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Australia



Floor coverings — Resilient sheet and tiles — Installation practices



AS 1884:2021

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- Australian Industry Group
- Australian Institute of Building Surveyors
- Australian Resilient Floorcovering Association
- Building Designers Association of Australia
- Carpet Institute of Australia
- Cement Concrete & Aggregates Australia
- Floorcovering Institute of Australia
- Vinyl Council of Australia

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Floor coverings — Resilient sheet and tiles — Installation practices

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Preface

This Standard was prepared by the Standards Australia Committee PL-015, Resilient Flooring, to supersede AS 1884 — 2012, *Floor coverings — Resilient sheet and tiles — Installation practices*.

The objective of this document is to provide minimum requirements for the installation and application of resilient coverings for Australian conditions to ensure that the installed product is fit for purpose.

Content in [Clause 5.9](#) and [Appendix G](#) has been used with permission from Dale Peterson.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

The inclusion of roles and responsibilities in AS 1884:2020 was approved by the Standards Development and Accreditation Committee (SDAC) on 2 May 2019, on a transitional basis of 5 years from the date of publication.

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Australian Standard®

Floor coverings — Resilient sheet and tiles — Installation practices

Section 1 Scope and general

1.1 Scope

This document sets out procedures for the preparation, laying and fixing of resilient sheet and tile floor coverings in all forms including flexible PVC, semi-rigid PVC, hybrid modular, linoleum, and rubber. It also applies to self-adhesive tiles.

This document gives details of the work necessary to prepare subfloor surfaces, together with procedures to be adopted for laying the resilient covering.

This document does not apply to the laying of textile floor coverings (carpets), bamboo, laminate, engineered flooring, melamine, timber or cork products.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography

AS 1684, *Residential timber-framed construction (series)*

AS 1860.2, *Particleboard flooring, Part 2: Installation*

AS 2870, *Residential slabs and footings*

AS 3740, *Waterproofing of domestic wet areas*

AS/NZS 1859.1, *Reconstituted wood-based panels — Specifications, Part 1: Particleboard*

AS/NZS 1859.2, *Reconstituted wood-based panels — Specifications, Part 2: Dry-processed fibreboard*

AS/NZS 1859.4, *Reconstituted wood-based panels — Specifications, Part 4: Wet-processed fibreboard*

AS/NZS 2269.0, *Plywood — Structural, Part 0: Specifications*

AS/NZS 2908.2, *Cellulose-cement products, Part 2: Flat sheets*

AS/NZS 4858, *Wet area membranes*

IEC 61340-4-1 ed2.1 Consol. with am1, *Electrostatics — Part 4-1: Standard test methods for specific applications — Electrical resistance of floor coverings and installed floors*

IEC 61340-5-1, *Electrostatics — Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements*

ISO 10581, *Resilient floor coverings — Homogeneous poly(vinyl chloride) floor covering — Specifications*

ISO 10582, *Resilient floor coverings — Heterogeneous poly(vinyl chloride) floor covering — Specifications*

ANSI/ESD S20.20, *ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)*

ASTM E96, *Standard Test Methods for Water Vapor Transmission of Materials*

ASTM F2170, *Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes*

1.3 Terms and definitions

For the purpose of this document, the following definitions apply:

NOTE A glossary of other terms used in the resilient flooring industry may be found in [Appendix H](#).

1.3.1

adhesive

1.3.1.1

chemical or moisture cure

single or 2 part reactive polymer adhesive that retains no residual tack once full cure is achieved

1.3.1.2

hard set

adhesive that retains no residual tack once full cure is achieved

1.3.1.3

high grab

fast aggressive grab adhesive that usually retains various degrees of residual tack dependant of formulation type

1.3.1.4

pressure sensitive

soft set adhesive that remains active (tacky) but forms a bond when two surfaces are married together and pressure is applied

1.3.2

alkalinity

pH

value that represents the acidity or alkalinity of an aqueous solution on a scale of 0 to 14 with 7 representing neutral, less than 7 increasing acidity and greater than 7 increasing alkalinity

1.3.3

bight mark

small hump commonly called pole mark found in the centre of a full roll or part rolls of linoleum running across the total width of the sheet

1.3.4

competent person

person who has acquired, through education, training, qualification or experience or a combination of these, the knowledge and skill enabling that person to perform the task required

1.3.5

conditioning

process of placing the flooring products in an environment into which they are to be installed for an appropriate period as recommended by the manufacturer in order to acclimatize

1.3.6

cove fillet

extruded profile made of vinyl, rubber and/or metal in a variety of heights and shapes to allow flooring to be formed in a wide range of sheet goods and tile installations

Note 1 to entry: Installed with adhesive or self-stick.

