

## 0651P FORBO IN RESILIENT FINISHES

**Branded worksection**

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**Worksection abstract**

This branded worksection *Template* is applicable to resilient sheet, tile and plank finishes, including Flotex flocked floor coverings by **Forbo Flooring Systems Australia**.

**How to use this worksection**

Customise this worksection *Template* for each project. See A guide to NATSPEC worksections ([www.natspec.com.au](http://www.natspec.com.au)) for information on *Template* structure, word styles, and completing a worksection.

**Related material located elsewhere in NATSPEC**

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

- 0315 *Concrete finishes* for substrates.
- 0383 *Decking, sheet and panel flooring* for substrates.
- 0541 *Access floors*.
- 0652 *Carpets*.
- 0654 *Multilayered board flooring* for hybrid modular flooring.
- 0656 *Floor sanding and finishing* for substrates.
- 0657 *Resin based seamless flooring*.
- 0802 *Hydraulic design and install* for fitting to floor wastes.

Related branded worksections include:

- 0652p *FLOTEX carpets*.

**Material not provided by Product Partner**

This worksection includes generic material which may not be provided by **Forbo Flooring Systems Australia**, including:

- Corklinoleum.
- Cork tiles.

**Documenting this and related work**

You may document this and related work as follows:

- Nominate the locations of finishes and finish abutments and control joints on drawings to your office documentation policy.
- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to verify availability.
- Hybrid modular flooring to AS 1884 (2021) is documented in 0654 *Multilayered board flooring*.

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search [acumen.architecture.com.au](http://acumen.architecture.com.au), the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.
- Polyvinyl chloride (PVC).

**Specifying ESD**

Forbo resilient materials never require resealing. Materials requiring resealing during their lifespan increase the negative environmental impact of the flooring. Materials with longer lifespans and warranties reduce environmental damage. Worn, aging or dirt-ridden flooring increase environmental damage. This is from labour, new protectant covering, micro-particles from worn surfaces and aging protectants, waste, recycling costs (& energy), and the environmental impact of replacement materials.

**Forbo Flooring Systems Australia** have the following sustainable product attributes:

- Recyclable.
- Low VOC emissions content.

- Extended warranty periods available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

Refer to Forbo Material Summary for further ESD attributes of flooring products.

The following may be specified by retaining default text:

- Natural and biodegradable flooring including linoleum, cork, corklinoleum and rubber.

The following may be specified by using included options:

- Scrap recycling, finishes with programs for recycling offcuts.

The following may be specified by including additional text:

- Recycled material, e.g. for PVC flooring.
- PVC finishes and adhesives low or no VOC emission.
- Sheets, tiles or planks tiles not requiring underlays or adhesives, reducing materials for installation.
- Programs for materials recyclable at the end of service life (available from Forbo Flooring Systems Australia).
- Regular cleaning & periodical maintenance program (provided by Forbo Flooring Systems Australia) to increase material life expectancy and reduce chemical use, improving user health and comfort.

Refer to NATSPEC TECHreport TR 01 on specifying ESD.

## 1 GENERAL

Forbo Flooring Systems is a global manufacturer of premium commercial and residential floor coverings. All materials are designed, engineered, and manufactured within our own 100% green energy European facilities. An extensive and attractive range of environmentally friendly linoleum, high-quality vinyl flooring & LVT, entrance flooring systems, carpet tiles, needlefelt and Flotex flocked flooring is provided globally through our local service and distribution operations.

### 1.1 RESPONSIBILITIES

#### General

Requirement: Provide Forbo resilient floor finishes and underlays to substrates, as documented.

*Documented* is defined in *0171 General requirements* as meaning contained in the contract documents.

### 1.2 COMPANY CONTACTS

#### FORBO Flooring Systems technical contacts

Website: [www.forbo.com/flooring/en-au/contact-us/](http://www.forbo.com/flooring/en-au/contact-us/).

### 1.3 CROSS REFERENCES

#### General

Requirement: Conform to the following:

- *0171 General requirements*.

*0171 General requirements* contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. *0171 General requirements* references the *018 Common requirements* subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

### 1.4 STANDARDS

#### General

Installation: To AS 1884 (2021).

#### Slip resistance

Classification: To AS 4586 (2013).

See NATSPEC TECHnote DES 001 on slip resistance performance.

### 1.5 MANUFACTURER'S DOCUMENTS

#### Technical manuals

Product information: [www.forbo.com/flooring/en-au/products/](http://www.forbo.com/flooring/en-au/products/).

Manuals: [www.forbo.com/flooring/en-au/downloads/p93rgu](http://www.forbo.com/flooring/en-au/downloads/p93rgu).

## 1.6 INTERPRETATION

### Definitions

General: For the purposes of this worksection, the definitions given in AS 1884 (2021) and the following apply:

- Acoustic underlay: A resilient material laid between the subfloor and the flooring material to provide sound isolation.
- Flotex (Flock Textiles): A waterproof hard wearing carpet-like textile with a resilient base.

For use within education, health, aged care, retail. It is an hygienic, 100% waterproof and easy to clean floor covering, without any of the drawbacks of traditional textile floor covering. It has a velour like surface that is comfortable to walk on, warm underfoot and with excellent slip resistant and acoustic properties.

- Resilient floor coverings classification: To EN ISO 10874 (2012).

- EN ISO 10874 (2012) classifies resilient floor coverings by level of use for domestic, commercial and industrial applications.

- Substrate: The surface to which a material or product is applied.
- Underlay: A non-structural layer of rubber, cork, plywood or in situ levelling compound to provide a smooth and flat surface for flooring installation. Rubber and cork underlays have acoustic sound absorbing properties.

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

## 1.7 SUBMISSIONS

### Certification

General: Submit a certificate of conformance for static dissipative and static conductive floor installations.

### Fire performance

Fire hazard properties: Submit evidence of conformity to PRODUCTS, **FIRE PERFORMANCE**, **Fire hazard properties**.

### Operation and maintenance manuals

Requirement: Submit manual to **COMPLETION**, **Operation and maintenance manuals**.

### Products and materials

Manufacturer's data: Submit the manufacturer's product data sheets for each type of finish, and the manufacturer's recommendations for its application including the following, as appropriate:

- Thickness and width of sheet, or size of tile or plank.
- Adhesive and jointing method.
- Resistance to wear, indentation, chemicals, light and fire.
- Flexibility and bending strength.

Type tests: Submit results, as follows:

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in SELECTIONS or PRODUCTS, when there are no SELECTIONS.

- Slip resistance to AS 4586 (2013).

Forbo can provide all necessary technical material and support documents including manuals, installation guides, warranty forms, technical papers, Slip and Fire Safety tests, Cleaning and maintenance guides.

Evidence of delivery: Submit delivery docket as evidence of delivery of [complete/delete]

If evidence of delivery to site is required for particular products, consider including this *Optional* style text by changing to *Normal* style.

