tile</td>
<td></td>
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<tr>
<td><strong>Approximate Coverage</strong></td>
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</tr>
<tr>
<td>1/16&quot; (1.6mm)</td>
<td>450 sq. ft./gal. (42m²)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/8&quot; (3.2mm)</td>
<td>325 sq. ft./gal. (31m²)</td>
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<tr>
<td>3/16&quot; (4.8mm)</td>
<td>275 sq. ft./gal. (26m²)</td>
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<tr>
<td>1/4&quot; (6.4mm)</td>
<td>225 sq. ft./gal. (21m²)</td>
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<tr>
<td><strong>Applicator</strong></td>
<td>1/16&quot; wide, 1/32&quot; deep, 1/32&quot; apart, trowel blade adapter included</td>
<td>Applicator nozzle included</td>
<td>Hard rubber float or green epoxy float. Cleanup with firm sponge and 3M pad.</td>
</tr>
<tr>
<td><strong>Working Time</strong></td>
<td>Floors: 12 hours. Dry to tack - 45 to 60 min. under normal conditions. Walls: 10 to 20 min. Dry to tack - 20 to 30 min.</td>
<td>N/A</td>
<td>10 minutes - for best results apply grout in a 20 sq. ft. area on floors or a 10 sq. ft. area on walls and clean up immediately.</td>
</tr>
<tr>
<td><strong>Set Up Time</strong></td>
<td>N/A</td>
<td>Tack free - 1 hour; Set up - 8 hours</td>
<td>16 to 24 hours</td>
</tr>
<tr>
<td><strong>Clean Up</strong></td>
<td>Wet - Water Dry - Mineral spirits (Caution: Mineral spirits is flammable)</td>
<td>Wet - Water Dry - Mineral spirits (Caution: Mineral spirits is flammable)</td>
<td>Wet - Water Dry - Household ammonia cleaner. Do not use grout haze removers.</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Pale blue, turns clear when tacky dry</td>
<td>White, turns clear when dry</td>
<td>Popular versatile colors available</td>
</tr>
<tr>
<td><strong>Tracers</strong></td>
<td>Dark Red</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Unit Size</strong></td>
<td>1 quart; 4 gallons</td>
<td>8 oz. bottle</td>
<td>1 gallon</td>
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<tr>
<td><strong>Shelf Life</strong></td>
<td>1 year if unopened</td>
<td>1 year if unopened</td>
<td>1 year if unopened</td>
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<tr>
<td><strong>Freeze/Thaw Stability</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Flammable</strong></td>
<td>No</td>
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<td><strong>Cautions</strong></td>
<td>Potential skin and eye irritant</td>
<td>Potential skin and eye irritant</td>
<td>Potential skin, eye and respiratory irritant</td>
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</table>

**DS100 and DS200 - WARNING:** Potential eye and skin irritant.

**DuraCeramic Premixed Grout - WARNING:** Potential eye, skin and respiratory irritant.

**Mineral spirits - Caution:** Flammable material; read and follow cautionary statements on label.
Recommended Use continued:

Hospitality
- Dining Areas
- Hospitality Rooms
- Lounges
- Guest Rooms

Educational
- Administrative Lounges

B. PRODUCT INFORMATION
1. SPECIFICATIONS AND RECOMMENDED USAGE

<table>
<thead>
<tr>
<th></th>
<th>DuraCeramic and DuraCeramic Options</th>
<th>DuraPlank</th>
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<tbody>
<tr>
<td>Size (nominal)</td>
<td>15 5/8&quot; x 15 5/8&quot; (40 cm x 40 cm)</td>
<td>4 1/2&quot; x 36&quot;</td>
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<tr>
<td>Gauge (nominal)</td>
<td>.160&quot; (4.1 mm)</td>
<td>.160” (4.1mm)</td>
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<tr>
<td>Packaging</td>
<td>10 Pieces/Carton; 17 Sq. Ft.; 1.58 m²</td>
<td>16 Pieces/Carton; 18 Sq. Ft.; 1.67 m²</td>
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<tr>
<td>Shipping Weight</td>
<td>DuraCeramic 29.5 lbs./carton</td>
<td>DuraPlank 34.5 lbs./carton</td>
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<tr>
<td>NBS Smoke Density</td>
<td>Passes</td>
<td>Passes</td>
</tr>
<tr>
<td>Critical Radiant Flux</td>
<td>Passes</td>
<td>Passes</td>
</tr>
<tr>
<td>(ASTM E648 &gt;0.45w/cm²)</td>
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<tr>
<td>Motor Vehicle FMVSS 302</td>
<td>Passes</td>
<td>Passes</td>
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<tr>
<td>Static Load Limit</td>
<td>250 psi</td>
<td>250 psi</td>
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<td>Slip Resistance</td>
<td>Meets ADA Recommendations</td>
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<tr>
<td>PEI Rating</td>
<td>3-4</td>
<td>N/A</td>
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<tr>
<td>Installation Method</td>
<td>Grouted or Traditional Edge-to-Edge Fit (Ungrouted)</td>
<td>Edge-to-Edge Fit</td>
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<tr>
<td>Subfloor Application</td>
<td>On, Above, or Below- Grade Level</td>
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<tr>
<td>Adhesive</td>
<td>Congoleum DS100 DuraSet Adhesive</td>
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<tr>
<td>Grout</td>
<td>DuraCeramic Premixed Grout</td>
<td>Not Recommended</td>
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<tr>
<td>Joint Sealer (Recommended for ungrouted floors)</td>
<td>DS200 DuraCeramic Joint Sealer</td>
<td>Not Recommended</td>
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<td>Suggested Usage</td>
<td>Residential and Light Commercial</td>
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<tr>
<td>Warranty</td>
<td>Residential - Lifelong/Light Commercial - Five-Year Commercial</td>
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</table>

C. GENERAL INFORMATION

- Always store and transport cartons on a flat surface stacked no more than 10 cartons high. Handle tiles and cartons with care. Tiles and planks can be damaged if dropped.
- Condition the room(s) and all flooring and setting materials at a constant temperature between 65°F (18°C) and 85°F (29°C) for 48 hours prior to, during, and 48 hours after installation. Thereafter, maintain a room temperature between 55°F (13°C) and 100°F (38°C).
- Do not install at a temperature higher than 85°F (29°C).
- When installing tile from two or more cartons, check the code on the side of the cartons to ensure that the pattern and shade numbers are the same.

Mix tiles from several different cartons to achieve the best appearance.
- For the best visual results, install planks with arrows pointing in the same direction following the illustration in Figure 117A. For tile, the directional arrows printed on the back of the tile should be installed following Figure 117B, with tiles turned randomly, i.e. north, south, east and west.

For information on other specific applications, contact the Congoleum Installation and Technical Office at (609) 584-3888. Areas receiving more concentrated traffic and or routine spills should be protected with floor polish and a regular maintenance schedule should be followed. See Care and Maintenance for more information.
1. SPECIAL INSTRUCTIONS FOR DURACERAMIC OPTIONS

DuraCeramic Options is designed with embossed center lines. To create an 8”x 8” format, score the embossed line(s) with a sharp utility knife and flex the tile to separate the sections. If necessary, use a sanding block with 100 grit open face sand paper to remove roughness at the separation edges. **Once DuraCeramic Options is separated, it must be grouted.** (Figure 118 and Figure 119).

![Score with a sharp utility knife.](image1)

![Flex tile and separate into 8” tiles.](image2)

### D. FLOORING INSTALLATIONS

#### 1. SPECIAL INSTALLATION TOOLS

- Notched trowel (1/16” wide, 1/32” deep, 1/32” apart)
- 100-pound, three-section, steel roller
- Grout tools and spacers for grouted applications
- 18” tile cutter - optional

### Subfloor Recommendations

DuraCeramic tile and DuraPlank may be installed over dry concrete on all grade levels, suspended wood, qualifying old resilient floors, ceramic tile and terrazzo. DuraCeramic tile and DuraPlank can also be installed over Congoleum UnderFlor, an optional floating underlayment system by Congoleum.

<table>
<thead>
<tr>
<th>Subfloor Construction/ Materials</th>
<th>Comments</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congoleum UnderFlor</td>
<td>• UnderFlor is an underlayment system for floating installations of DuraCeramic and DuraPlank over a variety of substrates in lieu of direct bonding. See detailed instructions on page 45.</td>
<td>The subfloor surface must be smooth, solid and dry.</td>
</tr>
<tr>
<td>Wood</td>
<td>• Double layer construction over joist or trusses on 16” centers with at least 18” of well-ventilated air space. • Install 1/4” or heavier underlayment over strip wood, single layer wood floors and APA-rated Sturd-I-Floor Systems.</td>
<td>Subfloor must be solid and free of movement.</td>
</tr>
<tr>
<td>Underlayment</td>
<td>• APA underlayment grade plywood with fully sanded face. • Hardwood and veneer underlayment panels such as Multiply, HU 845 Tec-Ply and Ulay. • Lauan plywood, particleboard, oriented strand board and chipboard create a higher risk for installation and adhesive failure and are not recommended unless warranted by the panel manufacturer or supplier. • Not recommended over cement backer-boards, glass mesh mortar units or acoustical cork.</td>
<td>Install according to panel manufacturers' written instructions.</td>
</tr>
<tr>
<td>Concrete</td>
<td>• On, above and below-grade level. • Radiant-heated floors not to exceed 85°F (29°C).</td>
<td>Moisture vapor emissions not to exceed 5 lbs.</td>
</tr>
<tr>
<td>Light Weight Concrete (Residential Application only)</td>
<td>• Minimum 100-pound density • Installation over gypsum-based acoustical toppings is not recommended unless Congoleum UnderFlor is used.</td>
<td>Confirm adequate adhesion to substrate.</td>
</tr>
<tr>
<td>Resilient Floor (See WARNING on inside cover)</td>
<td>• Smooth, non-cushioned sheet flooring and vinyl composition tile • Embossed non-cushioned and thin cushioned vinyl flooring can be prepared with embossing leveler in residential applications. • Do not install over soft, heavy cushioned floors, flooring with a self-adhering tile or tile installed below grade level.</td>
<td>Must be single layer, fully adhered and well bonded. Remove wax or polish.</td>
</tr>
<tr>
<td>Ceramic and Stone</td>
<td>• Ceramic, marble and granite.</td>
<td>Fill grout joints level.</td>
</tr>
<tr>
<td>Carpet/ Laminite</td>
<td>• Not recommended.</td>
<td>Remove</td>
</tr>
<tr>
<td>Patching Compound</td>
<td>• Portland cement-based compound such as Ardex Feather Finish, Mapei Plani-Patch or equal. • Gypsum-based patching compounds are not recommended.</td>
<td>Refer to manufacturers' instructions for use and applications.</td>
</tr>
</tbody>
</table>
The surface must be clean, dry and free of dust, dirt, grease or other extraneous material that will inhibit bonding. Thoroughly vacuum floor to remove dust.