1.3.7

coving

process used to create a continuous surface between a floor and wall junction

1.3.8

cross join

place where two ends of the resilient floor covering have been joined together

1.3.9**dimensional stability**

degree to which a material maintains its original dimensions when subjected to changes in temperature and humidity

1.3.10**double cut**

process of overlapping the edges of the material and cutting through both sheets at the same time

1.3.11**elastomeric filler**

flexible sealant which does not harden over time

1.3.12**engineered screed**

layer of material composed of proprietary mixes containing a hydraulic binder and graded sand and aggregate, which can be interposed between the structural base and the floor finish

1.3.13**factory edge**

strip of excess material down the edge of sheet goods for trimming purposes or to provide for overlap for seam cutting

Note 1 to entry: Some are marked with codes for matching and pattern repeat data.

1.3.14**floating floor**

method of installing hybrid modular floor covering, without the use of adhesive

1.3.15**flooring contractor**

company or person authorized by the purchaser to carry out any necessary preparation of the subfloor surface and/or the installation of the resilient covering

1.3.16**flooring system**

combination of flooring components, (e.g. primer, underlay, adhesive, resilient flooring, etc.) working together as parts of a mechanism or an interconnecting assembly

1.3.17**gauge**

overall thickness of the tile or sheet goods

1.3.18**groundable point**

attachment to a floor covering that facilitates its connection to ground

[SOURCE: IEC 61340-4-1 ed2.1]

1.3.19**hybrid modular flooring**

multi layered modular panels with resilient decorative surface layer, polymer-based core construction and often an attached underlayment designed to be loose laid using a locking system

Note 1 to entry: This section includes the following product categories:

- (a) Expanded Polymer Core (EPC).
- (b) Solid Polymer Core / Stone Polymer composite (SPC).
- (c) Wood Polymer Composite (WPC)

1.3.20**linoleum**

surfacing material composed of a solidified mixture of linseed oil, pine rosin, fossil or other resins or rosins, or an equivalent oxidized oleoresinous binder, ground cork, wood flour, mineral fillers, and pigments, bonded to a fibrous or suitable backing

1.3.21**loose lay**

method of installing resilient sheet, plank and tile either without the use of adhesive or with a minimal use of adhesive

1.3.22**mechanical means**

process of surface preparation performed by application of applied physical forces to the substrate surfaces to remove contamination

Note 1 to entry: For the purposes of installations on concrete this refers to the use of diamond grinders, scarifiers and captive shot blasters. For smaller areas this can include chippers and nail gun type scabblers.

Note 2 to entry: When installations are to be performed on timber composite floors, “mechanical means” refers to the use of floor sanders.

Note 3 to entry: Regardless of the means used, the final process in a mechanical preparation is vacuum cleaning

1.3.23**mitre**

installation of two pieces of material coming together at an angle (usually a 45° angle)

1.3.24**moisture content****MC%**

mass of evaporable water divided by volume of dry material

1.3.25**moisture suppression system**

system that is either a coating that is topically applied and sits on the surface of the subfloor or a penetrative treatment that is topically applied and absorbed into the subfloor

1.3.26**open time**

maximum time interval after application which resilient flooring can be embedded in the applied adhesive

1.3.27**point-to-point resistance****R_{p-p}**

electrical resistance measured between two electrodes placed on the use-surface

[SOURCE: IEC 61340-4-1 ed2.1]

1.3.28**porosity**

measurement of open voids in a concrete slab that allow liquid and air to pass through the surface

Note 1 to entry: Porosity enables viscous substances such as screeds, water based primers and adhesives to achieve a serviceable mechanical bond with the subfloor.