### Samples

If the specification does not state selected properties such as colour and texture, the effect of this clause is to require the submission of samples covering the full range of those properties. The specification should define the item with enough precision, either by description, or by reference to preselected samples, or as a proprietary item, to allow the contractor to identify and price it. Where the covering is specified as a proprietary item, use this clause as a means of confirmation.

Range: Submit labelled samples of resilient finishes illustrating the range of colour, pattern or texture of the product.

Minimum size per sample:

- Sheets: 300 x 200 mm.
- Tiles: A whole tile or 0.09 m<sup>2</sup>, whichever is the greater.
- Planks: A whole plank.
- Linear accessories, including coving, skirting, stair nosing and protection strips: 300 mm long.
- Welded joints: 300 mm long.

Identification: Label each sample with brand, product name and manufacturer's code reference, including the code for each coat of multi-coat work.

Sample panels: Provide sample panels as follows:

- Location: [complete/delete]
- Size (mm): [complete/delete]

Call for sample panels only when large areas are specified. Delete if not required.

### Subcontractors

General: Submit names and contact details of proposed suppliers and installers.

Delete if supplier/installer details are not required. Contact Forbo Flooring Systems Australia for preferred installers.

Substrate acceptance: Submit evidence of installer's acceptance of the flooring substrate before starting installation.

### Tests

Detail the tests required in PRODUCTS or EXECUTION, as appropriate, and list the submissions required here.

Site tests: Submit results, as follows:

- Moisture content test.
- Surface pH test.
- Electrical resistance test.
- Slip resistance test of completed installation.

If on-site slip resistance tests are documented, include this *Optional* style text by changing to *Normal* style text.

### Warranties

Requirement: Submit warranties to **COMPLETION, Warranties**.

## 1.8 INSPECTION

### Notice

Inspection: Give notice so that inspection may be made of the following:

- Substrate immediately before fixing resilient finishes or underlay.
- Trial set-outs before execution.
- Completed underlay, if any.
- Finished surface before applying sealers or polishes, if any.
- Completed installation.

Amend to suit the project adding critical stage inspections required.

**Hold points**, if required, should be inserted here.

## 2 PRODUCTS

### 2.1 GENERAL

#### Product substitution

Other products: Conform to **SUBSTITUTIONS** in 0171 *General requirements*.

**SUBSTITUTIONS** in 0171 *General requirements* sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

#### Storage and handling

Requirement: Store and handle to FORBO's recommendations, including:

- Store sheet rolls standing up.
- Store packs of tiles and planks on a level and dry surface.

**Product identification**

General: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

**2.2 FIRE PERFORMANCE****Fire hazard properties**

Critical radiant flux (CRF): Tested to AS ISO 9239.1 (2003).

Non-sprinklered buildings: The flooring finish must have maximum *smoke development rate* of 750 percent-minutes tested to AS ISO 9239.1 (2003).

Refer to NATSPEC TECHnote DES 020 for further information on fire hazard properties.

**2.3 FORBO NON-POLYMER (NIL PVC) LINOLEUM FLOOR COVERINGS****Forbo Marmoleum Sheet**

Description: Natural homogenous sheet linoleum flooring comprising a predominant layer of linoleum, an intermediate layer of reused linoleum and a carrier layer of natural woven jute.

Application: Marmoleum is naturally bacteriostatic and anti-allergen, for life, without additives; making it suitable for spaces where user health and well-being is critically important. Including all general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing, industry and sport.

Available in a range of design structures and colours, including Marbled, Linear, Walton, Slate, Piano, Concrete, and Cocoa (with real cacao husks). Acoustic and ESD versions are available. Suitable for complex bespoke design requirements using aquajet and dye-cutting technologies.

Sustainable product attributes:

- 97% natural raw materials, 70% of which renewable, 43% recycled content.
- Manufactured using 100% green electricity.
- CO<sub>2</sub> Neutral (Cradle to Gate).
- TVOC 0.16 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 614 low VOC linoleum adhesive.
- 10 year standard warranty or 21 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

**Forbo Marmoleum Modular Tiles and Planks**

Description: Natural homogenous linoleum flooring comprising a predominant layer of linoleum, an intermediate layer of reused linoleum and a carrier layer of woven polyester backing.

Application: Marmoleum is naturally bacteriostatic and anti-allergen, for life, without additives; making it suitable for spaces where user health and well-being is critically important. Including all general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing, industry and sport.

Available in various sizes and designs, the tiles and planks are created around visuals of wood, concrete, stone and marble.

Sustainable product attributes:

- Up to 88% natural raw materials, 76% of which renewable, 58% recycled content.
- Manufactured using 100% green electricity.
- CO<sub>2</sub> Neutral (Cradle to Gate).
- TVOC 0.16 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 614 low VOC linoleum adhesive.
- 10 year standard warranty or 21 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

**Forbo Marmoleum Sport Sheet**

Description: High performance homogeneous linoleum sheeting designed for professional sporting facilities.

Application: Sporting facilities (including professional sports facilities), schools and leisure centres.

Marmoleum Sport belongs to the category of area-elastic sports floor constructions and complies with EN 14904 (2006) and DIN V 18032-2 (2001). Area-elastic floors minimise the risk of injury. Refer to EN 12235 (2013) (ball rebound), EN 13036-4 (2011) (sliding coefficient of friction), EN 14808 (2005) (shock absorption) and EN 14809 (2005) (vertical deformation) for additional information on synthetic sporting surfaces.

The 13 colours are based on colour patterns commonly applied in sports halls. The colours can be combined to add accented shapes in the floor and are dirt concealing.

## 2.4 FORBO HOMOGENEOUS FLOOR COVERINGS

Homogeneous floor coverings have a solid colour and design pattern throughout making them easier to repair if scratched, gouged or damaged. Homogeneous floor coverings are very flexible, easily coved and shaped around complex curves.

### Forbo Sphera

Description: Homogeneous sheet vinyl flooring with an embossed surface with high light reflectance value (LRV) and high resistance to chemicals, scratches and stains.

Application: All general and high traffic areas; Education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing, industry and sport.

Sustainable product attributes:

- TVOC < 0.5 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Allura Colour Plus

Description: High density homogenous pressed interlocking flooring tile with a honeycomb substrate and hidden dovetail connectors for adhesive free fixing.

Application: Retail, offices, education, public buildings leisure, hospitality, and retail.

Quick installation as adhesive not required in most circumstances.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Loose-lay interlocking floating tile system – no adhesive.

### Forbo Onyx+

Description: Durable vinyl wall covering.

Application: Commercial applications such as wet areas of health facilities, nursing homes, and seniors residences. For high use (including trolleys and moving equipment) areas in industry, public, retail, leisure and hospitality buildings.

## 2.5 FORBO HETEROGENEOUS FLOOR COVERINGS

Heterogeneous floor coverings provide a range of design structures usually incorporating a digital print layer, a hard-wearing clear overlay, eliminating the need for resealing over its life, and improved stability and strength with substrate reinforcement. Surfaces can also be embossed.

