TUFFROLL™

Rubber Rolls

Technical Installation, Maintenance & Warranty Manual

Proudly manufactured in the U.S.A. by

KIEFER® U.S.A.

a DIVERZIFY company

Preparation & Installation

Maintenance

Warranty

Product Specifications

I. Preparation & Installation

1. Tape measure
2. Metal Straight Edge
3. Utility knife and blades
4. Framing square
5. Marking paint pens or chalk
6. Push broom or vacuum

II. SITE CONDITIONS

1. Installation should not begin until after all other trades are finished in the area. If the job requires other trades to work in the area after the installation of the floor, the floor should be protected with an appropriate cover.

2. Areas to receive flooring should be weather tight and maintained at a minimum uniform temperature of 65°F (18°C) for 48 hours before, during, and after the installation.

III. SUBFLOORS

1. Kiefer USA rolls may be installed over concrete, approved Portland-based patching and leveling materials, and wood.

NOTE: Gypsum-based patching and leveling compounds are not acceptable.

2. Wood Subfloors - Wood subfloors should be double construction with a minimum thickness of one inch. The floor must be rigid and free from movement with a minimum of 18" of well-ventilated air space below.

3. Underlayments - The preferred underlayment panel is American Plywood Association (APA) underlayment grade plywood, minimum thickness of 1/4-inch, with a fully sanded face.

NOTE: Particleboard, chipboard, Masonite and lauan are not considered to be suitable underlayments.

4. Concrete Floors - Concrete shall have a minimum compressive strength of 3000 psi. New concrete slabs should cure for a minimum of 28 days. It must be fully cured and permanently dried.

IV. SUBFLOOR REQUIREMENTS AND PREPARATION

1. Subfloors shall be dry, clean, smooth, level, and structurally sound. They should be free of dust, solvent, paint, wax, oil, grease, asphalt, sealers, curing and hardening compounds, alkaline salts, old adhesive residue, and other extraneous materials, according to ASTM F710.

2. Subfloors should be smooth to prevent irregularities, roughness, or other defects from telegraphing through the new flooring. The surface should be flat to the equivalent of 3/16" (4.8 mm) in 10' (3.0 m).

3. Mechanically remove all traces of old adhesives, paint, or other debris by scraping, sanding, or scarifying the substrate. Do not use solvents. All high spots shall be ground level and low spots filled with an approved Portland-based patching compound.

4. All saw cuts (control joints), cracks, indentations, and other non-moving joints in the concrete must be filled with an approved Portland-based patching compound.

5. Expansion joints in the concrete are designed to allow for expansion and contraction of the concrete. If a floor covering is installed over an expansion joint, it will likely fail in that area. Use expansion joint covers designed for resilient flooring.

6. Always allow patching materials to dry thoroughly and install according to the manufacturer's instructions. Excessive moisture in patching material may cause bonding problems or a bubbling reaction with the adhesive.

HAZARDS: SILICA WARNING - Concrete, floor patching compounds, toppings, and leveling compounds can contain free crystalline silica. Cutting, sawing, grinding, or drilling can produce respirable crystalline silica (particles 1-10 micrometers). Classified by OSHA as an IA carcinogen, respirable silica is known to cause silicosis and other respiratory diseases. Avoid actions that may cause dust to become airborne. Use local or general ventilation or provide protective equipment to reduce exposure to below the applicable exposure limits.

ASBESTOS WARNING - Resilient flooring, backing, lining felt, paint, or asphaltic "cutback" adhesives can contain asbestos fibers. Avoid actions that cause dust to become airborne. Do not sand, dry sweep, dry scrape, drill, saw, bead blast, or mechanically chip or pulverize. Regulations may require that the material be tested to determine the asbestos content. Consult the document "Recommended Work Practices for Removal of Existing Resilient Floor Coverings" available from the Resilient Floor Covering Institute.

LEAD WARNING - Certain paints can contain lead. Exposure to excessive amounts of lead dust presents a health hazard. Refer to applicable federal, state, and local laws and the publication "Lead Based Paint: Guidelines for Hazard Identification and Abatement in Public and Indian Housing" available from the United States Department of Housing and Urban Development.