■ **Deviations in the flatness of the subfloor cannot exceed 1/16” in 1’ or 3/16” in 10’**. Check the surface with a straightedge and fill low areas with a portland cement-based latex patching compound. Gypsum-based patching compounds are not recommended.

■ The use of a high-quality latex primer that is specifically designed to improve adhesion may be used over wood, porous concrete and patching compounds prior to adhesive application. The primer will help seal the surface and tie down dust that can interfere with the adhesive bond. Do not use paint primers.

**Concrete Floors**

Concrete must be clean, dry, and free of paint, curing, hardening and parting compounds, sealers, and old adhesive residue. Moisture vapor emissions should not exceed 5 lbs./1000 ft.²/24 hrs when tested with the calcium chloride kit. Do not install DuraCeramic or DuraCeramic Options over expansion joints; instead, cut the tile neatly to each side of the joint and fill it with an elastomeric polyurethane joint filler or cover with an expansion plate cover.

**Wood Floors**

Wood subfloors must be structurally sound and free of movement with at least 18” of well-ventilated air space below. Single layer floors and stripwood floors must be covered with a 1/4” or heavier underlayment to achieve a total subfloor thickness of 1”. Position underlayment joints so they offset the joints in the tile by at least 3”. Sand underlayment joints level and fill gaps wider than 1/32” with the recommended patching compound.

**E. CONGOLEUM UNDERFLOR**

The all-in-one underlayment system for floating installations of DuraCeramic tile and DuraPlank. Congoleum UnderFlor provides an economical solution for installing DuraCeramic, DuraCeramic Options and DuraPlank as a floating flooring system over a variety of subfloor surfaces. Now, one underlayment covers it all; wood, concrete, most old hard surface flooring, gypsum topping, even old adhesive residue and painted surfaces. Congoleum UnderFlor is constructed in 6’ wide rolls, and since it is a floating underlayment, it requires no fasteners or special tools so it’s quick and easy to install.

**Recommended Use**

- Residential applications on all grade levels
- Interior use in dry, heated areas
- Do not install over ramps, in showers or other wet areas

**1. GENERAL INFORMATION**

■ Always roll sheets of Congoleum UnderFlor tightly around a tube with the vinyl side out for storing and transporting. Avoid distorting UnderFlor.

■ Condition the room and all flooring materials at a constant temperature between 65°F (18°C) and 85°F (29°C) for 48 hours prior to, during and 48 hours after installation.

■ All UnderFlor underlayment and finished flooring must be installed with a 1/4” space around the perimeter of the room to allow for expansion and contraction of the flooring system and subfloor. Undercut door casing and slide finished flooring under for a finished appearance.

■ Use DS100 Adhesive only for installing Congoleum DuraCeramic tile and DuraPlank over Congoleum UnderFlor. Hard setting adhesives should not be used with Congoleum UnderFlor.

2. CONGOLEUM UNDERFLOR INSTALLATION

Install Congoleum UnderFlor with the vinyl side down just prior to installation of finished flooring. Determine the appropriate seam location and direction of the underlayment (depending on the finished flooring selection).

**Important** - For tile installation, position UnderFlor with seams at least 4” away from the joints in the finished floor tile. (Fig. 120).

For **DuraPlank** always install UnderFlor with seams running perpendicular to the long dimension of the plank flooring (Fig. 121). Install planks with staggered end joints positioned at least 2” away from the seams in the Congoleum UnderFlor.

Unroll the first sheet and trim it to fit allowing a 1/4” space between the edge of the sheet and the wall.

Unroll the second sheet and position it with the seam edge butted lightly up to the first sheet. If necessary, to adjust the seam location to ensure proper placement,
overlap the sheets and double-cut a new seam in the desired location. Use a straightedge and utility knife to cut the seam.

Tape the sheets together with 2” wide clear packaging tape or other thin single face plastic tape available through office supply stores and most home centers. Apply the tape, centered directly over the top of the seam edges. Roll the tape with a steel seam roller.

Suitable Packaging Tapes Include:
- Scotch® 3850 Packing Tape
- Duck™ Tape Standard Packaging Tape
- Shurtape® HP Series

Do not use masking tape, fiber reinforced tape, duct tape or other thick tapes that might telegraph through the finished flooring.

Install finished flooring immediately after installing Congoleum UnderFlor.

3. INSTALLING DURACERAMIC TILE AND DURAPLANK OVER CONGOLEUM UNDERFLOR

Follow installation instructions for the finished flooring being installed. Install finished flooring with Congoleum DS100 DuraSet Adhesive using the recommended trowel notch size. Do not apply excess adhesive. Allow adhesive to dry completely to a tack prior to flooring installation. Slight growth (buckles) in the UnderFlor may occur immediately after adhesive application. This is normal and will not affect the finished flooring installation. Install finished flooring allowing a 1/8” to 1/4” space around the entire perimeter. If necessary to adjust or remove a tile or plank, use a heat gun to warm it up first. Roll finished flooring on completion of the installation.

All finish trim and transition moldings must be installed so they do not bind or restrict the finished flooring from moving when expansion and contraction occurs during seasonal changes. Fasten the trim to the wall not to the subfloor. Do not drive fasteners into the floor or underlayment.

Seal all areas that may be exposed to surface spills, i.e. tubs, toilet and showers with a silicone caulking.

F. LAYOUT

■ Layout is slightly different for grouted and ungrouted floors. The grout line width must be added to the tile dimension for layout on grouted floors. Additional chalk lines are also used to keep the joints straight. Nominal tile size is 15 5/8” x 15 5/8”. DuraCeramic Options is 7 13/16” x 7 13/16” when scored and separated.

■ It is important to avoid positioning the tile joints directly over underlayment joints or seams in existing flooring. If this should occur, reposition chalk lines to offset joints by at least 3” or half of the tile dimension.

1. SQUARE LAYOUTS

■ Place a mark in the center of the floor at each end of the room. Then snap a chalk line between the marks.

■ Find the center of the line and snap a second chalk line at a right angle; use the 3’, 4’, 5’ method to form a right angle (Figure 122).

■ Make a dry layout in one quadrant along the center and perpendicular chalk lines. Remember to allow the desired grout line space between the tiles. A story pole (board marked with tile dimensions, including grout line width) can also be used in place of a dry layout.

■ Measure the distance between the last whole tile and the wall. If the distance is less than half a tile, snap a new chalk line one-half the dimension of a full tile away from the original chalk line (Figure 123). This will provide a balanced layout with larger cut tile at the border.

■ When installing grouted floors, divide the floor into smaller sections to help maintain consistent grout line widths and keep the joints running straight (Figure 124). Each section should be the precise dimension of 2 or 3 whole tiles wide, including the grout line width. Lay out the smaller sections by starting at the center lines and measuring out toward the walls. It is not necessary to divide the room into smaller sections when installing ungrouted floors.

Note: Chalk lines can be easily removed or difficult to see after applying adhesive over some subfloor surfaces like old flooring and concrete. To avoid loosing the lines, mark the subfloor with a pencil and a straightedge, directly over the chalk lines.
G. ADHESIVE APPLICATION

Congoleum DS100 DuraSet Adhesive is a pressure-sensitive adhesive that must be allowed to dry completely to a tack before setting tiles. (See Special Instructions for Wall Applications).

- Apply the adhesive with the trowel blade attachment included with the adhesive. The recommended trowel notch size, 1/16” wide, 1/32” deep, 1/32” apart.
- Spread the adhesive over one-half of the subfloor and a few inches beyond the center chalk line.
- Allow the adhesive to dry completely to a tack before installing the tile. Normal dry to tack time is about 45 to 60 minutes; longer in cool or humid conditions. The adhesive will turn from light blue to clear when tacky dry and will not transfer to the finger when firmly touched. Do not use fans to accelerate adhesive drying time. Fan drying can cause the top surface of the adhesive to dry prematurely, trapping residual moisture in and preventing the adhesive from fully curing.
- Tile must be installed within 12 hours after adhesive turns clear.

H. SETTING FLOOR TILES

Carefully position the first tile into the adhesive at the intersection of the chalk lines (Figure 125). The tile will bond instantly on contact so it must be positioned accurately without sliding it. Press the tile firmly into the adhesive. Follow the procedures below for grouted and ungrouted floors.

1. GROUTED FLOORS
- The desired grout line width should be determined prior to starting the flooring installation. It is important to understand that the finished grout line will be 1/16” to 3/32” wider than the space between the tiles, since the grout will extend up, onto the radius, along the top edge of the tile (Figure 126).

<table>
<thead>
<tr>
<th>Spacer Size</th>
<th>1/16”</th>
<th>1/8”</th>
<th>3/16”</th>
<th>1/4”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Grout Line Width</td>
<td>1/8” to 5/32”</td>
<td>3/16” to 7/32”</td>
<td>1/4” to 9/32”</td>
<td>5/16” to 11/32”</td>
</tr>
</tbody>
</table>

- Use spacers to maintain the joint width. Small pieces of DuraCeramic or 1/8” tile, cut into 1” squares, work very well as spacers, depending on the desired grout line width.
- If standard tile spacers are used, it will be necessary to remove one leg of the spacer (Figure 127) otherwise it will interfere with positioning the tile. Stand spacers on end. Do not place tile spacers flat at the intersection of tiles, they can become bonded, making it difficult to remove them without damaging the edge of the tile.
• Position two spacers along the edge of adjacent tiles, then lay the next tile gently against the spacers without forcing it into place (Figure 128). Continue to set the tiles in straight rows to complete each section (Figure 129). Follow the chalk lines to keep the joints straight and make minor adjustments if necessary. Remove the spacers immediately after setting each tile.

2. UNGROUTED FLOORS
• When installing an ungrouted floor, continue setting the tiles in a stair-step pattern along the center and perpendicular lines (Figure 130). Hold the tile in a low angle to the floor and position it tightly against the previously laid tile. Press it firmly into the adhesive. Continue working toward the walls to complete the first quadrant before starting the next. Check to make sure corners are lined up and adjust if necessary to prevent run-out.

3. GROUTED AND UNGROUTED FLOORS
• Spread the adhesive on the second half of the floor so it can dry while you are cutting and fitting the last row of tiles along the wall. Complete the second half of the room following the same procedures.
• Roll the floor slowly, in both directions, with a 100 lb., three-section roller within one hour after setting the tiles (Figure 131). Re-roll the entire floor immediately before grouting or applying joint sealer.

1. CUTTING TILE TO FIT FOR FLOOR OR WALL INSTALLATIONS
The last row of tiles will need to be cut to fit to walls and other vertical surfaces. Allow a 1/8” space for expansion, between the edge of the tile and the wall. Remember to subtract the grout line dimension for grouted floors.

1. STRAIGHT CUTS
• Measure the distance between the last whole tile and the wall. Subtract the dimensions for the grout and expansion space. Use this dimension to mark the tile.
• Place a square or straightedge over the marks and score the surface with a sharp utility knife. Break the tile over the score mark by flexing it downward.
• Install the tile with the cut edge against the wall.