1.3.29**primer**

substance used as a preparatory coat applied to the subfloor

1.3.30**purchaser**

principal to the contract or the person authorized by the principal to superintend the work on his behalf

1.3.31**relative humidity**

amount of moisture in the air as a percentage of the amount the air can actually hold

1.3.32**relevant authority**

agency authorized by legislation or regulation to issue determinations, orders, or other instructions in respect of any subject covered by this document

1.3.33**resistance-to-ground****R_G**

electrical resistance measured between ground or a groundable point and a single electrode placed on the use-surface

[SOURCE: IEC 61340-4-1 ed2.1]

1.3.34**roll curl**

anomaly in resilient sheet floor coverings caused by the packaging of the rolls with the wear layer outmost on the roll leaving the resilient sheet bulging off the subfloor, predominately at the roll ends

Note 1 to entry: Roll curl is more predominate in low ambient temperatures when the resilient sheet is laid flat on the subfloor (face-up).

1.3.35**rosin**

translucent amber to almost black brittle friable resin that is obtained by chemical means from the oleoresin or dead wood of pine trees or from tall oil

1.3.36**sand-cement screed**

layer of material composed of compacted Portland cement and sand which can interpose between the subfloor and the floor finish

1.3.37**scalping**

removal of a fine layer of the surface and/or the factory finish of the resilient flooring, when trimming the thermal welds

1.3.38**seam sealing**

chemical fusion of two edges of sheet vinyl at the seam

Note 1 to entry: Care needs to be taken to keep seams clean.

1.3.39**straightedge**

metal bar with one accurately straight edge, used for testing whether something else is straight (accurate)

1.3.40**subfloor**

structural layer intended to provide support for design loadings which may receive resilient floor coverings directly where the surface is appropriate or indirectly via an underlayment or underlay where the surface is not suitable

1.3.41**substrate**

any material on the surface of which another material is applied

Note 1 to entry: In this document substrate specifically refers to the floor layer directly on which the resilient covering is to be installed (see [Figure 1.1](#)). This may be the subfloor or for where the subfloor surface is deemed unsuitable, an underlay or underlayment.

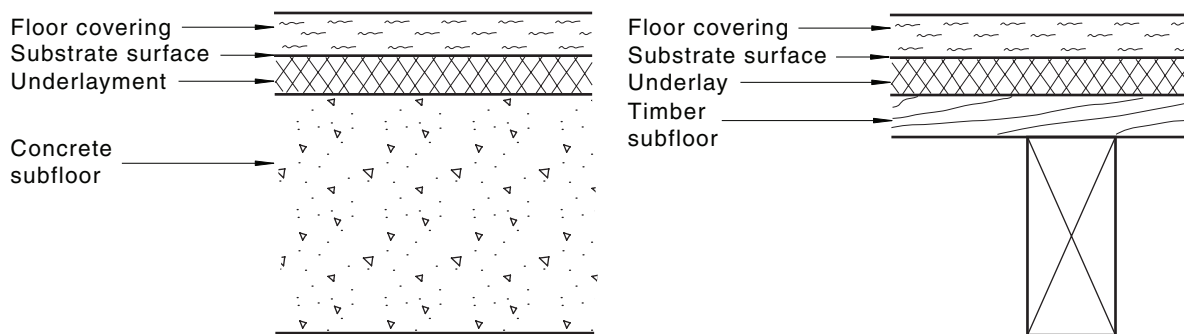


Figure 1.1 — Concrete and wood floors, and explanation of terms

1.3.42**tack time**

time required for adhesive to achieve its initial tack before the floor covering is laid onto it

1.3.43**thermal welding**

process for filling seams produced by grooving abutting edges of resilient flooring and filling said grooves with heated, fused, or melted material to provide a bonded and sealed continuous surface

1.3.44**tight seam**

joins that are true and parallel without gaps and peaking to provide an even and flush finish

1.3.45**topically applied**

applied to the surface of the concrete e.g. epoxy based or specialised polymer materials

1.3.46**underlay**

purpose-made board applied to a subfloor to provide a smooth, even surface suitable for the installation of a floor covering

1.3.47**underlayment**

smoothing compound or a cementitious levelling compound

Note 1 to entry: Underlayments are normally proprietary mixed products.