7. Moisture must be measured using the Relative Humidity (RH) test method per the ASTM F2170 test standard. Moisture content should not exceed the allowable limit of the selected Kiefer USA adhesive.

a) Adhesive RH limit of 85% normally selected
b) Adhesive 95 – RH limit of 95% - higher RH applications
c) Adhesive 99 - RH limit of 99% - highest RH applications

If RH levels exceed the selected Kiefer USA adhesive's RH limit, stop and correct the situation.

8. In the event that a moisture mitigation system is required, it must conform to the ASTM F3010 Standard Practice for Two-Component Resin Based Membrane Forming Moisture Mitigation Systems for use Under Resilient Floor Coverings.

9. It is essential that pH tests be taken on all concrete floors and be within the allowable limits of the selected Kiefer USA adhesive. If the pH is greater, it must be neutralized prior to beginning the installation.

10. Adhesive bond tests should be conducted in several locations throughout the area. Glue down 3' x 3' test pieces of the flooring with the recommended adhesive and trowel. Allow to set for 72 hours before attempting to remove. A sufficient amount of force should be required to remove the flooring and, when removed, there should be adhesive residue on the subfloor and on the back of the test pieces.

MATERIAL STORAGE AND HANDLING

1. Material should be delivered to the job site in its original, unopened packaging with all labels intact.

2. Note: Shipping pallets, cradles, banding, etc. are not intended for storage. After 7 days, remove material from shipping pallets, cradles, etc. Rubber roll material should always be stored laying down; Storing rubber rolls on end will curl the edges resulting in permanent memory of the material. All edges with memory curl must be straight edge cut before installation.

3. Material should only be stored on a clean, dry, smooth surface. Rolls should be stored with the end of the roll on top, facing up. The end of the roll should not be positioned against an adjacent roll or surface, or welts may be created on that roll and the roll below.

4. Roll material is stretched slightly during the manufacturing process. At the job site, the installer should unroll all rolls and allow to relax for 24-48 hours. Shaking the material once it is unrolled can help it to relax.

5. Inspect all materials for visual defects before beginning the installation. No labor claim will be honored on material installed with visual defects. Verify the material delivered is the correct style, color, and amount. Any discrepancies must be reported immediately before beginning installation.

6. The material and adhesive must be acclimated at room temperature for a minimum of 48 hours before starting installation.

7. Custom roll lengths eliminate the possibility of the rolls being manufactured and numbered in the customer's desired installation sequence, and Kiefer USA cannot be responsible for any resulting shading issues.

INSTALLATION - ROLL MATERIAL

1. Make the assumption that the walls you are butting against are not straight or square. Using a chalk line, make a starting point for an edge of the flooring to follow. The chalk line should be set where the first seam will be located.

2. Remove the roll from the shrink wrap and unroll it onto the floor. Lay the rubber on the floor in a way that will use your cuts efficiently. Cut all rolls at the required length, including enough to run up the wall a few inches. End seams should be staggered and overlapped approximately 3-6".