2. IRREGULAR SHAPES
• Scribe the tile to fit.
• Warm the tile with a heat gun. Score the surface with a sharp utility knife and break the tile over the score mark by flexing it downward or cut the tile with a coping saw.

3. WALL OUTLETS
• Mark the location of the outlet on the tile.
• Score the surface with a sharp utility knife over the marks. Be careful not to extend the cut beyond the corners.
• Warm the tile with a heat gun and press firmly over the score mark to remove the center section.

J. WALL, BACKSPLASH AND BASE INSTALLATION

WARNING: Electric Shock Hazard Exists
Electrical outlets and light switches on walls and backsplashes must be turned off prior to spreading adhesive or grouting. Shut off breaker(s) or remove the fuse(s) to turn off outlets and switches in the work area. Remove the cover plate and place tape over the entire electrical box. Do not use adhesive, grout or water near live electrical outlets or switches. Keep outlets and switches dry during installation.
Comply with all applicable building and electrical codes.

1. SPECIAL INSTALLATION TOOLS
• Level
• Protective drop cloth
• 1/4” nap smooth surface paint roller (optional)

2. SURFACES PREPARATION
DuraCeramic Options can be installed over painted dry wall or plaster, plywood, prepared ceramic or plastic laminate surfaces.

■ The surface must be clean, dry and free of dust, dirt, grease or other extraneous material that will inhibit bonding.

■ Deviations in the flatness of the wall surface cannot exceed 1/16” in 1’ or 3/16” in 10’. Check the surface with a straightedge and fill low areas with a portland cement-based latex patching compound. Gypsum-based patching compounds are not recommended.

• Painted drywall and plaster must be smooth, dry and clean. Bare drywall, plaster and gypsum compounds must be primed with a high-quality latex paint primer and allowed to dry for at least 48 hours. Existing surfaces must be thoroughly cleaned with a general purpose cleaner and water using a 3M white pad to remove all dirt and grease, and then rinsed thoroughly and allowed to dry completely. Check the surface for flatness with a straightedge and mark low areas with a pencil. Pay particular attention to unevenness at corners, window and door openings and joints in the wall board. Fill low areas with a portland cement latex patching compound. Set all protruding nails or screws flush with the surface.

**WARNING: Do not sand painted surfaces.**
Some paints in the past contained lead. These paints could be the surface coat or an underlying coat on the walls in older dwellings. Painted surfaces that are known to be free of lead can be lightly abraded with a mild abrasive cleaning pad and cleaning solution if necessary.

• Existing ceramic tile must be leveled with a portland cement patching compound following label instructions.

• Plastic laminate surfaces should be checked to make sure they are clean and securely bonded.

• 1/4” plywood underlayment can be installed in areas where the wall surface is unsuitable for covering. The underlayment should be secured with paneling adhesive and screws. The screws should be sufficient length to penetrate the wall studs by at least 3/4”.

3. LAYOUT
Walls and other vertical surfaces will need to be laid out using a level to establish the horizontal and vertical center lines.

• Locate the center of the wall or area to be covered with tile in the height and width directions.

• Place the level over the center point and mark the wall with a pencil continuing the entire length of the wall (Figure 132).

**Fig. 132. Use a level to establish vertical and horizontal lines.**

• Make a dry layout in a single row on the floor to check the size of the cut tiles at the perimeter. Adjust the horizontal and/or vertical lines one-half the distance of a tile if necessary to achieve a larger tile at the perimeter.

• Extend the horizontal line onto adjacent walls that will be covered so joints line up at the corners. When covering large surfaces, lay out additional reference lines to help keep joints running straight and establish sections for applying only enough adhesive that can be covered within the working time (Figure 133).

**Fig. 133. Lay out additional reference lines for alignment and adhesive application.**

K. ADHESIVE APPLICATION
**WARNING: See warning statement for shock hazards associated with tile installation near electrical outlets and switches.**

DS100 DuraSet Adhesive is recommended for all approved wall, backsplash and base applications. The tile must be set into the adhesive while it is in a semi tacky dry state to achieve maximum bond strength on a vertical surface. Do not set tile in tacky dry adhesive on walls or other vertical surfaces.

■ Use a drop cloth to protect countertops and floors against adhesive spills.

■ Apply DS100 adhesive on the wall, starting at the center lines with the recommended notched trowel
or a 1/4" nap smooth surface paint roller at a coverage rate of 200 sf/gal. When using a roller, apply a coat of adhesive thick enough that it completely covers the surface with a light blue color. Do not go back over adhesive once the desired coat has been applied.

- Allow the adhesive to tack up for 20 to 30 minutes before setting the tile. The adhesive must be soft and sticky, not tacky dry when setting tiles on walls. Working time is 10 to 20 minutes under normal conditions, shorter in warm, dry conditions. Apply only enough adhesive that can be covered within the working time. Reapply fresh adhesive with the flat side of the trowel over adhesive that has been allowed to dry.

L. SETTING WALL TILES

- Set the first tile along the center lines and press it firmly into place. Avoid squeezing adhesive into the joints. The adhesive should be soft enough that the tile can be adjusted slightly if needed, but will not slip when pressed firmly into place.
- Continue setting wall tiles in the semi tacky dry adhesive following the details for grouted tiles using a spacer and ungrouted tiles laid directly together.
- Complete each adhered section including cut pieces before adhesive dries completely to a tack.
- Spacers can normally be removed immediately.
- Roll each section with a wall roller using firm pressure immediately after setting tiles.
- Continue applying adhesive in small sections and setting tile to complete the wall.
- Re-roll the entire wall immediately after tiles are set and again just prior to grouting.
- The wall can be grouted immediately or within 24 hours.

1. ALTERNATE ADHESIVE/SETTING METHOD

PL Brand Polyurethane Construction Adhesive can be used as an alternative to DS100 for setting tiles on a vertical surface. This system provides a permanent bond and permits installation over a slightly rough or uneven surface.

- This adhesive does not have sufficient tack to prevent the tile from slipping so it will be necessary to secure a ledger strip to the wall before starting.
- Mark the wall at the bottom at the exact location where the last whole tile will end. Use a level to extend a pencil line along the entire wall at this point.
- Screw or nail a straight furring strip below the line to temporarily rest the first row against.
- Apply the PL Polyurethane Construction Adhesive directly onto the back of the tile. Apply a 1/8" bead of adhesive around the perimeter, about 1/2" in from the edge and place an “x” in the center of the tile.
- Install the tile within 10 minutes. Several pieces can be glued at one time and then installed quickly before a surface skin develops.

- Press each tile firmly into place with a slight back and forth shifting motion to flatten the adhesive beads. Use spacers to separate the tile joints on grouted applications. Leave the spacer in place only until the adhesive sets sufficiently to prevent tiles from slipping (2 to 4 hours). Roll the tile with a wall roller immediately after removing the spacers.

M. CUSTOM FLOOR INSTALLATIONS

Important Instructions for Using Different Spacer Sizes When Combining DuraCeramic and DuraCeramic Options

- When installing custom installations that combine 16" x 16" formats with 8" x 8" formats, it will be necessary to use different size spacers to maintain straight joints. Tiles that have been scored and separated will have one additional grout line that needs to be calculated in the overall size (Figure 134). To compensate for the additional grout joint, the separated tiles should be installed with a spacer that is one-half the thickness of the spacer used for the whole tiles (Figure 135). The joints can be off-set on border tiles as an alternative to using different spacer sizes (Figure 136).
Consider layout and spacer size when creating a pattern with two different tile sizes. First determine the actual size of the pattern repeat in both directions, including the grout line width (Figure 137). Adjust the center lines so the pattern is balanced in the room and the desired appearance is achieved (Figure 138 A/B).

Use the measurement of the full pattern repeat to lay out additional chalk lines to keep joints straight (Figure 139).

1. DIAGONAL LAYOUTS
   • Lay out the center and perpendicular lines as previously described for a square layout. Place a mark on each line an equal distance away from the center point (distance from center is arbitrary).
   • Use a slightly larger arbitrary size and swing an arc on both sides of each line from points E, F, G, H (Figure 140). Snap diagonal chalk lines at the point where the marks intersect. If done correctly, the chalk lines will intersect at the center point.

   ![Figure 140. Diagonal layout.](image)

   Make a dry layout in one quadrant along the center and perpendicular chalk lines.

   Measure the distance between the last whole tile and the wall. If the distance in either row is less than one-forth of the diagonal dimension of the tile (whole tile = 5 1/2” and a separated tile = 2 3/4”), adjust the starting point and snap a new chalk line (use the dimension for the tile being installed) away from the original chalk line (Figure 141). This will provide a balanced layout with larger cut tile around the perimeter.

   ![Figure 141. Adjusting chalk lines for a diagonal layout.](image)

   Installing Borders and Insets
   Borders can be created easily by using an accent color or different size tile on a square layout. Plan the layout to allow for a uniform border size using full size tile in the field if possible.

   When using a square border with a diagonal layout, it is necessary to prepare the cut edge of the diagonal tile where it meets the border.

   Finishing Cut Edges for Borders and Insets
   When installing tile with a diagonal layout and a square border, it will be necessary to prepare the cut edge of the diagonally cut tile. First cut the tile to the desired size. Then heat the cut edge and back of the tile with a heat gun to soften it. Place the tile on a flat surface and roll the edge with a steel hand roller to turn the edge downward, forming a slight radius (Figure 142). Allow the tile to cool before installing it.
N. GROUT AND JOINT SEALER APPLICATION

WARNING: See warning statement for shock hazards associated with tile installation near electrical outlets and switches.

1. GROUTING FLOORS AND WALLS

- DuraCeramic and DuraCeramic Options can be grouted immediately or within 24 hours after setting the tiles.
- Tiles must be grouted using DuraCeramic Premix Grout. This exclusive premixed acrylic grout is designed for high flexural strength and adhesion to the edge of the tile. This feature provides durability to resist cracking from thermal dimensional changes and normal subfloor deflection. Traditional cement grouts are not recommended and will not perform properly.

2. GROUT APPLICATION

**Tools and Equipment**
- Hard, green, rubber epoxy float
- Firm, square-edge sponge
- 3M® white nylon scrubbing pad
- Spray bottle of water
- Water buckets
- Rubber gloves
- Safety glasses

Soft grout floats and soft sponges are not recommended because they tend to pull the grout out of the joint, leaving it shallow.

**Surface Preparation**
- Re-roll the floor or wall just before grouting and check to make sure all edges are tightly seated in the setting adhesive. The joints must be clean and dry. Remove any adhesive smears from the surface and edges of the tile with mineral spirits before grouting.