### Forbo Eternal General Purpose Vinyl

Description: Durable general purpose heterogeneous vinyl sheet with a hard-wearing clear 0.7 mm PUR wear layer.

Application: All general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing and general industry.

Available range includes Design (timber, stone and all over visuals), Textile, Deluxe, Smaragd (original), HD Digital print, including bespoke design.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Allura Puzzle

Description: Puzzle-like interconnectable 96 cm x 96 cm vinyl tiles designed for adhesive free installation and easy re-use.

Application: All high traffic areas; retail, pop-up displays, education, public buildings, commercial offices, leisure and hospitality, retail, and general industry.

Can be laid directly over existing resilient flooring and requires minimal subfloor preparation. Dimensional stability and strong puzzle-like connection make the tiles ideal for high traffic areas up to 500 m<sup>2</sup> without transition.

Installation time can reduce by over 50% and easy to remove, re-use and recycle.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Loose-lay interlocking floating tile system – no adhesive.

## 2.6 FORBO ACOUSTIC FLOOR COVERINGS

Acoustic floor coverings of robust surface materials combined with an inbuilt underlay for improved acoustic performance by lowering impact noise.

### Forbo Marmoleum Acoustic

Description: Environmentally sustainable linoleum acoustic floor covering of Marmoleum with a laminated Corkment insulating layer.

Application: Reception areas, corridors, libraries and multi-level buildings, education, childcare and healthcare centres.

Achieves a 14 dB impact sound reduction.

### Forbo Marmoleum Decibel

Description: Linoleum acoustic floor covering of Marmoleum with a laminated polyfine film insulating layer.

Application: Reception areas, corridors, libraries and multi-level buildings, education, childcare and healthcare centres.

Achieves a 17 dB impact sound reduction.

### Forbo Allura Flex

Description: Heterogeneous acoustic modular vinyl tiles and planks.

Application: Multi-unit residential, education, public buildings, leisure and hospitality, and general industry where the reduction of impact noise pollution is required.

Achieves an acoustic value of  $L_{nTW}$  44 with a 200 mm thick concrete slab and a 100 mm ceiling space.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Eternal de Luxe Decibel

Description: Durable heterogeneous acoustic vinyl sheet flooring with a PUR top-coat finish.

Application: All general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing and general industry.

Achieves a 17 dB impact sound reduction.

Available in wood and stone effects emulating LVT planks.

### Forbo Sarlon (15 dB and 19 dB)

Description: Heterogeneous acoustic vinyl sheet flooring with XtremPUR™ surface protection.

Application: All general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing and general industry.

Achieves a 15 dB or 19 dB impact sound reduction. Document in the **FORBO resilient flooring schedule**.

Sustainable product attributes:

- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Modul'up 19 dB

Description: Loose laid heterogeneous acoustic vinyl sheet flooring with XtremPUR™ surface protection, designed for adhesive free installation and easy removal.

Application: All general and high traffic areas; education, aged care, healthcare, public buildings, commercial offices, leisure and hospitality, retail, community and social housing and general industry.



Sustainable product attributes:

- Loose-lay system – no adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

## 2.7 FORBO SAFETY VINYL FLOOR COVERINGS

Safety vinyls are engineered and constructed to maintain required slip resistance rating, for life. Various slip resistance ratings are achieved through the use of embedded particles.

### Forbo Surestep Safety Vinyl (R10)

Description: Slip resistant vinyl sheet flooring with Step Crystals.

Slip resistance classification: R10/P3.

Application: Public bathrooms and toilets, change rooms, wet areas, cafes, food outlets, canteens, and undercover concourse areas.

Step crystals provide a clean look and improved cleaning and maintenance properties.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Safestep Safety Vinyl (R11 and R12)

Description: Slip resistant vinyl sheet flooring, with a PUR Pearl coating, for cleaning, maintenance and hygiene requirements.

Slip resistance classification: R11/P4 and R12/P5.

Application: Internal covered ramps, serving areas within kitchens, cafes, industrial and food technology learning environments where a R11/P4 slip resistance classification is required. Use R12/P5 classification where slippery liquids may spill, such as commercial kitchens and loading docks.

PUR Pearl coating provides for easy cleaning and maintenance, meeting hygiene requirements.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Surestep Star Barefoot

Description: Slip resistant vinyl sheet flooring, with a PUR Pearl coating and a fine structured surface consisting of slip resistant particles and contrasting coloured chips.

Slip resistance classification: R10/P3 and Barefoot Class B.

Application: Public and hotel bathrooms and toilets, change rooms, wet areas, cafes, food outlets, canteens, and undercover concourse areas.

Combines barefoot and footwear slip resistance. Offers brighter visual with holographic particles colour matched to the terrazzo or natural base colour.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Surestep Laguna

Description: Slip resistant vinyl sheet flooring with barefoot and footwear slip resistance.

Slip resistance classification: R10 and Barefoot Class B.

Application: Public, hotel, and aged care bathrooms and toilets, change rooms and wet areas.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.



- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Safestep Aqua

Description: Slip resistant vinyl sheet flooring with increased barefoot and footwear slip resistance.

Slip resistance classification: R10 and Barefoot Class C.

Application: Public, hotel, and aged care bathrooms and toilets, change rooms and wet areas.

Sustainable product attributes:

- TVOC 0.3 mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

## 2.8 FORBO ELECTROSTATIC DISCHARGE (ESD) FLOOR COVERINGS

ESD vinyl flooring is for use within specific work environments where ESD (electrostatic discharge) can be detrimental to the health and well-being of people, sensitive electric and electronic equipment, or stored materials. Specialised machinery may require various ohms ratings. Refer to the machinery manufacturer to determine requirements.

### Forbo Ohmex

Description: Linoleum sheet flooring with conductive properties providing ESD control, with electrical resistance improved to  $< 1 \times 10^8 \Omega$ , to EN 1081 (2018).

Application: Pharmaceutical, medical technology, I.T, specialised industry including electronics, biotechnology, medical facilities, and healthcare facilities where sensitive equipment is used, and where high levels of static discharge are expected and/or unacceptable to users.

### Forbo Sphera SD

Description: Static dissipative homogenous sheet vinyl flooring with conductive properties providing ESD control.

Electrical resistance (SD):  $1 \times 10^6 \Omega$  -  $1 \times 10^8 \Omega$  to EN 1081 (2018).

Application: Pharmaceutical, medical technology, I.T, specialised industry including electronics, biotechnology, medical facilities, and healthcare facilities where sensitive equipment is used, and where high levels of static discharge are expected and/or unacceptable to users.

Sustainable product attributes:

- TVOC  $< 0.5$  mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Sphera EC

Description: Electrostatic conductive homogeneous sheet vinyl flooring with conductive properties providing ESD control.