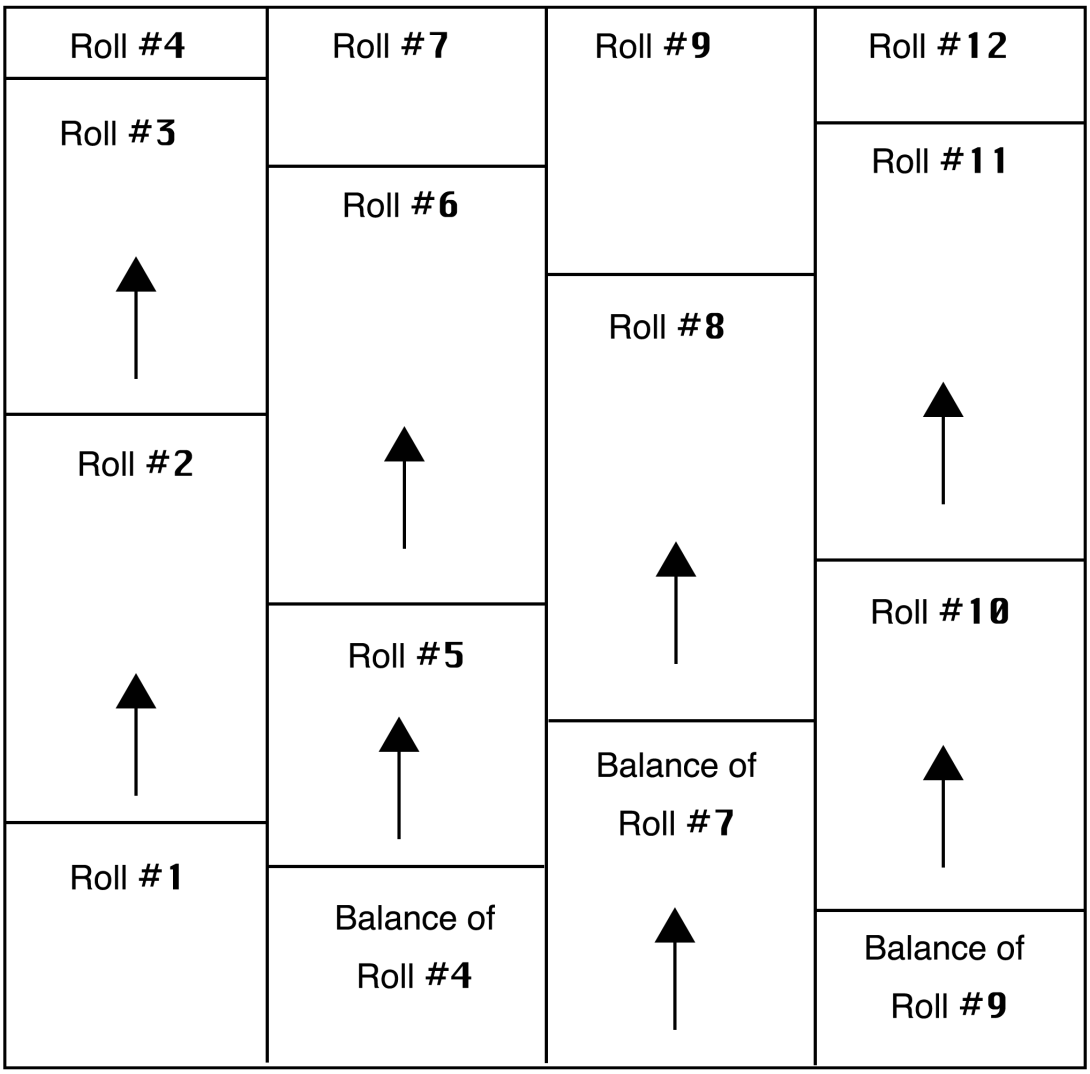
3. Allow the rough cuts to relax in position for a minimum of two hours.