**Application**
- Start grouting floors at the far end of the room and work toward the entrance. Walls should be grouted starting at the bottom and working upward in narrow columns. This will reduce the possibility of water flowing into ungrouted joints during cleanup.
- Apply grout in small sections, up to 20 sq. ft. and cleanup immediately or before grout films over (approximately 5 minutes).
- Use the tip of a hard rubber float and fully pack the grout into the joints (Figure 143). Hold the float in a low angle and press firmly with short strokes at a right angle to the joint.
- Extend the grout a few inches in to the next row of tile so water does not run into the unfinished joints during cleanup (Figure 144).
- Remove excess grout from the surface of the tile by holding the float at a 45° angle to the floor surface and moving diagonally across the joints.

**Initial Cleanup**

Initial cleanup should be done immediately after finishing each section. The faster the grout is removed from the tile, the easier it is to clean up.
- Apply a light mist of water with the spray bottle over the grouted tiles and allow it to remain on the surface for at least 30 seconds.
- Use a slightly wet 3M white nylon pad to loosen the grout residue. Apply light pressure while moving the pad in a circular motion (Figure 145).
- Use a firm square edge sponge to remove the excess water solution. Use light pressure and wipe diagonally across the joints (Figure 146). Do not allow the water to flow into the ungrouted joints or accumulate in finished areas.
- Then rinse the sponge in clean water and wipe diagonally again to shape joints evenly and remove any remaining grout residue. Change rinse water frequently. Clean tools with water while grout is wet. If allowed to dry, remove with ammonia.
Final Cleanup

- Allow grout to dry for 24 hours.
- Remove any remaining grout haze with an ammonia-based window cleaner or a dilute solution of 1/4 cup household ammonia to one gallon of warm water. Apply a small amount of the solution over a small section and allow it to remain for about 30 seconds. Use a clean sponge mop or a 3M nylon white pad to loosen the grout haze. Rinse with fresh water and buff with a soft, dry terry cloth towel. Do not use grout haze removers or solvents.
- If touch up is necessary, new grout can be applied directly over existing grout.

**Keep all traffic off newly tiled floors for 24 hours. Resume normal traffic after 48 hours.**

3. **JOINT SEALER APPLICATION**

DuraCeramic DS200 Joint Sealer is designed to keep surface water and dirt from penetrating ungrouted floor joints. Do not use joint sealer on walls, other vertical surfaces or apply to the embossed center lines on DuraCeramic Options when installing a full 16” x 16” format. Apply joint sealer to the tile joints only.

**Surface Preparation**

- Roll the floor with a 100 lb., three-section roller just before sealing the floor and check to make sure all edges are tightly seated in the setting adhesive. The joints must be clean and dry. Remove any adhesive smears from the surface and edges of the tile with mineral spirits before sealing. **Vacuum the floor to remove dust and loose particles.**

**Application**

- Shake the applicator bottle and allow air bubbles to dissipate before using.
- Remove the plastic cap and screw the applicator tip onto the bottle.
- Cut 1/16” off of the applicator tip to provide a small opening.
- Start in the far corner of the room and apply a uniform 1/16” bead of sealer in the tile joint. Apply the sealer to the first 2 or 3 rows, then come back immediately and seal the perpendicular (cross) joints in this area before the sealer develops a surface film (about 4 minutes). Repeat this process to seal the entire floor.
- The color of the sealer will change from white to clear when it dries.
- If the nozzle becomes clogged, use a straight pin to free the flow.
- Protect newly applied joint sealer from foot traffic and dust until it dries, (approximately 8 hours). Keep traffic to a minimum and do not wash the floor for the first 48 hours.
- Use water cleanup for wet sealer and mineral spirits for dry sealer. **Caution: Mineral spirits is flammable. Read and follow label instructions.**

O. **IMMEDIATELY AFTER INSTALLATION**

- Install or replace base moldings and return furniture to the room by rolling or sliding them over strips of hardboard.
- Use acrylic caulking at bathtubs, showers and other wet areas to prevent water from seeping under the floor.
- Wait 48 hours before damp mopping the floor and at least 5 days before wet mopping or washing. Adhesive smears can be removed with mineral spirits.
X. INSTALLATION OF DURASTONE

A. SPECIFICATIONS/RECOMMENDED USE – DURASTONE PRODUCTS

The following are specifications and other information which will be helpful when installing Congoleum DuraStone products:

### Specifications/Recommended Use

**DuraStone Products**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (nominal)</td>
<td>16” x 16”</td>
</tr>
<tr>
<td>Gauge (nominal)</td>
<td>.160”</td>
</tr>
<tr>
<td>Packaging per Carton</td>
<td>10 pcs./carton (17.77 sq. ft.)</td>
</tr>
<tr>
<td>Weight per Carton</td>
<td>34 lbs./carton</td>
</tr>
<tr>
<td>NBS Smoke Density</td>
<td>Passes</td>
</tr>
<tr>
<td>Critical Radiant Flux (ASTM E648 &gt; 0.45w/cm²)</td>
<td>Passes</td>
</tr>
<tr>
<td>Motor Vehicle FMVSS 302</td>
<td>Passes</td>
</tr>
<tr>
<td>Static Load Limit</td>
<td>250 psi</td>
</tr>
<tr>
<td>Slip Resistance</td>
<td>Meets ADA Recommendations</td>
</tr>
<tr>
<td>PEI Rating</td>
<td>3-4</td>
</tr>
<tr>
<td>Installation Method</td>
<td>Full Spread</td>
</tr>
<tr>
<td>Subfloor Application</td>
<td>On, above, or below-grade level</td>
</tr>
<tr>
<td>Adhesive</td>
<td>Congoleum DS100 DuraSet Adhesive</td>
</tr>
<tr>
<td>Adhesive Sizes</td>
<td>1 quart; 1 gallon and 4 gallon</td>
</tr>
<tr>
<td>Adhesive Spread Rate</td>
<td>200 to 250 sq. ft./gallon</td>
</tr>
<tr>
<td>Recommended Trowel</td>
<td>1/16” w x 1/32” d x 1/32” apart</td>
</tr>
<tr>
<td>Suggested Usage</td>
<td>Residential and Light Commercial</td>
</tr>
</tbody>
</table>

DuraStone is recommended for residential and light commercial use in dry, interior heated areas.

1. **RESIDENTIAL**
   DuraStone is recommended for use in all areas of the home.

2. **LIGHT COMMERCIAL**
   DuraStone is recommended for use in areas receiving light commercial foot and wheel traffic:

   **Retail**
   - Specialty Shops
   - Beauty Salons
   - Clothing and Apparel Shops
   - Boutiques

   **Office**
   - Lobby
   - Reception Area
   - Conference Room
   - Lounge
   - Offices
   - Restrooms

   **Notes:**
   DuraStone is not recommended for installation in exterior or unheated areas, wet areas, commercial kitchens or food processing areas or on ramps. For information on other specific applications, contact the Congoleum Installation and Technical Department at 609-584-3888. Areas receiving more concentrated traffic and or routine spills should be protected with floor polish and a regular maintenance schedule should be followed.

B. **GENERAL INFORMATION**

- Install DuraStone with Congoleum DS100 DuraSet Adhesive.
- Proper storage and handling is critical to ensure tiles do not become distorted prior to installation. Always store and transport cartons on a flat surface stacked no more than 10 cartons high.
- The importance of proper temperature at the time of installation cannot be over-emphasized. Do not install at a temperature higher than 85°F (29°C). The subfloor, all flooring material, and adhesive must be conditioned at a constant temperature between 65°F (18°C) and 85°F (29°C) for 48 hours prior to, during, and 48 hours after installation (Figure 147).

Thereafter, maintain a room temperature between 55°F (13°C) and 100°F (38°C). **NOTE: Exposure to extreme temperature variations can cause thermal expansion or contraction resulting in edge curl or gaps between tile.**

- When installing tile from two or more cartons, check the code on the side of the cartons to ensure that the pattern and shade numbers are the same. Mix tiles from several cartons to achieve the best appearance. When arrows are printed on the back of each tile, install tile with arrows pointed in the same direction unless specifically instructed otherwise on a separate insert found in the carton. Perimeter grout lines will vary in width from tile to tile. This variation has been designed into the floor to create a more realistic visual of a hand-set tile.

C. **SUBFLOOR REQUIREMENTS**

- DuraStone may be installed over dry concrete on all grade levels, suspended wood floors and qualifying old, smooth, resilient floors that are fully adhered and securely bonded.
• Deviations in the flatness of the subfloor cannot exceed 1/16” in 1’ or 3/16” in 10’. This is particularly important when installing over a cold concrete subfloor since the tile will be stiffer at low temperatures.

• See SECTION II. SUBFLOOR AND UNDERLAYMENT RECOMMENDATIONS for subfloor types and preparation information.

D. FLOOR LAYOUT

There are 2 basic layouts: square or diagonal. Two or more colors from the same or coordinating product lines can be mixed or matched to create virtually unlimited custom design effects. Straight borders with diagonal layouts are not recommended.

It is important to avoid positioning tile joints directly over underlayment joints or seams in existing floor coverings. If this should occur when laying out the installation, reposition the chalk lines.

1. SQUARE LAYOUTS

Place a mark in the center of the floor at each end of the room. Snap a chalk line down the center of the floor to connect the marks (AB as shown in Figure 148).

Find the center of the line and snap a second chalk line at a right angle (CD as shown in Figure 148); use the 3’, 4’, 5’ method to form a right angle.

Starting at the center of the room, lay a row of loose tiles along the chalk lines to one end wall and one side wall. If the distance between the edge of the last full tile and the wall is less than one-half of a tile, establish a new center line (or lines) one half the dimension of a full tile (Figure 149).

When installing tile in irregular shaped rooms, check the size of the last tile along all walls and adjust the center lines (if necessary) to achieve the best layout. Begin laying the tile in the center of the room following the chalk lines made on the floor.

Fig. 148. Square layout.

2. DIAGONAL LAYOUTS

Lay out the center and perpendicular lines as in a square layout. Place a mark on each line an equal distance away from the center (distance from center is arbitrary). Use a slightly larger arbitrary size and swing an arc on both sides of each line from points E, F, G and H (Figure 150). Snap diagonal chalk lines at the point where the marks intersect. If done correctly, the chalk lines will intersect the center point.

Starting at the center of the room, lay a row of loose tiles along the chalk lines to one end wall and one side wall. If the distance between the corner of the last full tile and the wall is less than one-half of a tile, establish a new center line (or lines) to achieve the best layout with larger cut tiles (Figure 151).

Fig. 150. Diagonal layout.
E. ADHESIVE INFORMATION

- Congoleum DS100 DuraSet Adhesive applied with a properly notched adhesive trowel is required for installing DuraStone over all approved subfloor surfaces (Figure 152).