Electrical resistance (EC):  $\leq 1 \times 10^6 \Omega$ .

Application: Pharmaceutical, medical technology, I.T, specialised industry including electronics, biotechnology, medical facilities, and healthcare facilities where sensitive equipment is used, and where high levels of static discharge are expected and/or unacceptable to users.

Sustainable product attributes:

- TVOC  $< 0.5$  mg / m<sup>2</sup> / hr.
- Hard-set fixed using Eurostar 640 low VOC adhesive.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Colorex SD

Description: Static dissipative homogeneous flooring tile providing ESD control.

Electrical resistance (SD):  $1 \times 10^6 \Omega$  -  $1 \times 10^8 \Omega$ .

Body voltage generation (ESD shoes):  $\leq 40$  V.

Application: Suited to raised access floor systems, use within clean rooms and demanding production sites including electronics, biotechnology, medical facilities and manufacturing industries.

Available in 'Signal' bright yellow, red and green for improved spatial identification.

Sustainable product attributes:

- Hard-set fixed using 615 Eurostar EL low emissions conductive adhesive + 801 Copper strip.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Colorex EC

Description: Electrostatic conductive flooring tile providing ESD control.

Electrical resistance (EC):  $\leq 1 \times 10^6 \Omega$ .

Body voltage generation (ESD shoes):  $\leq 20 \text{ V}$ .

Application: Suited to raised access floor systems, use within electronics, biotechnology, medical facilities and manufacturing industries.

Sustainable product attributes:

- Hard-set fixed using 615 Eurostar EL low emissions conductive adhesive + 801 Copper strip.
- 10 year standard warranty or 15 year extended warranty available where Forbo good design practice is employed; including the use of appropriate entrance matting systems to protect the interior flooring.

### Forbo Colorex Plus

Description: High performance, electrostatic conductive, modular flooring tile providing ESD control with a honeycomb substrate and hidden dovetail connectors for adhesive free fixing.

Electrical resistance (EC):  $\leq 1 \times 10^6 \Omega$ .

Body voltage generation (ESD shoes):  $\leq 20 \text{ V}$ .

Application: Suited to raised access floor systems where extensive subfloor preparation and downtime is an issue.

Available options:

- Colorex Plus EC: Electrostatic conductive (EC) option suitable for pharmaceutical and manufacturing industries.
- Colorex Plus R10: Slip resistant option suitable for electronics and manufacturing industries and shops.
- Colorex Plus Basic: Basic option for stores and warehouses.

Sustainable product attributes:

- Loose-lay interlocking floating tile system without adhesives allows for easy removal and upcycling elsewhere.

## 2.9 FORBO TEXTILE FLOOR COVERINGS

### Forbo Flotex

Description: A carpet-like textile floor covering comprising a densely flocked surface of nylon 6.6 fibres bonded to an impervious and resilient closed-cell reinforced vinyl base.

Flotex combines the practicality of a resilient flooring with the slip resistant and acoustic properties usually associated with textiles. It is strong, hygienic and washable. It is available as sheet, tile or plank.

Application: Any commercial specification.

### Antimicrobial, insect and stain resistance treatment

Requirement: Not required.

Flotex is inert and requires no antimicrobial barrier, it is also 100% insect resistant. Flotex requires no treatment to improve stain resistance. The nylon 6.6 fibres with impervious base naturally repel soiling and is significantly stain resistant without the use of chemicals. Certified by the British Allergy Foundation.

### Electrostatic propensity

Maximum electrostatic propensity value: 2.0 kV at a relative humidity of 25% to AATCC TM 134 (2019).

May be required for projects over 5000 m<sup>2</sup> in area. This is important for preventing personal discomfort and equipment damage due to static electricity in floors where computers are located.

### Slip resistance

Classification: R12/P5.

### Total VOC

Total VOC emission tested to ISO 10580 (2010):  $< 0.5 \text{ mg/m}^2/\text{h}$ .

The maximum total VOC emission limit recommended by the Green Building Council of Australia (GBCA) is  $0.5 \text{ mg/m}^2/\text{h}$ .

**FORBO underlays****Sarlibase Acoustic**

Description: A resilient PVC acoustic underlay incorporating a glass fleece reinforcement and foam backing.

Thickness: 2 mm.

Sarlibase Acoustic provides additional acoustic performance by increasing sound reduction values. It also significantly improves shock absorption by 70%+ (with Flotex; value = 19.7%) for use within indoor play areas.

**Sarlibase TE**

Description: An impervious loose lay underlay consisting of a glass fibre scrim, a vinyl top surface with foam backing.

Thickness: 1.5 mm.

Sarlibase TE is an impervious loose lay underlay for use over damp or contaminated subfloors.

**Quickfit**

Description: A self-adhering, floating MDF board and foil covered foam substrate system.

Thickness: 11 mm, consisting of 7 mm cross-bonded boards and 4 mm impervious closed-core polypropylene foam.

Quickfit subfloor system is a loose lay system requiring little or no sub-floor preparation and provides its own moisture barrier. It can be overlaid onto heritage flooring to permanently protect it and can be used to replace cementitious, hardwood ply, or fibreboard underlays. It provides additional acoustic performance (increased impact sound reduction) and shock absorption.

**Corkment**

Description: A cork based acoustic underlay.

Corkment is an all-natural underlay providing impact sound reduction. Available in 2 mm and 3.2 mm thicknesses. Corkment provides increased acoustic performance without reducing wear or heavy traffic performance especially where heavy trolleys are being deployed.

**2.10 OTHER UNDERLAYS**

Traditional underlays may be necessary and should be considered in conjunction with Forbo Sub-floor solutions. Seek advice from Forbo for specific applications.

A thin cementitious type underlay may be used as an isolating barrier of known electrical resistance beneath antistatic or conductive flooring if required. Other special underlay systems are available for the reduction of impact noise, these may be laid directly on the substrate or over an isolation pad or board, an embedded reinforcing mat is usual. Consult manufacturer of underlay and Forbo for compatibility and installation requirements.

**Cementitious**

General: Polymer modified cementitious smoothing and self-levelling compound.

Thickness: 3 mm minimum.

Use to correct the substrate. Avoid a feather edge that may curl, by cutting back for a 3 mm minimum thickness. Delete if not appropriate.

**Fibre cement underlay**

Standard: To AS/NZS 2908.2 (2000), Type B, category 2 minimum.

Thickness: 5 mm minimum.

**Wet process fibreboard (hardboard) underlay**

Standard: To AS/NZS 1859.4 (2018).

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

**2.11 MOISTURE BARRIER****FORBO Eurocol**

Description: Two-part water based epoxy sealer.

For use where Quickfit or Sarlibase TE underlays are not used and if testing to AS 1884 (2021) shows the moisture content of the substrate exceeds the requirements of AS 1884 (2021) or the flooring or adhesive manufacturer's recommendations. Forbo have a range of moisture barrier solutions through the Eurocol range. Delete if not required. See NATSPEC TECHnote DES 008 on the preparation of concrete substrates.