4. Trim end seams **after acclimation** using a square for tight fit without gaps.

5. After proper acclimation and rough cuts are made and allowed to relax, you may begin the installation.

6. Align the first edge to the chalk line.

Best Roll use Practices

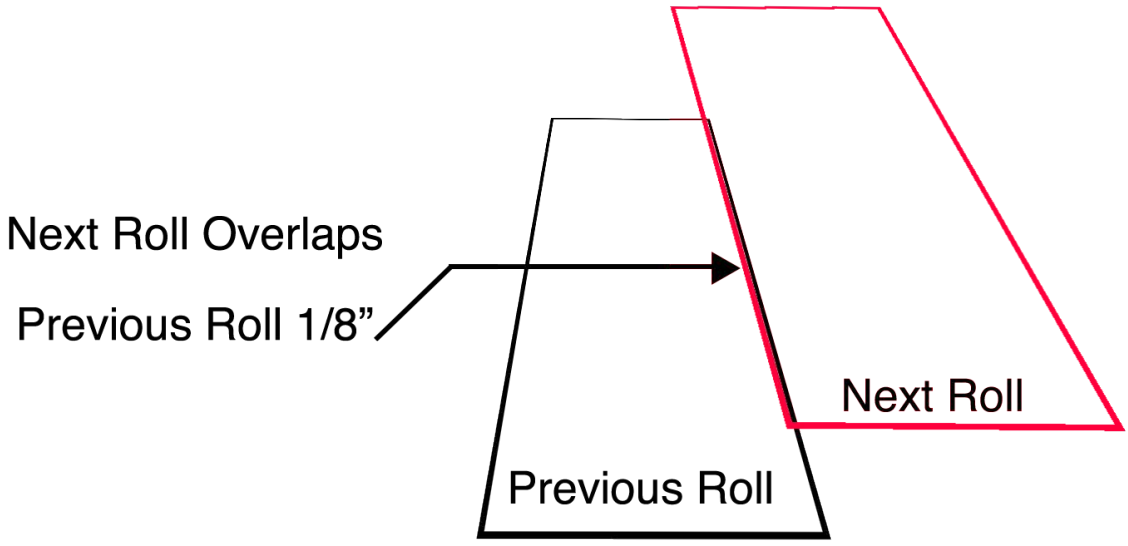


Note: it is very important that the first seam is perfectly straight.

7. Position the second roll with no more than a 1/8" overlap over the first roll at the seam. After adhesive is applied to substrate, the material will be worked back to eliminate the overlap. This procedure will leave tight seams and eliminate gaps.

8. Care should be taken to not over compress the seam. Over compressed seams will cause peaking.

9. It may be necessary to trim the edge of the second lineal drop if the rolls do not extend the length or width of the room. Rolls laid end to end with a variance in roll width greater than 1/4” could result in peaked seams.



NOTE: This product is suitable for installation over a radiant heat source.

METHOD 1 - GLUE DOWN

A. After performing the above procedures, begin the application of the RLX-100, a one-component moisture-cured polyurethane adhesive (use RLX-110 for high moisture areas). RLX-100 should not be mixed; use right out of the pail. Apply RLX-100 to the substrate using a 1/16" square-notched trowel.

B. Fold the first drop lengthwise (half the width of the roll).

C. Spread adhesive using the proper notched trowel. Take care not to spread more RLX-100 than can be covered by flooring and rolled within 30 minutes. The open time of the adhesive is 30 - 40 minutes at 70° F and 50% relative humidity.

Note: The open time of adhesive is affected by temperature and humidity. High temperatures and high humidity will cause the adhesive to set quickly. Low temperatures and low humidity will cause adhesive to cure at a slower rate. The installer should monitor on-site conditions and adjust open time accordingly.

D. Carefully lay the flooring into the wet adhesive. Do not allow the material to "flop" into place; this may cause air entrapment and bubbles beneath the flooring.

E. Immediately roll the floor with a 75-100 lb. roller to ensure proper adhesive transfer. Overlap each pass of the roller by 50% of the previous pass to ensure the floor is properly rolled. Roll the width first and then the length. Roll again after 30-45 minutes. Fold over the second half of the first roll and half of the second roll. Spread the adhesive. (Spread at right angles to seam to prevent the adhesive from oozing up through seam. Gently lay (do not flop) flooring into wet adhesive. Roll the flooring.

G. In some instances, it may be necessary to weigh down the seam until the adhesive develops a firm set.

H. Continue the process for each consecutive drop. Work at a pace so that you are always folding material back into wet adhesive.

NOTE: Never leave adhesive ridges or puddles. They will telegraph through the material.

I. Do not allow RLX-100 to cure on your hands or the flooring. Cured adhesive is very difficult to remove. We strongly suggest wearing gloves while using RLX-100.

J. Immediately wipe excess adhesive off floor with a rag slightly dampened with mineral spirits. Follow the mineral spirits with a rag dampened with water to remove the mineral spirits.

NOTE: Use mineral spirits sparingly. Saturating the rubber with mineral spirits may darken the flooring and cause the adhesive to be pushed too deeply into the pores of the rubber.

K. If some seams are gapping it is possible to hold them together temporarily with blue painters tape.

Tape MUST be removed after adhesive has developed a firm set which is approximately 2-3 hours. Allowing tape to remain longer than 2-3 hours or using aggressive tapes may result in adhesive residue. Kiefer USA will not be responsible for residue left behind from tape of any kind.

L. In some instances, it may be necessary to weigh down the seam until the adhesive develops a firm set. Keep traffic off the floor for a minimum of 24 hours. Floor should be free from rolling loads for a minimum of 72 hours. Foot traffic and rolling loads can cause permanent indentations or debonding in the uncured adhesive.