1.4 Materials**1.4.1 Resilient floor covering**

The resilient floor covering shall be agreed between the purchaser and the flooring contractor.

1.4.2 Adhesive

The nature or class of the adhesive used and the manner of use shall be in accordance with instructions for the particular installation by the manufacturer or supplier of the resilient floor covering.

Selection and use of adhesive shall conform to the instructions of both resilient flooring and adhesive manufacturers for the type of adhesive.

1.4.3 Underlay and underlayment

Where a resilient floor covering is to be adhered, unless the subfloor is substantially free from grooves, ridges, gaps, holes and similar imperfections, an underlay or underlayment shall be used.

The underlay and underlayment shall have an estimated service life not shorter than that of the resilient covering. The underlay and underlayment shall be compatible with the resilient floor covering and adhesive(s) to be used and meet the following requirements:

- (a) *For timber, plywood and particleboard subfloors* — The underlay shall be any one of the following:
 - (i) Standard hardboard underlay of Type GP conforming to AS/NZS 1859.4.
 - (ii) High performance medium density fibreboard (HP MDF) conforming to AS/NZS 1859.2.
 - (iii) Plywood underlay of Grade C conforming to AS/NZS 2269.0.
 - (iv) Fibre-cement sheet underlay conforming to AS/NZS 2908.2.
 - (v) An underlayment specifically designed for timber composite floors.
- (b) *For concrete subfloors* — The underlayment shall be non-shrinking so that no evidence of cracks is visible when the resilient floor covering is laid. In addition, the underlayment shall be non-staining, non-exuding and able to withstand the expected traffic load on the floor without indenting and deforming. The underlayment shall be capable of being bonded to the subfloor so that the bonding is not affected by the expected traffic loading.

Section 2 Pre-installation requirements

2.1 Site inspection

2.1.1 Pre-installation preparation

Both concrete and timber composite floors shall be prepared prior to installation of resilient floor coverings to meet the pre-installation requirements of the resilient floor covering manufacturer. At a minimum floor preparation shall include sanding, grinding, or both, and vacuuming.

Where dry clean processes are used, all residual waste materials shall be removed by vacuuming. Where wet clean processes are used, floors shall be dry enough to vacuum waste surface materials before installing resilient floor coverings.

2.1.2 Subfloor information

The flooring contractor shall obtain the site information on the subfloor, outlined in [Appendix D](#), from the purchaser. The flooring contractor shall inspect each of the relevant particulars required in [Appendix D](#). The following shall be determined:

- (a) Whether any repairs to the subfloor are required.
- (b) Whether the surface of timber subfloors needs to be sanded.
- (c) Whether the surface of the subfloor requires cleaning to remove existing floor covering, any deleterious materials such as grease, oil, paint curing or parting agents, or any surface treatment which could adversely affect adhesion.

2.1.3 Report by flooring contractor

Where, after visual inspection, the subfloor is found unsuitable for installation of floor covering, the flooring contractor shall submit a written report to the purchaser, and, where appropriate, the builder.

The report shall state the following:

- (a) The subfloor is not in a suitable condition for laying of the floor coverings, with reasons.
- (b) All conditions that, in the flooring contractor's opinion, will affect the satisfactory execution of the installation work or impair the durability and serviceability of the resilient floor covering or installation systems.
- (c) Whether remedial work is necessary.

2.2 Information

2.2.1 General

The information to be exchanged between the flooring contractor and the purchaser shall include advice as to whether the installation is to be in accordance with the commercial or residential laying requirements of this document.

The measurements and test results reported shall reflect conditions at the time they were taken and do not predict future conditions.

NOTE 1 Heritage listed and National Trust installations are covered by legislated building requirements.

In instances where there is direction to install a floor covering over a subfloor that falls outside of the requirements set out in this document (non-conformance) there shall be a mutual agreement between all invested parties to proceed with this direction.