**Properties of DS100 Adhesive**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Moisture and alkali resistant, high initial tack. Solvent free, low odor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Pressure sensitive/Water based/Acrylic</td>
</tr>
<tr>
<td>Subfloors</td>
<td>Dry concrete on all grade levels, suspended wood floors and approved resilient floor covering.</td>
</tr>
<tr>
<td>Trowel</td>
<td>1/16” wide x 1/32” deep x 1/32” apart</td>
</tr>
<tr>
<td>Spread Rate</td>
<td>200 - 250 square feet/gallon</td>
</tr>
<tr>
<td>Working Time</td>
<td>12 hours Dry to tack - 45 - 60 minutes</td>
</tr>
<tr>
<td>Freeze/Thaw Stable</td>
<td>Yes</td>
</tr>
<tr>
<td>Flammability</td>
<td>Nonflammable</td>
</tr>
<tr>
<td>Tracer Color</td>
<td>Dark Red</td>
</tr>
<tr>
<td>Cleanup</td>
<td>Wet: Soap and water. Dry: Clean cloth dampened with mineral spirits.</td>
</tr>
<tr>
<td>Shelf Life</td>
<td>One year if unopened.</td>
</tr>
<tr>
<td>Sizes</td>
<td>1 qt. (12/ctn.); 1 gal. (4/ctn.), 4 gal.</td>
</tr>
</tbody>
</table>

DS100 – WARNING: Potential eye and skin irritant. 
Mineral spirits – Caution: Flammable materials; read and follow cautionary statements on labels.

- The use of a high quality, floor covering, latex primer that is specifically designed to improve adhesion may be used over wood, porous concrete and patching compounds. The primer will help seal the surface and tie down dust that can interfere with the adhesive bond. Do not use paint primers.

- The recommended trowel notch size, 1/16” wide, 1/32” deep, 1/32” apart must be used (Figure 153). Excessive amounts of adhesive applied with an improper trowel will delay drying time and can result in exudation (oozing up) of adhesive between tile in service. Insufficient coverage (normally caused by worn notches on adhesive trowels) will prevent proper adhesion or bond to the tile. When trowel notches become worn (occurs more frequently on concrete subfloors), they should be re-notched to the recommended size or replaced.

- Spread the adhesive over one-half of the subfloor and a few inches beyond the chalk line with a notched trowel.

- Allow DS100 adhesive to dry completely to a tack before installing tile. Drying time can vary depending on temperature, humidity and substrate conditions. When tacky dry, the adhesive will turn from light blue to clear. The final test is to place a finger into the tacky dry, clear adhesive and apply firm pressure. If the adhesive does not transfer to the finger when removed, it is ready for installation. Do not use fans to accelerate adhesive drying time. Fan drying will cause the top surface of the adhesive to dry prematurely, trapping residual moisture in and preventing the adhesive from fully curing. Tiles set into DS100 before it has completely dried may result in tile shifting and gapping.

- The installer has up to 12 hours to lay the tile into the adhesive.

F. INSTALLATION PROCEDURES

- With DS100 DuraSet Adhesive, the installation can be done while working on top of the newly installed tile.

- Complete one-half of the room at a time. Carefully position the first tile into the adhesive at the intersection of the chalk lines (Figure 154).

- Continue working toward the walls. Position the tiles at a low angle into adhesive tightly against previous tiles with corners lined up (Figure 155). Press tiles firmly without sliding. Spread adhesive on the second half of the floor so it can dry while you are cutting and fitting the last row of tiles.

Fig. 152. DS100 DuraSet Adhesive

Fig. 153. Use the proper notched trowel.

Fig. 154. Start installing tile in center of room.
G. CUTTING DURASTONE TO FIT
See “H. Cutting Tile to Fit” in Section XI. “Installing Tile Products” on pages 61 and 62.

H. IMMEDIATELY AFTER INSTALLING THE PRODUCT
- Roll the entire floor with a 100-pound, three-section, steel roller in both directions (Figure 156).
- Replace the base moldings and return furniture and appliances to the room by rolling or sliding them over strips of hardboard.
- DuraStone installed with DS100 DuraSet Adhesive can be walked on immediately. Wait 48 hours before washing. Adhesive smears can be removed with mineral spirits or charcoal lighter fluid.

CAUTION
Solvents are hazardous materials and should be used with caution in accordance with the manufacturer’s label instructions.
XI. INSTALLING TILE PRODUCTS

A. SPECIFICATIONS/RECOMMENDED USE — TILE PRODUCTS

On the chart below are specifications and other information which will be helpful when installing tile and plank products:

<table>
<thead>
<tr>
<th>Products</th>
<th>Gauge</th>
<th>Tile Size</th>
<th>Weight Per Carton (Pounds)</th>
<th>Square Feet Per Carton</th>
<th>Adhesive (Dry Back)</th>
<th>Recommended Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLANK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forum Plank</td>
<td>1/8&quot;</td>
<td>3&quot; x 36&quot;</td>
<td>37.5</td>
<td>27</td>
<td>AD72(3)</td>
<td>✓</td>
</tr>
<tr>
<td>Endurance Plank</td>
<td>.080&quot;</td>
<td>4&quot; x 36&quot;</td>
<td>29</td>
<td>36</td>
<td>DS100(4)</td>
<td>✓</td>
</tr>
</tbody>
</table>

| RESIDENTIAL DO-IT-YOURSELF |       |             |                            |                         |                     |                 |
| Intrigue            | .080" | 12" x 12"   | 27                         | 30                      | AD42                | ✓               |
| Majestic            | .080" | 12" x 12"   | 40                         | 45                      | AD42                | ✓               |
| Advantage           | .070" | 12" x 12"   | 35                         | 45                      | (2)                 | ✓               |
| Carefree            | H.G.(1)| 12" x 12"   | 24.5                       | 45                      | (2)                 | ✓               |
| Reflection          | H.G.(1)| 12" x 12"   | 24.5                       | 45                      | (2)                 | ✓               |

| COMMERCIAL          |       |             |                            |                         |                     |                 |
| Selections          | 1/8"  | 12" x 12"   | 64                         | 45                      | AD42                | ✓               |
| Special Effects     | 1/8"  | 12" x 12"   | 64                         | 45                      | AD42                | ✓               |
| Alternatives        | 1/8"  | 12" x 12"   | 64                         | 45                      | AD42                | ✓               |
| Choices             | 1/8"  | 12" x 12"   | 64                         | 45                      | AD42                | ✓               |
| CX Series           | .100" | 12" x 12"   | 54                         | 45                      | AD42                | ✓               |

(1) HG=Household Gauge
(2) Not Available in Dry Back
(3) Use DS100 with Forum Plank over qualifying old resilient flooring.
(4) Use AD72 with Endurance Plank where temperature fluctuations exist.

B. GENERAL INFORMATION

Congoleum tile products should be stored in an interior area protected from the elements. Store on a smooth floor in a dry, clean area. The ideal long-term temperature is from 50° to 70°F (10° to 21°C).

Tile should be limited in height of stacking as follows:

- **Tile Thickness** | **Maximum Height**
  - 1/8” Gauge | 5 cartons
  - .100” Gauge | 6 cartons
  - .070” and .080” Gauge | 8 cartons
  - Household Gauge | 11 cartons

Stack in straight, even tiers; do not stack heavy weight on top of cartons; handle carefully, avoid dropping cartons.

**NOTE:** Storage of tile on an uneven surface, in extreme temperatures, or stacking higher than recommended can cause distortion of shape.

The following should be taken into consideration when installing Congoleum tile:

- The subfloor, all flooring materials, and adhesive must be conditioned at a constant temperature between 65°F (18°C) and 85°F (29°C) for 48 hours prior to, during and for 48 hours after installation. Thereafter, maintain a minimum temperature between 55°F (13°C) and 100°F (38°C).

**NOTE:** Exposure to extreme temperature variations can cause thermal expansion or contraction resulting in tile edge curl or gaps between tile.

- When installing tile from 2 or more cartons, check the code number on the side of the carton to ensure that the pattern and shade numbers are the same. Mix tiles from several cartons to achieve the best appearance.
- When arrows are printed on the back of each tile, install the tile with arrows all pointing in the same direction. If an exception to this rule exists, there will be a separate installation insert in the carton that directs the proper tile layout.
- Perimeter grout lines will vary in width from tile to tile. This variation has been designed into the floor to create a more realistic visual of a hand-set tile, and to help conceal seams between tile.
- Congoleum tile products are not recommended for installation on ramps. However, they can be installed on stair treads and risers, provided that a slip-resistant stair-nose molding (generally metal or rubber) is utilized on the leading edge of the tread.
- The subfloor requirements for installing tile are basically the same as those for installing resilient sheet floor covering. Refer to “Subfloor And Underlayment Recommendations” Section II, on pages 2 through 8, for this information.
C. FLOORING COMPOSITION/BACKING

The basic composition of most Congoleum tile, including the back, consists of vinyl resins, plasticizers, and mineral fillers. All Congoleum tile can be installed on suspended wood floors and concrete subfloors on all grade levels.

1. DRY BACK

“Dry Back” is the terminology used to describe Congoleum tile which is generally installed by the professional installer. Adhesive is spread on the subfloor and the tile laid into the wet or pressure sensitive adhesive (depends on the product being installed).

2. ZipStik

Tile which has had the adhesive applied to the tile back is called “ZipStik”. Paper is applied to the back of each tile during the manufacturing process to keep them from sticking together in the carton. The paper is then pulled from each tile as it is installed. Tile with ZipStik is generally considered to be a do-it-yourself floor.

D. GENERAL ADHESIVE INFORMATION

Use of the recommended adhesive applied with a properly notched adhesive trowel is crucial for a successful, trouble-free tile installation. Excessive amounts of adhesive will result in exudation (oozing up) of adhesive between tile in service. Insufficient coverage (normally caused by worn notches on adhesive trowels) will prevent proper adhesion or bond to the tile. When trowel notches become worn (occurs more frequently on concrete subfloors), they should be relaid to the recommended size or replaced.

Tile adhesives are not interchangeable between tile products. Three adhesives are required to install Congoleum floor tile. AD72 is a wet-set adhesive, (tile must be laid into adhesive before it sets up, generally within 20 minutes). The other two adhesives (AD42 and DS100) must be allowed to dry to a tacky state before the tile is laid into the adhesive (30 to 60 minutes of drying time required depending on atmospheric conditions). The installer then has up to 6 hours with AD42, or 12 hours with DS100, to lay the tile into the adhesive.

E. CONGOLEUM ADHESIVES

See chart below for adhesive recommendations for installing Congoleum tile products.