## 2.12 ADHESIVES

### FORBO adhesives

Eurocol 540 Eurosafe Special: An acrylic liquid adhesive.

Provides a high initial grab for resilient sheet flooring.

Eurocol 614 Lino Plus: A low emissions linoleum adhesive.

A very low emission acrylic liquid adhesive providing a high initial grab for linoleum sheet flooring.

Eurocol 615 Lino EL: A low emissions conductive linoleum adhesive.

A special adhesive for Marmoleum Ohmex used in conjunction with copper earthing strips required for antistatic and conductive applications. Seek advice and refer to detailed installation guide. If alternative products are documented, consult with the supplier for more information, guidance and warranty conditions.

Eurocol 640 Eurostar Special: A low emission acrylic liquid adhesive.

A very low emission acrylic liquid adhesive providing a high initial grab for resilient sheet flooring.

Eurocol 641 Eurostar Special EL: An ESD floorcovering adhesive.

A special adhesive and the use of copper earthing strips are required for antistatic and conductive applications. Seek advice and refer to detailed installation guide. If alternative products are documented, consult with the supplier for more information, guidance and warranty conditions.

## 2.13 SHEETS, TILES AND PLANKS

### Cork tiles

Standard: To EN 12104 (2023).

Most of the cork tiles imported from Portugal are 305 x 305 mm square. Cork is not suitable for very heavy wear although densities over 450 kg/m<sup>3</sup> may be available for heavy contract use.

### Linoleum

Standard: To EN ISO 24011 (2012).

### Corklinoleum

Standard: To EN 688 (2011).

### Polyvinyl chloride (PVC)

Resilient floor covering, homogeneous: To EN ISO 10581 (2020).

Resilient floor covering, heterogeneous: To EN ISO 10582 (2018).

Resilient floor covering, jute or polyester felt backing: To EN 650 (2012).

Resilient floor covering, with foam layer: To EN 651 (2011).

Resilient floor covering, with particle based enhanced slip resistance: To EN 13845 (2017).

Resilient floor covering, semi-flexible polyvinyl chloride tiles: To EN ISO 10595 (2012).

Proprietary PVC products will generally be imported and conform to overseas standards. See also NATSPEC TECHnote DES 001 on slip resistance. Consult the manufacturer on suitability for service conditions, especially for severe conditions such as underfloor heating or high humidity.

### Inlaid vinyl sheet

General: A layer of vinyl chips inlaid in a translucent vinyl matrix, bonded to a moisture resistant backing.

## 2.14 OTHER MATERIALS

### Tactile ground surface indicators

Standard: To AS/NZS 1428.4.1 (2009).

The NCC cites AS 1428.4 (1992) and AS/NZS 1428.4.1 (2009). The current edition is AS/NZS 1428.4.1 (2009).  
Delete if none required.

## 3 EXECUTION

### 3.1 GENERAL

#### Subcontractors

Requirement: Use specialist installers recommended by the material manufacturers.

Contact FORBO for recommended installers throughout Australia.

### 3.2 PREPARATION

#### Substrates

General: To AS 1884 (2021) Section 3.

Where substrate conformance is difficult to achieve, use Forbo Quickfit sub-floor system to resolve flatness issues, moisture, surface contaminants and prior treatments, raised areas or ridges, cracks or gaps, pH problems, or to overlay existing timber flooring or where an existing floor (including timber and tiles) must be protected.

#### Substrate tolerance table

Property	Length of straightedge laid in any direction	Max. deviation under the straightedge
Planeness	2000 mm	4 mm
Abrupt deviation tolerance	150 mm	0.5 mm

Planeness tolerance class: Nominate Class A in the **Flatness tolerance class table** in *0315 Concrete finishes* and **TOLERANCES** in *0612 Cementitious toppings* for locations where resilient finishes locations are to be installed, as appropriate for the project. It is assumed smoothness and projection tolerance corrections form part of substrate preparation.

#### Concrete substrates

Refer to NATSPEC TECHnote DES 008 on the preparation of concrete substrates. Refer also to *CCAA Data Sheet on Moisture in concrete and moisture-sensitive finishes and coatings (2007)*.

Requirement: Do not start installation of the resilient finishes until the concrete substrate conforms to AS 1884 (2021) clause 3.1 and the adhesive and resilient finish manufacturers' recommendations.

AS 1884 (2021) sets out minimum requirements for moisture content surface pH, and surface quality of the concrete substrate, which should be determined by inspection and testing. The manufacturer's recommendations may exceed these requirements. This worksection requires submission of test results.

Substrate rectification: Conform to the following:

- Surface treatments: Mechanically remove any incompatible surface treatments, including the following:
  - . Sealers and hardeners.
  - . Curing compounds.
  - . Waterproofing additives.
  - . Surface coatings and contamination.

The application of solvent based spray paint and markers during construction should be avoided as these products may cause bleed through to resilient finishes laid on concrete floors.

- Surface quality: Remove projections and fill voids and hollows with a smoothing and self-levelling compound compatible with the adhesive. Allow filling or levelling compound to dry to manufacturer's recommendations.

**Moisture content rectification: Provide a moisture barrier to the flooring manufacturer's recommendation.**

If a moisture barrier or moisture suppression system is permitted, consider including this *Optional* style text. Changes in the design mix of concrete, admixtures and concrete surface finishing techniques, and low VOC adhesives have contributed to increased failure of resilient finishes. Consult the flooring manufacturer.

Cleaning: Remove loose materials or dust.

#### Timber, plywood, particleboard and fibre cement sheet substrates

Requirement: Do not start installation of the resilient finishes until the timber, plywood, particleboard and fibre cement substrate conforms to AS 1884 (2021) clause 3.6.

Substrate rectification: Remove projections. If conformance to the **Substrate tolerance table** cannot be achieved, provide an underlay in brick pattern with joints avoiding substrate joints.

Cleaning: Remove oil, grease, traces of applied finishes and loose materials or dust.

#### Working environment

General: Do not start work before the building is enclosed, wet work is complete and dry, overhead work is complete and good lighting is available. Protect adjoining surfaces.

**Conditioning**

Conditioning of floor covering and subfloor: To AS 1884 (2021) clause 4.1 and manufacturer's recommendations.

**Trial set-out**

General: Prepare a trial tile and plank set-out to each area.

Delete if not required.

**3.3 TESTING****Moisture content tests**

General: Test substrate for suitability for the installation of resilient floor coverings to AS 1884 (2021) Appendix A.

- Maximum relative humidity of concrete: To AS 1884 (2021) Appendix A3.2.
- Moisture content of timber, plywood and particleboard subfloors: To AS 1884 (2021) Appendix A3.3.

