

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 Procedures" under DuraCeramic.

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.

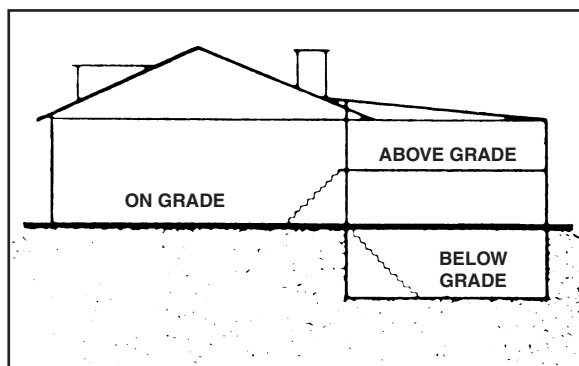


Fig.1. Grade level illustration

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 underlayments 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). New concrete floors require a minimum of six weeks to fully cure and dry.

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 typically 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.

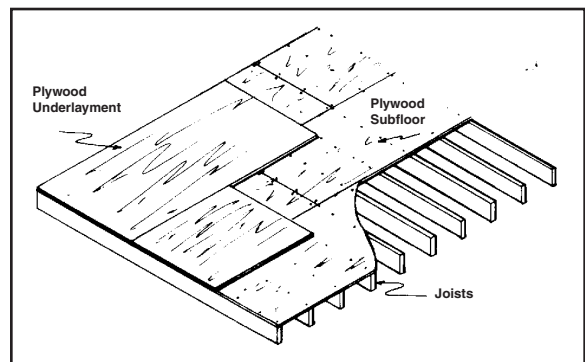


Fig. 2. Typical subfloor structure

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 wood 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 underlayments for all Congoleum flooring products.

GRADE DESIGNATIONS

Grade ^{(1), (2)}	Exposure/ Durability Classification	Look for these Special Notations In Panel Trademark ⁽³⁾
APA Underlayment	Exposure 1	Sanded Face
APA C-C Plugged Exterior APA Underlayment C-C Plugged	Exterior	Sanded Face
APA A-C APA B-C	Exterior Exterior	Plugged Crossbands Under Face ⁽⁴⁾ "
APA A-D APA B-D	Exposure 1 Exposure 1	" "
APA Underlayment A-C APA Underlayment B-C	Exterior Exterior	Sanded Face Sanded Face

(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.

Source: American Plywood Association (APA) "Data File" Form No. L335 (Revised March 1999).

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 underfloor 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 UNDERLAYMENT 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 underlayments. Consult the manufacturer or supplier for recommendations.

4. NON-RECOMMENDED UNDERLAYMENTS

The following underlayments 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 underlayments 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 plywoods** – 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 manufacturers’ 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 allowed 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 panel joints 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" (15.4cm).

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.

⚠ 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 structure 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:

CONGOLEUM CORPORATION
Installation Department
P.O. Box 3127
Mercerville, NJ 08619-0127
(609) 584-3888

or
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 mildew 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 mildew (such as discoloration) can indicate the presence of mold or mildew on the subfloor, on the underlayment, on the back of the flooring, and sometimes even on the floor surface. If mold or mildew is discovered during the removal or installation of resilient flooring, all flooring work should stop until the mold or mildew 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 remediated consistent with the U.S. Environmental Protection Agency (EPA) guidelines referenced below. Any structural damage or signs of mold or mildew 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 mildew issues, you should refer to the EPA guidelines that address mold and mildew. Depending on the mold and mildew condition present, those remediation options range from cleanup measures using gloves and biocide to hiring a professional mold and mildew remediation contractor to address the condition. Remediation measures may require structural repairs such as replacing the underlayment and/or subfloor contaminated with mold and mildew 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/