<table>
<thead>
<tr>
<th>Adhesive Recommendations for Installing Congoleum Tile Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Vinyl Composition Tile</td>
</tr>
<tr>
<td>• Selections</td>
</tr>
<tr>
<td>• Special Effects</td>
</tr>
<tr>
<td>• Alternatives</td>
</tr>
<tr>
<td>• Choices</td>
</tr>
<tr>
<td>• CX Series</td>
</tr>
<tr>
<td>Dry Back D-I-Y Tile</td>
</tr>
<tr>
<td>• Intrigue</td>
</tr>
<tr>
<td>• Majestic</td>
</tr>
<tr>
<td>Moisture and alkali-resistant, high initial tack</td>
</tr>
<tr>
<td>Moisture and alkali-resistant, develops high initial tack. Solvent free, low odor.</td>
</tr>
<tr>
<td>Pressure sensitive/Water based/ Acrylic</td>
</tr>
<tr>
<td>Pressure sensitive/Water based/ Latex</td>
</tr>
<tr>
<td>Dry concrete on all grade levels, suspended wood floors, and over approved resilient floor covering.</td>
</tr>
<tr>
<td>Trowel</td>
</tr>
<tr>
<td>Working Time</td>
</tr>
<tr>
<td>Spread Rate</td>
</tr>
<tr>
<td>Freeze/Thaw Stable</td>
</tr>
<tr>
<td>Flammability</td>
</tr>
<tr>
<td>Tracer Colors</td>
</tr>
<tr>
<td>Cleanup</td>
</tr>
<tr>
<td>Shelf Life</td>
</tr>
</tbody>
</table>

WARNING: AD42 Adhesive: eye and skin irritant; DS100 Adhesive: Potential eye and skin irritant; AD72 Adhesive: eye irritant. Mineral spirits is a flammable material. Read and follow precautionary instructions on labels.

* Use DS100 with Forum Plank only when installing over approved resilient flooring.

** Use AD72 with Endurance Plank only where temperature fluctuations exist.
When using AD42 or DS100 Adhesive, a thin prime coat of the same adhesive, diluted 1:1 with water, may be required over porous concrete and some patching compounds. The prime coat should be applied with a smooth wall paint roller or flat trowel and allowed to dry before continuing. To test the surface, apply adhesive with a notched trowel to areas of the subfloor with and without a prime coat. If equal adhesive tack develops in both areas when dry, no prime coat is required.

Allow AD42 and DS100 to dry before starting to install tile. AD42 turns from an opaque milky color when applied, to translucent amber when tacky dry. DS100 turns from light blue to clear. Press a finger onto the adhesive. If it is firm and does not transfer to your finger, the adhesive is dry and ready for tile installation. Tiles set into the adhesive before it is dry may result in tile shifting and gapping.

If AD42 or DS100 adhesive is being used to install the floor tile, complete one-half of the room at a time. Spread the adhesive on the second one-half of the floor so it can dry while the last row of tiles is being cut and fit to the wall. Move all supplies and tile onto the installed tile so they are accessible.

AD72 can only be used on porous surfaces such as wood or concrete subfloors to install Congoleum Plank. This adhesive will not dry when applied over old resilient or other non-porous floor coverings. Allow the adhesive to tack up for about 5 minutes after applying with a 1/16" x 1/16" x 1/16" (1.6mm x 1.6mm x 1.6mm) semicircular notched trowel. NOTE: When installing Plank over old resilient or other nonporous floor coverings, DS100 Adhesive should be used. When using DS100 Adhesive, shrinkage of the Plank may occur if the room temperature fluctuates below 70°F (21°C) or above 75°F (24°C). Where fluctuations are expected to occur, Congoleum recommends the old floor be removed (following recommended procedures) or covered with an approved underlayment panel (wood constructed subfloors) and the plank installed with AD72 Adhesive.

When using AD72 wet-set adhesive, work in straight rows. Install cut pieces as you continue. Spread adhesive in an area no larger than can be covered in 20 minutes. The adhesive will become slightly tacky. Periodically check to see that at least 95% of the adhesive pattern has transferred to the back of the tile. Position each tile lightly against previously laid tile with corners precisely aligned. Press firmly into the adhesive. Avoid sliding tile into position to prevent adhesive from squeezing up between tiles. If the adhesive starts to set-up or skin-over, scrape it off the subfloor and reapply fresh adhesive. Tiles set into AD72, after the adhesive has “set-up” may exhibit a high/low appearance since trowel ridges may not be flattened during the rolling process.

All tile (including ZipStik) must be rolled with a 100-pound (45 kilogram), or heavier, floor covering roller after installation. Roll diagonally in both directions with the floor covering roller. Do this as each section is completed. This is particularly important when installing Congoleum tile or plank in wet-set adhesive. Reroll the entire floor after one to two hours. Use a steel hand roller to level any raised corners or edges.

Any adhesive smears on the face of the tile can be removed with mineral spirits or lighter fluid. CAUTION These solvents are flammable; follow cautionary information on labels.

Since ZipStik tiles have adhesive preapplied, the use of additional adhesive is neither advised or recommended. If a primer is required when covering a porous surface, AD42 or DS100 may be diluted 1:1 with water and applied with a smooth wall paint roller or flat trowel and allowed to dry. The use of additional adhesive may lead to indentation problems.

CAUTION Do not stand or walk on release paper or a tile with release paper on the back. This paper is extremely slippery. Immediately place all removed release paper in a trash receptacle.

F. GENERAL INSTALLATION INSTRUCTIONS

There are 2 basic tile layouts: square or diagonal. Two or more colors from the same or coordinating product lines can be mixed or matched to create virtually unlimited decorative borders and custom design effects.

It is important to avoid positioning tile joints directly over underlayment joints or seams in existing floor coverings. If this should occur when laying out the installation, reposition chalk lines.

1. SQUARE LAYOUTS

Place a mark in the center of the floor at each end of the room. Snap a chalk line down the center of the floor to connect the marks (AB as shown in Figure 157).

Find the center of the line and snap a second chalk line at a right angle (CD as shown in Figure 157); use the 3’, 4’, 5’ method to form a right angle.

![Fig. 157. Square layout.](image-url)
Starting at the center of the room, lay a row of loose tiles along the chalk lines to one end wall and one side wall. If the distance between the edge of the last full tile and the wall is less than one-half tile, establish a new center line (or lines) one half the dimension of a full tile (Figure 158).

When installing tile in irregular shaped rooms, check the size of the last tile along all walls and adjust the center lines (if necessary) to achieve the best layout. Begin laying the tile in the center of the room following the chalk lines made on the floor.

2. DIAGONAL LAYOUTS

Lay out the center and perpendicular lines as in a square layout. Place a mark on each line an equal distance away from the center (distance from center is arbitrary). Use a slightly larger arbitrary size and swing an arc on both sides of each line from points E, F, G, H (Figure 159). Snap diagonal chalk lines at the point where the marks intersect. If done correctly, the chalk lines will intersect the center point.

If the layout includes a border, adjust the size of the border to allow one-half tiles to be used at the edge of the field tiles. When using two different colors in a checkerboard design, it will be necessary to adjust the layout to allow the same colored tile to be used at the edge of the field.

To adjust the layout, snap new diagonal chalk lines one-half the dimension of a full tile away from the original line (Figure 160). It may also be necessary to adjust the size of the border. The chalk lines will serve as a guide for laying the tile. Start installing the tile in the center of the room.

3. PLANK LAYOUTS

Place a mark in the center of the floor at each end of the room. Snap a chalk line between the marks (Figure 161).

It may be necessary to adjust the center line to avoid small border pieces at side walls. To do this, measure the distance between the center line and the side wall. Divide the measurement by the plank width (3” [7.6cm] for Forum Plank; 4” [10.2cm] or 6” [15.2cm] for Endurance Plank). If the remainder is less than half a plank width, adjust the center line one half the width of a plank in either direction (Figure 162).

G. INSTALLATION PROCEDURES

Installing tile in wet-set adhesive requires a different procedure than when installing in clear thin-spread...
adhesive. With clear thin-spread adhesive, the installation can be done while working on top of the newly installed tile. With wet-set adhesive, the installation of the tile must be done by working on the subfloor.

1. PRESSURE-SENSITIVE OR CLEAR THIN-SPREAD ADHESIVES

Tile should be laid starting at the center of the room working toward the walls. Complete one-half of the room at a time. Carefully position the first tile into the adhesive at the intersection of the chalk lines (Figure 163). Continue working toward the walls. Position the tiles at a low angle into adhesive tightly against previous tiles with corners lined up. Press tiles firmly without sliding. Spread the adhesive on the second half of the room so it can dry while the last row of tile is being fitted at the wall. Move all supplies and tile onto the installed floor so they are accessible before spreading adhesive on the other half of the floor.

The procedure for installing Congoleum Plank with DS100 Adhesive is very similar to installing 12" x 12" tiles. Spread adhesive over one-half of the floor up to the center line and allow it to dry to a tack. Start installing the plank along the center line (Figure 164). Complete each row including cut pieces at the wall before proceeding to the next row. Offset cross joints by at least six inches and position planks in a random fashion for the best appearance unless creating a pattern (as in a custom layout). Position each plank tightly against the previously laid plank and press it firmly into the adhesive. Work in straight rows or a pyramid fashion.

Continue installing flooring in a random fashion, completing each section before starting the next (Figure 167). Each section should be rolled with the floor covering roller before moving to the next section.

When installing Congoleum Plank in wet adhesive, dry fit the last row of tiles before spreading adhesive otherwise the adhesive may set up before the new row is completed.

H. CUTTING FLOORING TO FIT

The last row of tiles on each installation must be fitted to walls and other vertical surfaces. When tile is being laid in clear thin-spread adhesives, this row is normally fitted after all field tiles are laid in each section, or can
include the entire room. **NOTE:** Always fit tile and plank net to walls and vertical surfaces to avoid shifting during installation or in use.

1. **STRAIGHT WALLS**

The last row of tiles at the wall of the room will generally be straight cuts. Fitting to straight walls is relatively easy, even if a net, or flush, fit to wall moldings is required.

Place the tile to be fitted (Tile A) precisely over the tile in the row closest to the wall. Lay another tile (Tile B) flush against the wall with the opposite edge overlapping Tile A. Draw a pencil line on Tile A (Figure 168). Cut along the line following a square or straightedge with a sharp utility knife, and snap off the excess material. Another way is to score Tile A following the edge of Tile B with a sharp utility knife, and then snap off excess material; this method saves time because it eliminates an operation.

![Fig. 168. Fitting to straight walls.](image)

2. **IRREGULAR AREAS**

There are two ways that are normally used to fit irregularly shaped areas: direct scribing and pattern scribing.

To fit by direct scribing, place the tile to be cut as flush as possible to the wall with the excess overlapping the last whole tile on the floor. Make a mark on the last whole tile following the edge of the tile being fitted (Figure 169). Set dividers for the distance from the mark to the edge of the tile (Figure 170). Reposition the tile to be fitted in place where the mark was made, and scribe the wall outline onto the tile (Figure 171). To cut curved areas apply heat from the back to soften the tile; straight areas can be scored and the excess snapped off.

![Fig. 170. Set dividers for distance between mark and tile edge.](image)

To pattern scribe, which is normally used for the most complex areas to be fitted, cut a piece of heavy paper or felt to the exact size of a tile (follow tile edge with a sharp utility knife). If there is adhesive on the floor, cover it with wax paper to avoid adhesive transfer to the tile.

Position the pattern material in the area to be fit and trim it approximately 1/4" (6.4mm) short of the walls. Set the dividers so the scribing pin reaches the pattern material and score the wall outline onto the pattern material (Figure 172). Place the pattern accurately on the tile. Transcribe the wall outline onto the tile with the dividers (Figure 173). Heat the back of the tile being fitted and trim off excess material. Remove the wax paper before setting the tile in place.