NOTE 2 It is recommended that an agreement signed by all parties setting out the specifics of the non-conformance is put in place, a copy kept by each party and this agreement noted in any site meeting minutes for future reference.

NOTE 3 The manufacturers of the various products used in the flooring assembly should also be notified of this non-conformance agreement in case of a future warranty claim which may be affected by this decision.

2.2.2 Commercial installations

Flooring contractors shall consult with all relevant parties involved in the specification and installation of the flooring early in the design process and whenever changes occur during the contract regarding the following:

- (a) *Site* — Site-specific factors such as location, access, other contractors on site, unloading, hoisting and storage facilities, air-conditioning, heating, lighting and power supply, floor loading and security arrangements.
- (b) *Building* — Building-specific factors such as assessment of type and density of traffic, particulars of environmental and subfloor surface conditions or other potentially damaging conditions.
- (c) *Specifications* — Specifications for, or details of —
 - (i) the floor structure;
 - (ii) the damp-proof membrane and its location within the floor construction;
 - (iii) results from moisture testing and subsequent requirements for moisture barrier
 - (iv) screed curing and drying times;
 - (v) floor heating and cooling systems;
 - (vi) underlays/underlayments;
 - (vii) adhesives and accessories, including floor preservation treatments;
 - (viii) resilient floor coverings, including type, classification, supplier, dimensions and repeat pattern size (if applicable); and
 - (ix) subsequent maintenance of the resilient floor covering.
- (d) *Associated work* — Details of any associated work, including services embedded in or passing through the floor, skirtings and abutments, ducts and junctions with other adjacent floorings.
- (e) *Planning and procedures* — Details of the plans and procedures for the installation, including —
 - (i) total area, including landings and stairs;
 - (ii) number of stair treads and landings;
 - (iii) where direction of seams or direction of manufacture are outside normal practice; and
 - (iv) method of installation and seaming.
- (f) *Protection* — Details of the intended means of protection, including method of and responsibility for the protection of the stored resilient floor covering and the completed work and fabric of building.

- (g) *Storage* — The resilient floor covering and ancillary materials shall be stored to manufacturer's instructions.
- (h) *Time schedule* — A time schedule for the progress of the work in relation to other trades and services (see [Appendix D](#)).
- (i) *Time lapse before use* — Resilient floor covering adhesive shall be allowed to cure in accordance with the adhesive manufacturer's instructions prior to being subjected to concentrated foot and wheeled traffic.
- (j) *Floor covering plan* — Prior to the installation, the purchaser shall be supplied with a floor covering plan which includes the following:
 - (i) A scaled drawing or proportional sketch of the areas in which the installation shall take place.
 - (ii) All dimensions necessary for the installation in accordance with this document, recorded in millimetres and in a manner that enables them to be read from the bottom right-hand corner.
 - (iii) Where possible, all dimensions recorded inside the scaled drawing or proportional sketch.
 - (iv) The approximate position of all seams and cross joins.
 - (v) The manufacturer's description of the resilient floor covering, underlay/underlayment and accessories for the installation.
 - (vi) Safe work method statements, material safety data sheets, a description of the condition of the subfloor and details of the subfloor preparation required to obtain a substrate or finish that meets the requirement of [Clause 3.1.4](#).
 - (vii) Results from moisture testing and subsequent requirements for moisture abatement system.

2.2.3 Residential installations

The flooring contractor shall provide the following prior to installation:

- (a) The manufacturer's description of the resilient floor covering material, type of underlay/underlayment and, where appropriate, a description of accessories and fittings to be installed.
- (b) Necessary subfloor preparation in accordance with [Clause 3.1.4](#), where the condition of the subfloor can be practicably determined by the flooring contractor.
- (c) Results from moisture testing and subsequent requirements for moisture abatement system.

Section 3 Subfloors and underlays

3.1 Concrete subfloors

3.1.1 Construction

The surface of concrete subfloors shall be structurally sound to the building design specification and in accordance with building best practice.

NOTE AS 3600 is not an appropriate Standard for installation of resilient finishes as its specified tolerances for smoothness and planeness are too broad in scope.

3.1.2 Dryness

Before subfloor preparation is performed and a floor covering is laid on a concrete subfloor the dryness of the concrete shall be determined as described in [Appendix A](#).