Forbo can offer a range of options that can be used on concrete slabs with a moisture content greater than the maximum allowed by AS 1884 (2021), or that require a moisture content less than the maximum allowed by AS 1884 (2021). This includes use of Quickfit underfloor system or Sarli TE underlay.

**Surface pH tests**

General: Test concrete subfloor for suitability for the installation of resilient floor coverings to AS 1884 (2021) Appendix C.

- Maximum pH: 10.

Testing of pH should be carried out after any surface grinding. Freshly exposed concrete has high alkalinity and problems have been encountered overseas. Forbo can offer a range of options to resolve onsite issues.

**Electrical resistance tests**

Electro-static discharge, static dissipative and electro-static conductive floors: Test installation to the recommendations of AS 1884 (2021) Appendix G. Do not carry out point-to-ground electrical resistance tests earlier than 14 days after installation. Make first random control measurements 24 hours after installation.

Electrical resistance readings may be higher than specified on floor covering coated with wax, acrylic emulsions etc.

**Slip resistance tests**

Slip resistance of completed installation: To AS 4663 (2013).

If on-site slip resistance tests are required in addition to type tests, consider including this *Optional* style text by changing to *Normal* style text. Site testing is expensive. See NATSPEC TECHnote DES 001 on slip resistance.

**3.4 INSTALLATION****General**

Requirement: To AS 1884 (2021) Section 5 and FORBO's published installation procedures and recommendations.

Where a complex, bespoke aquajet or digital print design is to be installed, provide a detailed layout plan. Forbo can provide specialist consultant services and installers to assist.

Fixtures: Remove door stops and other fixtures, and refix in position undamaged on completion of the installation. Make sure fixings penetrate substrate and are stable.

Partitions: Make sure all internal partitions have been installed prior to laying flooring.

**Batching**

Requirement: In a single area and for each documented type, quality, or colour, use floor covering from one manufacturing batch and dye lot, with roll ID's that are consecutive or close to consecutive.

**Sheet set-out**

General: Set out sheets to give the minimum number of joints. Position joints away from areas of high stress. Run sheet joints parallel with the long sides of floor areas, vertically on non-horizontal surfaces.

**Tile set-out**

General: Set out tiles from centre of room. If possible, cut tiles at margins only to give a cut dimension of at least 100 mm x full tile width. Match edges and align patterns.

Amend text if tile layout and joints have been documented.

Direction: Install tiles in the documented direction using the directional arrows on the backing.

Document the required direction of the tiles on the drawings.

Patterns, designs and inlays: As documented.

Bespoke designs and patterns are possible and must be documented on the drawings or detailed by Forbo Floor Systems Australia.

### Plank set-out

General: Set out planks from centre of room. Align patterns, texture and grain in one direction.

Direction: Install planks in the documented direction using the directional arrows on the backing.

Document the required direction of the planks on the drawings. Options for the direction of the plank installation will vary between product designs. Consult with Forbo Flooring Systems Australia, if required.

Patterns, designs and inlays: As documented.

Bespoke designs and patterns are possible and must be documented on the drawings or detailed by Forbo Flooring Systems Australia.

### Edges

General: Make sure edges are firm, unchipped and machine-cut accurately to size and square to the face, and that edges are square to each other before installation.

Where aquajet cut designs are included within the installation, check that all adjoining edges align

### Expansion joints

General: Refer to FORBO's recommendations for joint widths, and area and length limitations.

### Joints

Non-welded: Butt edges together to form tight neat joints showing no visible open seam.

Delete if joints are welded.

Doorways: Where changes of floor finish occur at doorways, locate the joint on the centreline of the door leaf in the closed position.

If the floor finish is to be divided into bays, specify here the bay size, dividing strip or joint filler.

### Junctions

General: Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

### Rolling

General: Roll the finish in multiple directions before the adhesive sets and to FORBO's recommendations.

### Change of finish

General: Maintain finished floor level across changes of floor finish including carpet.

### Cleaning

General: Keep the surface clean as the work proceeds.

### Scrap recycling

General: Retain scraps to return to Forbo Flooring Systems Australia for recycling.

Forbo Flooring Systems Australia will assist with recycling of site scrap of Forbo products.

## 3.5 TILING

### Vinyl tiles and planks

Laying: Lay as follows:

- Loose lay: Interlock tongue and groove edges of rigid planks. Tap down with rubber mallet.
- Adhesive fix: Apply acrylic adhesive over whole subfloor surface.

### Cork tiles

Laying: Provide a water-based latex adhesive. Do not use pins.

Finishing: Sand after laying.

Cork tiles can be sealed or given a clear finish. Two-pack polyurethane will give the floors a harder finish with some loss of resilience. Coordinate with 0671 Painting.

### FORBO resilient tile flooring

Laying: Dry lay tiles before installation. Lay tiles in stretcher bond. Match edges and align joints.



Stretcher bonding, where each alternate tile is laid so that the end of the adjacent tile is in the centre of the ones on either side of it, reduces the possibility of the tiles lifting at the point where the four corners join.

### 3.6 SHEETING

#### Laying sheets

Requirement: To AS 1884 (2021) Section 5 and to FORBO's recommendations.

#### Butt joints

Linoleum sheets: Scribe sheet edges neatly and provide any requirements for expansion, to FORBO's requirements. Roll seams with heavy roller.

Refer to FORBO instructions for butt jointing of FORBO Marmoleum (linoleum). Due to its non-PVC construction, a butt joint (no adhesive or weld) is preferred. Welding Marmoleum joints is unnecessary, increases installation time, impacts the environment (labour process) and detracts from its design aesthetic. Welding Marmoleum joints does not improve its bacteriostatic properties or other health benefits.

#### Welded joints

Thermal welding: After fixing, scribe and groove the seams to the required depth, using the manufacturer's recommended grooving tool and weld the joints with matching or contrasting weld rod using a hot air welding gun. When the weld has cooled, trim off flush with surface.

Thermal welding was developed specifically for homogeneous sheet. It may be used for vinyl chip sheet but will be more conspicuous than cold welding and will not have the same strength as heat welding in homogeneous sheet. Refer to FORBO instructions for the welding of joints to FORBO Marmoleum (linoleum).

Chemical welding: Apply seaming compound 100 mm wide to the substrate centrally under the seam to the manufacturer's requirements, until the compound is forced up into the joint. Clean off flush with a damp cloth.

Is less conspicuous and may be preferable for that reason. Document welding type in SELECTIONS Schedules.

Epoxy jointing: Join seams with epoxy adhesive.

For slip-resistant vinyl sheet.

#### Conductive flooring

General: Install conductive sheet on a copper grid comprising copper tape 80 µm thick x 10 mm wide adhered to the floor with conductive adhesive to the manufacturer's requirements. Lay copper tape along each length of sheet and connect it at right angles to a 1 MΩ resistor. Connect to earth with copper tape at 20 to 30 m<sup>2</sup> intervals.