![Fig. 171. Scribe wall outline onto tile; cut off excess.](image)

![Fig. 172. Scribe wall outline onto pattern material with dividers.](image)

![Fig. 169. Make mark on last whole tile following edge of tile being fitted.](image)
3. DIAGONAL CONFIGURATIONS
Fitting to walls when the tile has been laid diagonally requires a different technique. Make a square template out of rigid material (a piece of resilient sheet flooring works well). Use the exact dimension of the tile when measured diagonally from corner to corner (The diagonal dimension of a 12” x 12” tile is approximately 17”).

Follow the steps for fitting to straight walls (see Figure 166 on page 62), and use the template in place of Tile B (Figure 174).

On diagonal installations, use the pattern scribing method for fitting to irregularly shaped areas.
XII. REPAIRING CONGOLEUM FLOORING PRODUCTS

REFER TO THE WARNING STATEMENT IN THE FRONT OF THIS MANUAL. UNLESS IT IS ABSOLUTELY KNOWN THAT THE FLOORING BEING REPAIRED DOES NOT CONTAIN ASBESTOS, ALL PRECAUTIONS AND RECOMMENDATIONS CONTAINED IN THE WARNING STATEMENT SHOULD BE FOLLOWED.

CONGOLEUM SEAM SEALERS AND MINERAL SPIRITS ARE REFERENCED IN THIS SECTION FOR MAKING REPAIRS. THESE PRODUCTS ARE FLAMMABLE. REFER TO PAGE 22 FOR WARNING AND CAUTIONARY STATEMENTS.

Repairs to Congoleum floor coverings should be made from material left over from the original installation, whenever possible, to minimize a color variance. Many consumers will save scrap pieces of sheet flooring and extra pieces of tile from when the flooring was originally installed which can be used for repairs. If leftover flooring was not saved, other places where material may be acquired is from under appliances and from the inside of closets.

A. TOOLS AND MATERIALS NEEDED FOR REPAIRS

1. FOR SMALL CUTS, PUNCTURES, AND GOUGES
   • Clean cloth
   • Mineral spirits
   • Stiff, bristle brush or razor blade
   • Appropriate seam sealer

2. FOR REPAIRING SEAMS
   • Sandpaper or emery cloth
   • Clean cloth
   • Mineral spirits
   • Stiff, bristle brush or razor
   • Artist paint brush
   • 2” masking tape
   • Steel, hand roller
   • Appropriate seam sealer
   • Adhesive (if necessary)

3. FOR REPAIRING LARGE AREAS
   • Utility knife with sharp blade
   • Stiff-blade, putty knife
   • Straightedge
   • Clean cloth
   • Mineral spirits
   • 2” masking tape
   • Steel, hand roller
   • Congoleum recommended adhesive
   • Appropriate seam sealer

4. FOR REPLACING TILES
   • Utility knife with sharp blade
   • Heat gun
   • Stiff-blade, putty knife
   • Razor-scaper
   • Congoleum recommended adhesive (if dry back)

B. REPAIR PROCEDURE FOR RESILIENT SHEET FLOORING PRODUCTS

1. SMALL CUTS, PUNCTURES, AND GOUGES
   To repair small cuts, punctures, and gouges where the wearlayer is intact;
   • Remove soil from the opening with a cloth dampened with mineral spirits. Use a short, stiff, bristle brush, like a toothbrush, or gently scrape with a razor blade, if necessary.
   • Allow the spot to dry and then seal the wearlayer together with the appropriate seam sealer, following the label's instructions.
   • On small punctures and gouges, apply the seam sealer topically to cover the damaged area.
   • Protect the area from foot traffic for 16 hours.

2. REPAIRING SEAMS
   a. Remove old seam sealer if necessary.
      • Tape off the surrounding area.
      • Use a fine, wet, sandpaper or emery cloth to remove excess seam sealer if necessary.
   b. Clean the seam.
      • Remove all adhesive and soil from the seam cut with a cloth dampened with mineral spirits.
      • Soil and adhesive embedded in the cut can be cleaned with a short, stiff, bristle brush, like a toothbrush or gently scraped with a razor blade.
   c. Adhere the seam.
      • If the seam edges have lifted, re-adhered them. Use an artist's paint brush to coat the backing of the material and subfloor with the recommended adhesive. (Allow a few minutes for the adhesive to tack up.)
      • Press down on the seam edges and place 2” masking tape across the seam to pull the material together.
      • Roll the material with a steel hand roller.
      • Apply weight to keep edges flat and allow to dry overnight. Remove the tape then clean the seam surface with mineral spirits.
   d. Seal the seams.
      • Apply the appropriate seam sealer. (Remember to cover the entire area where the old seam sealer was removed.)
      • Protect the area from foot traffic for 16 hours.

3. REPLACING SMALL SECTIONS
   There are two ways to make repairs in White Shield backed products depending on the repair material available:
   a. *Leftover material* with the backing intact makes the most inconspicuous repair. Follow these steps:
      1. Determine the best area in the design to place seam cuts to remove the damaged spot. Then, cut out a slightly larger corresponding section...
(about 1/4” (6.4mm) oversize on all edges) of the design on the material to be used for repair. Use a diamond-shaped repair piece when repairing floors with overall designs (Figure 175).

![Fig. 175. Make diamond shaped repairs in overall designs.]

2. Position the repair material over the spot to be removed and carefully match the design. Use masking tape on all four (4) sides to hold the repair piece in place (Figure 176).

![Fig. 176. Match the design and fasten in place with masking tape.]

3. Cut through both layers of flooring with one firm pass of a sharp utility knife, using a straight-edge as a guide (Figure 177).

4. Insert the knife tip in one of the cut edges and lift the material to remove the damaged area (Figure 178).

5. Use a razor scrapper to completely remove the backing residue from the subfloor, if necessary (Figure 179).

![Fig. 177. Apply enough pressure to cut through both layers of flooring.]

6. Apply a thin coat of Congoleum 3044 Adhesive to the back of the repair piece with a notched trowel or paint brush (Figure 180). However, if the floor covering was perimeter fastened and the repair is in an area without adhesive, the adhesive should be supplied to the subfloor and about 1” under the edges of the installed floor covering.

7. Insert the replacement piece in place in the exact way the seams were cut and roll with a steel hand roller to bring the wearlayers even.

8. Clean the seam to remove adhesive and pull any minor gaps together by placing masking tape across the seam.

![Fig. 178. Remove damaged spot.]

![Fig. 179. Remove backing from repair area down to subfloor.]

![Fig. 180. Apply a thin coat of adhesive.]

9. Remove masking tape after 30 minutes and apply the appropriate seam sealer following the label’s instructions (Figure 181).
10. Protect the area from foot traffic for 16 hours.
b. *Delaminated material* (top half of the material removed; backing left in place) can be used if leftover material is unavailable:
   1. Take material from an inconspicuous area such as underneath an appliance or from a closet.
   2. Follow the repair method above, replacing step 5 with the following step: Allow the backing residue to remain on the subfloor. **NOTE:** This repair piece may appear more textured than the surrounding areas, particularly if the flooring has little or no texture.

4. **REPAIRING SMALL GOUGES AND BURNS IN SPECIFICATIONS AND FOUNDATIONS**

Small gouges or burns in Specifications and Foundations can be easily repaired with a small triangular-shaped section. Follow these steps:

- Apply a piece of double-faced tape to the back of the material to be used for the repair.
- Trim the repair piece with a sharp utility knife following a straightedge into a “V” shape. Remove the paper backing from the double-faced tape and position the repair piece over the spot to be removed.
- Carefully follow the edges of the “V” and cut the flooring below.
- To cut the last side, place a straightedge over the desired seam location and cut through both layers of flooring.
- Remove the repair piece and save. Remove the damaged area with the tip of the utility knife. If the felt splits, remove the layer of felt from the repair piece so it fits flush with the flooring surface.
- The repair piece should fit tightly. Apply a thin coat of Congoleum 3044 Adhesive to the back of the repair piece with a paintbrush. If the size of the repair is 3/8” (9.5mm) or under on all sides, no adhesive will be required. After leveling the repair piece with a steel hand roller, apply a bead of SU80 or SU92 seam sealer on all seam cuts.

C. **REPAIR PROCEDURES FOR DURACERAMIC**

DuraCeramic Options and DuraPlank can be repaired easily if it is necessary to replace a tile or plank.

1. **GROUTED FLOORS AND WALLS**

- Use a heat gun to warm the grout along one edge of the tile. The grout will soften when heated.
- Place a straightedge over the center of the grout line and cut the grout with a sharp utility knife (Figure 182).

![Fig. 181. Seal seams with the recommended seam sealer.](image)

![Fig. 182. Cut along the center of the grout line after heating it.](image)

![Fig. 183. Drive a putty knife into the heated area and pry upward.](image)

- Remove as much of the grout as possible using care to avoid cutting into the edge of the adjacent tile. Repeat this process on all four sides of the damaged tile.
- Next, heat the tile a few inches in from the corner. While the tile is warm, drive a putty knife or screwdriver into the heated area with a hammer (Figure 183).

- Then, pry upward to release the tile from the adhesive. Continue lifting the tile as you heat it until it is completely removed.
- To install the new tile, re-apply DS100 DuraSet Adhesive over the exposed subfloor using the flat side of a trowel; it is not necessary to remove the old adhesive.
- Allow the adhesive to dry completely to a tack and then reinstall the new tile using spacers to maintain the grout line width.
- Roll the tile with a 100 lb., three-section roller.
- Re-grout the tile with DuraCeramic Grout following label instructions. Allow grout to dry for 24 hours and remove any remaining grout haze.

- Then, pry upward to release the tile from the adhesive. Continue lifting the tile as you heat it until it is completely removed.
• To install a new tile, re-apply DS100 DuraSet Adhesive over the exposed subfloor using the flat side of a trowel; it is not necessary to remove the old adhesive.
• Allow the adhesive to dry completely to a tack and then install a new tile using spacers to maintain the grout line width.
• Roll the tile with a 100-pound, three-section roller.
• Re-grout the tile with DuraCeramic Grout following label instructions. Allow grout to dry for 24 hours and remove any remaining grout haze.

2. UNGROUTED FLOORS
• Use a utility knife and carefully cut through the joint sealer using care to avoid cutting into the adjacent tiles.
• Follow the same procedure for Grouted Floors to remove the tile and re-adhere the replacement tile.
• Re-apply DuraCeramic DS200 Joint Sealer along all four sides of the tile to seal the joints.

3. PLANK FLOORS
• Follow the same procedure that is used for UngROUTED Floor Tiles to remove the plank and re-adhere the replacement plank.

D. CONGOLEUM UNDERFLOR REPAIR TECHNIQUES
Repair techniques are very easy on Congoleum UnderFlor installations. Use these procedures for repairs for DuraCeramic, DuraCeramic Options or DuraPlank installed over Congoleum UnderFlor.