3.1.3 Surface pH

Before subfloor preparation is performed and a floor covering is laid on a concrete subfloor the concrete surface pH shall be determined as described in [Appendix C](#).

3.1.4 Surface quality

The surface of a concrete subfloor shall be thoroughly checked for the following:

- (a) *Planeness* — Refer to manufacturer's planeness instructions. Where no manufacturer's instructions are supplied, and a straightedge 2 000 mm long is placed at rest at any two points over a 2 000 mm distance, no part of the surface shall be more than 4 mm below the straightedge.
- (b) *Abrupt deviation tolerance* — Where a straightedge 150 mm long is placed at any position at rest at two points on the surface, no abrupt surface deviation shall be more than 0.5 mm below the straightedge.
- (c) *Smoothness* — The surface shall be regular with no holes, lumps or sudden rise or fall and with homogenous appearance.
- (d) *Soundness* — The surface shall be without cracks, crazing, dusting, rain damage, spalling, efflorescence or blistering.

3.1.5 Surface preparation

Where subfloor repairs form part of the resilient installation contract, all grooves, holes and other concave imperfections shall be filled with a suitable cementitious material. Any ridges or protrusions likely to impair the subfloor surface shall be removed by mechanical means to achieve the required surface quality, see [Clause 3.1.4](#). Any filling or levelling materials used shall be allowed to dry and cure before floor coverings are laid.

Mechanical preparation equipment shall be fitted with effective dust collection devices suitable to capture silica dust, see [Clause 4.3](#). The prepared floor shall be vacuumed only and not swept.

Where a subfloor is so rough or uneven that it is unsuitable for the direct application of the resilient covering, corrective action should be taken (e.g. steel-trowelled underlayment).

Before laying operations begin, the following shall be removed from the subfloor by mechanical means, where present:

- (a) Materials such as grease, oil or paint.

- (b) Existing floor coverings and adhesive residue.
- (c) Curing or parting agents.
- (d) Any surface treatment, particularly oxides, markout paints, or wax crayons, which could adversely affect adhesion, or cause discolouration or any other detrimental effect.

3.2 Sand-cement Screed subfloors

Sand-cement screed subfloors shall not be used for the installation of resilient flooring and their preparation products. This form of subfloor does not possess the required tensile and compressive strength for resilient floor covering installation.

3.3 Engineered screed subfloors

In areas where falls to wastes are required, an engineered screed or an appropriate underlayment or repair mortar for that application in accordance with the dry mix powder manufacturer's instructions shall be used or the falls to waste may be formed in the actual concrete slab.

Where the resilient flooring is being installed where falls to waste are required the system installed shall conform to AS 3740.

An engineered screed may also be used for filling set-downs and in unbonded situations.

3.4 New concrete subfloors

3.4.1 General

The general requirements listed in [Clause 3.1](#) shall apply to new concrete subfloors.

3.4.2 Construction

A new concrete subfloor shall be constructed so as to remain free from rising moisture. When in contact with fill, hardcore, or the ground, slabs shall be protected from the entry of moisture by means of a continuous impermeable membrane in accordance with AS 2870. Concrete waterproofing additives and curing compounds shall not be used as replacements for a water-vapour-proof membrane.

Typically applied moisture suppression systems shall have a water vapour transmission rate measured to ASTM E96 of 10 g per m² or less in 24 h.

NOTE Testing of moisture barrier performance to E96 is a proof test for manufacturers to show the performance of the product. It is not intended to be a test for site installed products.

3.4.3 Dryness

3.4.3.1 General

The resilient covering shall be laid on a new concrete subfloor only after the concrete has cured and dried sufficiently as indicated by the test procedures described in [Appendix A](#).

If it is determined that the concrete subfloor is not sufficiently dry, resilient floor coverings can be installed over a compatible moisture suppression system, and any associated underlayments, in accordance with the flooring and product manufacturers guidelines.

3.4.3.2 Surface

New concrete subfloors on which floor preparation materials, and the resilient covering are to be laid without underlay, shall be finished to a smooth and porous surface. Burnished concrete surfaces,