The static dissipative requirement will determine the installation method, adjust text above as necessary. Provide an earthing system if electrical resistance to earth or a conductive floor is required. The earthing grid will consist of metallic strips laid directly under the flooring material, connection to building is made by a qualified electrician – a backup connection is recommended. Metal fixtures and fittings should be isolated from the flooring. Additional requirements, e.g. earthing rails, placement of switches and outlets outside the area, atmosphere ionisation and humidity controls may be required. Include these under the relevant worksection.

### 3.7 VINYL STAIR FINISH

#### General

Preformed: Provide purpose-made vinyl stair finish combining riser, nosing and tread in the one element. Lay each step consecutively with the joint at the bottom of each riser.

Formed in situ: Fit the sheet vinyl to each tread, and to the riser above, in one piece, coved in the angle. Accurately scribe, cut and fit to stair nosings and perimeters.

Preformed and formed in situ are alternatives. Delete as required.

### 3.8 JOINTS AND ACCESSORIES

At areas of heavy use, particularly with wheeled traffic, consider specifying a prototype test for the joint product installation using the anticipated wheeled equipment.

#### Accessories

General: Provide purpose-made matching moulded accessories for nosings, coves, skirtings, edge cover strips and finishes at junctions, margins, and angles, if available. Otherwise, form accessories from the sheet material. Provide solid backing for radiused coves and nosings.

#### Edge strips

General: Provide edge cover strips at junctions with different floor finishes and to exposed edges.

Metal cover strip: Extruded tapered strip 25 mm wide, of the same thickness as the sheet or tile. Fix with matching screws to timber bases or to masonry anchors in concrete bases, at 200 mm maximum centres.

### Control joints

Location: Provide control joints as follows:

- Over structural control joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 to 25 mm.

Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

### Control joint materials – sheet flooring

Proprietary slide plate divider strip: Provide interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

### Vinyl skirting

Select from the following.

Feather edge: Moulded PVC skirting section.

Intended for use with PVC or similar flat surface floor finishes. It provides coverage of floor termination at the vertical surface. Occasionally used where partitions are retro fixed over carpet.

Flat skirting: Flat PVC skirting section.

Intended for use with carpet. It provides a solid margin to assist the carpet laying process. Skirtings may be cut from sheet material but are more costly.

Fixing: Scribe as necessary. Mitre corners. Fix to walls with contact adhesive.

Minimum height: 100 mm.

### Coved skirtings

Install where a continuous surface is required e.g. Wet areas, Wet mopping, Hygiene and clean rooms. A sealant or cover mould may be necessary where the wall finish joins the door jamb profile. The width may require special consideration to provide a sealed overlap where the coving terminates at the door jamb.

Pre-formed coving: Provide a sit-in coved skirting to FORBO Marmoleum sheet flooring.

Site formed coving: Carry the flooring material up over a profiled coving section to form the skirting and mitre and weld all joints. Make sure the radius of the coving section conforms to the floor finish manufacturer's recommendations for sheeting material and thickness.

If using a contrasting border, document in the **FORBO resilient flooring schedule**.

## 3.9 COMPLETION

### Protection

Finished floor surface: Keep traffic off floors for a minimum of 24 hours after laying or until bonding has set, whichever period is the longer. Avoid contact with water for minimum 7 days after laying.

### Reinstatement

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

### Cleaning

Consult resilient finish manufacturers for cleaning instructions and recommendations on polishing. Polyurethane reinforced vinyls do not require sealing or polishing (they are mopped and dry buffed), and other vinyl floors only require mopping. For installations in existing buildings, consult the building user on current maintenance procedures, type of polish used, and make the new installations compatible as far as possible.

General: Remove all construction dust and debris and clean the finished surface. Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

FORBO resilient flooring: Conform to FORBO's cleaning and maintenance guidelines. Do not wet clean within 3 days of installation. Remove all debris, dirt and dust from the floor surface and clean with a neutral floor cleaner. Use a scrubber dryer or a rotary machine (150-300 rpm) with a 3M red pad or equivalent on larger floor areas. Pick up dirty water with a wiper and mop or wet vacuum, rinse with clean water and allow floor to dry. Do not use stripping chemicals to clean FORBO products.

Forbo Flooring Systems Australia provide specific cleaning maintenance and installation advice for each of their products, which can be downloaded from their website.

#### Cleaning static control flooring

General: Do not use sealers, wax or floor polish. Clean using a mild neutral detergent and lukewarm water. Dry buff clean floor using a scrubbing machine with a white nylon pad.

Sealers and polishes affect or destroy the antistatic properties.

#### Spare materials

General: Supply spare matching resilient finishes and accessories of each type for future replacement purposes. Store the spare materials on site where directed.

Quantity: At least 1% of the quantity installed.

#### Operation and maintenance manuals

General: Prepare a manual that includes manufacturer's recommendations for care and maintenance for each type of finish.

Compliance with this clause targets the Operations and Maintenance requirement within the Minimum Expectation level of the Verification and Handover credit in Green Star Buildings (2021).

#### Warranties

Requirement: For each type of resilient finish specified, submit the manufacturer and installer's warranty of the material, workmanship and application.

Warranty items: [complete/delete]

Describe the requirements of warranties in PRODUCTS or EXECUTION, as appropriate, and list the submissions required here.

Warranty terms: [complete/delete]

Consult or negotiate with manufacturers for warranty terms, and specify only such terms as are actually available. State requirements.

FORBO provides a 10 year commercial product warranty. For detailed warranty conditions refer to FORBO's Warranty Packs at [www.forbo.com/flooring/en-au/downloads/warranty/](http://www.forbo.com/flooring/en-au/downloads/warranty/)

Extended warranties are available where Forbo Coral Entrance Matting, adhesives and underlays are used, as follows:.

- Vinyl ranges: Warranty extends to 15 years.
- Linoleum ranges: Warranty extends to 21 years.

## 4 SELECTIONS

**Schedules** are a tool to specify properties required for products or systems. If the principal permits documentation of the product or system by proprietary name, some of the properties may be unnecessary and can be deleted. Document the product or system's location or application here and/or on the drawings with a matching project code. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

### 4.1 PRODUCTS

#### FORBO resilient flooring schedule

	A	B	C
Type			
Product			
Form			
Colour and pattern			
Tile laying pattern			
Sheet width (mm)			
Thickness (mm)			
Vinyl chip size (mm)			
Surface			
Slip resistance classification			
Critical radiant flux			
Airborne sound insulation			

	A	B	C
Impact sound insulation			
Tile dimensions (mm)			
Underlay			
Acoustic underlay (separate)			
Skirting			
Welded joints			
Finish			
Roll after laying			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Much of the scheduled information will be unnecessary if resilient finishes are specified by proprietary items.

Forbo can assist with the schedule development to ensure optimum outcomes and warranty.

Include any particular requirements not otherwise specified, such as resistance to wear, indentation, chemicals, light or fire. Consult the manufacturer.