METHOD 2-DOUBLE FACE TAPE DOWN

NOTE: It is characteristic for rubber flooring to expand and contract with changes in temperature and humidity. **Dependent upon conditions, double face tape may not be strong enough to hold rubber in place in every situation, and when used, neither the flooring nor the installation method can be warranted.** For permanent installations, it is recommended to use our RLX-100 adhesive.

NOTE: Tape method is not recommended for ice rink applications.

A. Dry lay the rolls onto the subfloor.

B Draw a pencil line beneath all seams to be taped.

C. Use a high-quality double-faced carpet tape with a minimum width of two inches.

D. Fold over the first drop along the chalk line (half the width of the roll).

E. Apply two strips of the double-faced tape along the seam, one on each side of the pencil mark.

F. Remove the release paper and place the flooring onto the exposed tape.

G. When butting one roll next to another, overlap the seams by no more than 1/8". Work the material back to eliminate the overlap. This procedure will leave tight seams over the tape and eliminate any gaps.

Hand-roll the seams to ensure adequate contact. Do not roll the entire floor.

Floor Protection, Cleaning and Maintenance

A. Kiefer USA recommends our environmentally friendly line of maintenance products, including Kiefer Clean Rubber Floor Cleaner

B. Kiefer USA's products must not be subjected to construction debris and damage from construction activities. The specifier should include details to protect the floor until job and construction are complete and floor is thoroughly cleaned.

C. CLEANING AND MAINTENANCE

D. Initial Cleaning Materials

E. Kiefer Clean Rubber Floor Cleaner
   - Pads & Brushes: Soft nylon brush, microfiber mop or 3M 5100 Red Pad

Daily Cleaning Materials
- Kiefer Clean Rubber Rubber Floor Cleaner

- Pads & Brushes: Soft nylon brush, microfiber mop or 3M 5100 Red Pad

C. Heavy Soil and Restorative Cleaning Materials

- Kiefer Clean Rubber Rubber Floor Cleaner
  - Pads & Brushes: Brown or Black Stripper pad

A. Initial Cleaning Procedure

1. Remove all surface soil, debris, sand, and grit by sweeping, dust mopping or vacuuming.

2. Scrub floor with Kiefer Clean Rubber Floor Cleaner, using low speed rotary scrubber or auto scrubber with Microfiber mop, Soft Nylon Brush or pad per table above.

3. Pick up solution with a wet vacuum, rinse with clean water, and allow to dry thoroughly (6-8 hours).

B. Daily/Regular Cleaning Procedure

1. Sweep, dust mop, or vacuum floor to remove surface soil, debris, sand, and grit.

2. Damp mop with a microfiber mop or scrub floor with Kiefer Clean Rubber Floor Cleaner, using low speed rotary scrubber or auto scrubber with Microfiber mop, Soft Nylon Brush or pad using the appropriate Cleaning Materials shown above.

C. Heavily Soiled and Restorative Maintenance

1. Hard-to-clean areas may require a higher concentration of Kiefer Clean Rubber Floor Cleaner and may even require restorative maintenance (below) .
2. Restorative Maintenance Restorative maintenance is not needed until there is a noticeable accumulation of dirt and contaminant build up. Normally this accumulation occurs in hard-to-reach and high traffic areas. A good maintenance program will minimize the frequency of restorative cleanings.
3. Sweep, dust mop or vacuum to remove loose surface soil.
4. Pick up solution with wet vac.
5. Rinse with clean water. Do not flood the floor
6. Allow floor to thoroughly dry.

Warranty

All Kiefer USA rubber flooring is guaranteed to be free from manufacturing defects on both material and workmanship. If such a defect is discovered, the customer must notify Kiefer USA either through the contracting installer, distributor, or directly. If found to be defective within three years under normal non-abusive conditions, at the discretion of Kiefer USA, the sole remedy against the seller will be to repair, to replace, or to issue a credit not exceeding the selling price of the defective goods.

Kiefer USA rolls warranty shall not cover dissatisfaction due to improper installation, normal wear or quality of installation expected from the use or environment of installation, damage from improper maintenance or usage, or general misuse, including and without limitation: burns, cuts, tears, scratches, scuffs, damage from rolling loads, damage from cleaning products not recommended by Kiefer USA, slight shade variations or shade variations due to exposure to direct sunlight, or differences in color between samples or photographs and actual flooring.