1. UNGROUTED REPAIR
• Carefully score the tile or plank to be removed across the corner edge about 1 inch from the corner.
• Apply heat to the area.
• Using a putty knife and hammer, position the putty knife over the scored edge and tap it until the corner is released.
• Apply heat as you go and carefully begin to pry up the piece from the Congoleum UnderFlor using a utility knife. If you keep the tile or plank heated, it should release without damaging the UnderFlor.
• When the piece has been removed, check the adhesive tack. If it is still tacky to the touch, simply position the new piece in place.
• If the adhesive is not tacky, reapply adhesive with the flat side of the trowel and let it tack up. Then set the replacement piece into place.
• Roll the replacement piece with a roller.
• Re-grout the tile with DuraCeramic grout following label instructions. Allow grout to dry for 24 hours and remove any remaining grout haze.

2. GROUTED REPAIR
• Use a heat gun to warm the grout.
• Using a sharp utility knife, carefully score the joint, cutting through the grout. Make sure that you do not apply a lot of pressure because you do not want to cut into the Congoleum UnderFlor. Carefully score the tile or plank to be removed across the corner edge about 1 inch from the corner.
• Apply heat to the area.
• Using a putty knife and hammer, position the putty knife over the scored edge and tap it until the corner is released.
• Apply heat as you go and carefully begin to pry up the piece from the Congoleum UnderFlor using a utility knife. If you keep the tile or plank heated, it should release without damaging the UnderFlor.
• When the piece has been removed, check the adhesive tack. If it is still tacky to the touch, simply position the new piece in place.
• If the adhesive is not tacky, reapply adhesive with the flat side of the trowel and let it tack up. Then set the replacement piece into place.
• Roll the replacement piece with a roller.
• Re-grout the tile with DuraCeramic grout following label instructions. Allow grout to dry for 24 hours and remove any remaining grout haze.

3. REPLACING THE CONGOLEUM UNDERFLOR
If the Congoleum UnderFlor is cut or damaged during the repair procedure and needs to be replaced, follow these procedures.
• Using the piece that was removed as a template, cut a fill piece of Congoleum UnderFlor.
• Slide pieces of thin, clear, sticky, one-sided packaging tape centered under the cut out edges.
• Tip: Here’s a tip to make it easier to slide the tape under the edges. Cut the piece of Dura product that was removed to make it about 1” shorter. Cut the thin packaging tape to that dimension. Carefully fasten the tape along the edge of the product overlapping it about 1/4”. Turn the piece over so that the tape is now sticky side up and slide it under the cut out edge. Firmly press down on the edge and pull the replacement piece away to release the tape.
• Carefully lay in the new cut piece of UnderFlor pressing it firmly onto the tape.
• Apply a thin layer of DS100 adhesive to the Congoleum UnderFlor and allow it to tack up.
• Lay in the replacement flooring and roll it to set it in place.
• Roll the replacement piece with a roller to set it.
• If necessary, re-grout the tile or reapply DS200 joint sealer to finish the repair.

E. REPAIR PROCEDURES FOR TILE PRODUCTS
For damaged spots in tile, the best method of repair is to replace a complete tile with another of the same
design and color. Whenever possible, use tile left over from the original installation to minimize color variance. The procedure for removal of the damaged tile will vary depending on the adhesive that was used to install the tile.

1. **AD72 WET-SET ADHESIVE**
   a. Start by making a cut in the middle of the tile with a sharp utility knife. Then, use a stiff-blade putty knife to remove the tile from the center out. Use caution to avoid damaging the edges of the surrounding tile or the subfloor. Scrape the subfloor clean and smooth with a chisel or razor-scraper.
   b. After the area has been made ready to receive the replacement tile, spread the adhesive on the subfloor with the recommended, notched trowel. Insert the tile and roll with a steel hand roller.

2. **AD42 AND DS100 PRESSURE-SENSITIVE ADHESIVES**
   a. Tile installed with pressure-sensitive adhesives can usually be removed fairly easily by prying it up from the subfloor with a stiff-blade putty knife. Start by warming the tile with a heat gun, puncturing the center with a sharp, utility knife, and prying it up. This method allows the damaged tile to be removed without damaging the edges of the surrounding tiles.
   b. Clean the existing adhesive from the subfloor using a razor-scraper. Spread the appropriate adhesive on the subfloor with the recommended notched trowel or brush. Allow the adhesive to tack-up according to directions and insert the new tile in place. Roll the replacement tile with a steel hand roller.

3. **ZIPSTIK ADHERED TILE**
   a. Use the same method to remove the damaged tile as described for tile adhered with AD42 and DS100 adhesives.
   b. Remove the paper from the back of the tile and insert the new tile in place. Roll the replaced tile with a steel hand roller to complete the repair.
### XIII. ESTIMATING

In order to accurately estimate the cost of a flooring installation, the following guidelines will be helpful.

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<tr>
<th>A. EXISTING FLOOR</th>
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<tr>
<td>Plywood Underlayment</td>
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<tr>
<td>Untempered Hardboard</td>
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<tr>
<td>Concrete Suspended</td>
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<td>Other</td>
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</tbody>
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### C. MEASURING FOR FLOORING

#### 1. RESILIENT SHEET PRODUCTS

The quantity of sheet flooring which will be required must be figured on the length of the piece(s) required, not the square footage in the room. The following are general points to be considered when measuring:

- **Measure into any doorways or arches in the room.**
  At doorways, the flooring should meet the adjoining floor at the mid point of the door when it is closed.

- **Add a minimum of 3” (7.6cm) to the net length of the room.**
  This will allow for sheet alignment within the room, and compensate for areas which may not be square. If a design requiring matching is being installed, the 3” (7.6cm) is only required on the first sheet. Review Section IV., B. “Calculating Additional Material To Acquire A Design Match At Seams” on page 15 for matching information.

- **If there is a stairway or stair landing to be covered on the installation, any cut-off pieces may be used for these areas.**
  Figure additional material, if required, to complete the installation. If a designed floor is being installed, keep in mind that the positioning of the design should be the same on each step and riser.

- **It will be possible to install the flooring material seamless in most rooms because of the availability of the 12’ width in many products.**
  In rooms that are 12’ or under in width, the flooring required is the room length plus 3” (7.6cm).

- **On seamed installations, the length of each sheet of flooring must be determined.**

  Draw an accurate diagram of the room, or rooms, showing seam placement. This will help eliminate errors, and provide a permanent record for use when the flooring is actually installed.

  On other than overall designs, additional material will be required to match the design. The method of calculating additional flooring material will vary depending on the specification for seaming (reverse sheets or do-not-reverse sheets). This information with length of design match is available in the Congoleum Resilient Flooring literature. On the following page are examples of diagrams utilizing “Reverse Sheets” and “Do-Not-Reverse Sheets” specifications.
REVERSE SHEET DESIGNS — After establishing where the seam should be placed, measure the length of the first sheet and add 3” (7.6cm). The second and all succeeding sheets should have the length of the design match added to the length of the sheet needed.

**Example:**

| Piece A 6’ x 16’6” plus 3” | = 6’ x 16’9” |
| Piece B 6’ x 14’0” plus 18” | = 6’ x 15’6” |
| Piece C 6’ x 9’0” plus 18” | = 6’ x 10’6” |
| **Total** | **6’ x 42’9”** |

DO-NOT-REVERSE DESIGNS — Establish where the seam should be placed, measure the first sheet and add 3” (7.6cm). The second and succeeding sheets should be calculated by going to the next multiple of the design match over the net size required for the sheet.

**Example:**

**Fig. 184. Reverse Sheet Designs**

**Fig. 185. Do-Not-Reverse Sheet Designs.**

**2. TILE PRODUCTS**

On tile installations, it will be necessary to calculate the number of square feet in the room(s). To do this, break the room into rectangles and calculate the square footage in each. Figure 186 provides an example of how to calculate the quantity of tile required for installation in two adjoining rooms.

**Fig. 186. Calculation of tile required for two adjoining rooms**

Multiply length by width of each rectangle as follows:

- Room A 12’ x 15’ = 180 square feet
- Room B 12’ x 18’ = 216 square feet
- **Sub Total** 396 square feet
- Add 5% for Waste* = 20 square feet
- **Tile required for job** 416 square feet

To calculate cartons, divide the total square feet by the number of square feet per carton (include the grout joint width in the square feet per carton number if installing grouted DuraCeramic). For example, 1/8” vinyl composition tile has 45 square feet per carton; 10 cartons will be required (unless partial cartons are available from distributor).

* **NOTE** 5% waste should be used for installations ranging from 300 to 1,000 square feet. Larger installations will require less waste, ranging from 1% to 4%; while smaller installations may require up to 15% waste.

**D. OTHER CONSIDERATIONS**

- There will be appliances which require moving on most jobs. Having good moving equipment is very important. If the installation is a one-piece resilient sheet installation, all movable appliances will have to be taken from the room. If the installation requires
two or more sheets, it is likely that the appliances can be moved within the room. For tile installations, appliances can be moved as required within the room to install the tile.

On gas operated appliances, check to see if there is a shut off valve. If none exists, a central valve may have to be turned off and could require gas company services, which usually must be requested by the consumer. You should also check to determine if state or local ordinances require that a licensed plumber or electrician disconnect and reconnect utilities.

Removal of toilet bases and other plumbing fixtures may be necessary for a good job. If the customer assumes this responsibility, be sure they understand that removal and reinstallation must be coordinated around the flooring installation.

E. PREPARING THE ESTIMATE

1. MATERIALS
Following is a check list of materials which may be required for the flooring installation:

Resilient Sheet Flooring
  – Size, width and length

Tile
  – Numbers of cartons

Metal (pieces or length required)
  – Doorway
  – Stair nose
  – Cap material

Top Set Cove Base
  – Height
  – Piece required
  – Adhesive

Flooring Adhesive
  – Type (stock number, e.g., 3044)
  – Quantity

Subfloor Patching Materials
  – Type
  – Quantity

Underlayment
  – Type
  – Thickness
  – Size of sheets
  – Number of sheets
  – Fasteners

Seam Sealer
  – Type (stock number, e.g., SU80)
  – Quantity

Miscellaneous
  – Pattern scribing felt
  – Cove fillet strip

2. LABOR
Following are a number of items to be considered when estimating labor.

  – Flooring Installation
  – Preparation of existing floor
  – Underlayment installation
  – Old floor removal (refer to warnings on inside front cover if removal of an existing resilient floor is being considered).
  – Moving appliances
  – Additional labor for steps
  – Self-cove labor
  – Metal installation
  – Other work not mentioned above

F. LEAVE BEHINDS
Be sure the consumer receives a copy of the Congoleum Maintenance and Warranty Information Brochure (M3702). This brochure explains the maintenance recommendations for all Congoleum flooring products and also includes product warranties.
TRADEMARK LISTINGS

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