1. The exact matching of shade, color or mottling.

2. Any express or implied promise made by any salesperson or representative.

3. Tears, burns, cuts or damage due to improper installation, improper use or improper cleaning agents or maintenance methods.

4. Wear from chairs or other furniture without proper floor protectors will void the warranty. Care should be taken to protect the flooring from damage by using good quality protective feet for chairs, tables, and other furniture. Chair mats may be required under chairs with casters/wheels.

5. Labor costs for installation of original or replacement material.

6. Sale of "Remnants", “Seconds", "Off Goods" or other irregular (non-first-quality) flooring materials. With respect to "Seconds", "Off Goods", or "Remnants" such are sold "as is," and Kiefer USA makes no warranties whatsoever, express or implied with respect thereto, including warranties of merchantability or fitness for a particular purpose.

7. Problems caused by moisture, hydrostatic pressure, or alkali in the sub-floor.

8. Problems caused by uses, maintenance, and installation that are contrary to Kiefer USA specifications, recommendations or instructions.

9. Material installed with obvious defects.

10. Damage to flooring products from high heels or spike heels.

11. Damage or discoloration to flooring products from rubber mats, rubber backed mats, or car tires.

12. Installation of Kiefer USA products with adhesives other than those recommended by Kiefer USA.

13. Fading and/or discoloration resulting from heavy sunlight penetration and ultraviolet ray exposure from direct or glass-filtered sunlight.

14. Material that is not installed and maintained as recommended by Kiefer USA.

15. Damage to flooring products from pallet jack and tow-motor traffic.

16. Environments where the product will be exposed to animal fats, vegetable oils, grease or petroleum based materials. (i.e.; commercial kitchens or auto repair facilities.)

17. Premature wear and deterioration from spikes and skate blade exposure.

18. Differences in color between products and photography.

19. Embossing / density deviations between product and samples, photography.

These warranties are in lieu of any other warranty expressed or implied. Kiefer USA shall not be liable for any incidental or consequential damages which may result from a defect. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. These warranties give you specific rights, and you may also have rights which may vary from state to state. To know what your legal rights are in your state, consult your local or state Consumer Affairs Office or your State Attorney General. For complete and latest warranty information, please see www.kieferusa.com

Performance Criteria	Test Method	Result
Roll Width	Manufacturer	+3/4" – 0" / +19mm – 0mm
Roll Tolerance Length	Manufacturer	+ 2% - 0"
Roll/Tile Tolerance Thickness	Manufacturer	+/- 0.3 mm
23'x23" Interlocking Tile Dimensions	Manufacturer	+/- 1/8"
Tensile Strength	ASTM D412	>200 PSI
Min Flexibility 1/4" Mandrel	ASTM F137	Pass
Thermal Reistance "R"	ASTM C518	0.10 F-ft2-h/BTU
Static Load Limit	ASTM F970 @ 400psi	< 0.005 in.
Slip Resistance / Coefficient of Friction	ASTM D2047	> 0.9
VOCs / FloorScore / CHPS / CA 01350	ASTM D5116	Certified
Color Stability	ASTM F1515	Good
Abrasion Resistance	ASTM D3389 / EN 649	<1g, 100 cycles
Flammability – Pill Test	ASTM D2859	Pass
Vertical Deflection / Deformation	ASTM F2772	0.7 mm
Surface Effect Slip Resistance	ASTM F2772	Pass
Ball Rebound	ASTM F2772	99.70%
Force Reduction	ASTM F2772	12.60%
Ambient Noise Reduction, Sabin/ft2	ASTM C423	0.1
Impact Insulation Class	ASTM E492	53 minimum
Delta IIC	ASTM E2179	22
Energy Restitution	Deltec	71.90%
Sound Transmission Coefficient	ASTM E90	54
Chemical Resistance	ASTM F925	1. 5% Acetic Acid: No Change
		2. 70% Isopropyl Alcohol: No Change
		3. 5% Sodium Hydroxide: No Change
		4. 5% Hydrochloric Acid: No Change
		5. 5% Ammonia: No Change
		6. Bleach: No Change
		7. 5% Phenol: No Change
		8. Sulfuric Acid: No Change