Type: e.g. FORBO vinyl, FORBO flocked (Flotex), FORBO Marmoleum, Cork, SD (static dissipative); EC (electro-static conductive), Acoustic (cushion backed) vinyl, Vinyl or linoleum counter topping.

Product: e.g. FORBO Sphera EC.

Form: e.g. Sheet or Tile (Vinyl, linoleum, cork, rubber, flocked); Unbacked flexible sheet, Semi-rigid floor tiles, Flexible floor tiles, Inlaid vinyl sheet (PVC).

Colour and pattern: Refer to FORBO's specific descriptors. Select colour and pattern from within published ranges. Check with FORBO for availability and suitability. Several materials are available in bespoke high-definition digital print and aquajet custom design (e.g. Eternal, Surestep, Sarlon, Flotex, aquajet-cut Marmoleum).

Tile laying pattern: Refer to FORBO's specific descriptors including customised layouts. e.g. Checkerboard or Stretcher bond.

Thickness: Confirm available thicknesses with Forbo:

- For FORBO vinyl sheet or tiles: e.g. 2 mm, 3.5 mm or 5 mm.
- For FORBO Flotex flocked sheet or tiles: 4.3 mm (sheet) or 5 mm (tiles and planks).
- For FORBO Marmoleum: 2 mm (School modular), 2.5 mm (Marbled/ solid-collection/ linear/ modular), 3.2 mm (Fresco/real), 3.5 mm (Decibel), 4 mm (Acoustic).
- For cork: 4.75 or 6.3 mm (6.3 mm is recommended for concrete floors).
- For flexible terrazzo tiles: 4.76 mm.

Surface: Consult the manufacturer for available surface finishes:

- For cork: Smooth surface only.
- For FORBO vinyl sheets and tiles: Refer to FORBO's specific descriptors (Normally smooth surface, but various textured or inlaid slip resistant surfaces are available.)

Slip resistance classification: Refer to NATSPEC TECHnote DES 001, SA HB 197 (1999) and SA HB 198 (2014). Select the slip resistance test and classification to suit the location and application.

Critical radiant flux: Include the appropriate value from BCA (2022) Table S7C3 for the building class. Refer to FORBO's product technical data for compliance.

Airborne sound insulation: State the required rating to AS/NZS ISO 717.1 (2004) for either the weighted sound reduction index (Rw) or weighted sound reduction index with spectrum adaptation (Rw + Ctr). This rating is for a building system e.g. partition wall, of which the building element is only one component. It may be better to provide the rating in the appropriate system schedule. It is advisable to obtain the advice of an acoustic consultant on the selection of an Rw or Rw + Ctr rating for airborne sound transmission reduction. Refer to NATSPEC TECHnote DES 032 for information.

Impact sound insulation: State the required rating to AS ISO 717.2 (2004) for the weighted normalised impact sound pressure level (Ln,w). This rating is for a building system of which the building element is only one component. It may be better to provide the rating in the appropriate system schedule. It is advisable to obtain the advice of an acoustic consultant on the selection of an Ln,w rating for impact sound transmission reduction. Refer to NATSPEC TECHnote DES 027 for information.

Tile dimensions: Consult the manufacturer for available sizes and thicknesses:

- PVC tiles: 300 x 300 mm, 500 x 500 mm, 607 x 607 mm, 1000 mm x 1000 mm or 250 mm x 1000 mm.
- Portuguese cork tiles: 305 x 305 mm.
- Rubber tiles: 500 x 500 mm.

Underlay: e.g. Trowelled, Hardboard, Fibre cement sheet. Consult manufacturers of resilient flooring for recommended underlay for particular applications. State thickness. Forbo Quickfit is an underfloor system with acoustic benefits – combine with other underlays to further improve acoustic values and improve shock absorption.

Acoustic underlay (separate): Select from Forbo Sarlibase Acoustic, Sarlibase TE, or Corkment.

Welded joints. Thermal, Chemical or Epoxy. For Forbo digital print sheet use a concealed chemical weld or Noviweld 671 cold-weld.

Finish: e.g. Buffable water emulsion polish, Two-pack clear polyurethane (cork); Buffable metallised emulsion polish, Buffing only for slip-resistant sheet (PVC); Two coats buffable metallised emulsion polish (cushion backed sheet vinyl). Refer to the specific manufacturer's recommendations. All Forbo materials have a hard-wearing clear PUR Topshield, which generally requires a regular dry mop clean and occasional wet-mop clean using warm water only.

Roll after laying: Refer to manufacturer's recommendations.

### Synthetic sporting surfaces schedule

	A	B	C
Type			
Sport/activity			
Surface finish product			
Underlay			
Surface product			
Colour			
Colour density			
Skirting			
Critical radiant flux			
Slip resistance classification			
Surface marking method			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Type: e.g. Indoor or Outdoor.

Sport/activity: e.g. aerobics, gymnastics, badminton, fencing.

Underlay: Consult the manufacturer of the proprietary surface for recommendations as to the need for, and type of, underlay.

Skirting: e.g. feather edge, flat or coved vinyl, coved rubber, or site formed coving. Forbo provide a pre-formed coving (sit-in) for Marmoleum.

Critical radiant flux: Include the appropriate value from BCA (2022) Table S7C3 for the building class.

Slip resistance classification: Refer to NATSPEC TECHnote DES 001, SA HB 197 (1999) and SA HB 198 (2014).

Surface marking method: e.g. Inlaid or interwoven material with contrasting colour, paint, tape (self-adhesive).

### Tactile ground surface indicators schedule

	A	B	C
Product			
Type			
Edge protector			
Material			
Colour			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Product: Refer to manufacturer's range. Many of the following items in the schedule may not be required if the product identification is sufficient. Delete any items below if sufficiently covered by the product details nominated here.

Type: Directional, Warning or Integrated. Both warning and directional indicators may be required.

Edge protector: Button bevelled, Button round, Bar thin or Bar thick.

Material: Porcelain, Stainless steel, Thermoplastic urethane injection moulded (TPU), Rubber. Refer to manufacturer.

Colour: A colour contrast is required, in both wet and dry conditions, between the tactile indicators and the adjacent surface and that the colour provides a luminance contrast to the surrounding surface to AS/NZS 1428.4.1 (2009) Appendix E. Refer to manufacturer's range. The NCC cites AS 1428.4 (1992) and AS/NZS 1428.4.1 (2009). The current edition is AS/NZS 1428.4.1 (2009).

### Accessories schedule

	A	B	C
Skirting			
Edge strip material			
PVC cover strip: Width (mm)			
PVC cover strip: Colour			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Skirting: e.g. Feather edge, Flat or coved vinyl, Coved rubber, or Site formed coving. If preformed, nominate whether skirting is sit-in or sit-on. Sit-on is surface mounted after the floor material is laid.

Edge strip material: e.g. Brass, Stainless steel, Aluminium.

PVC cover strip:

Width: e.g. 25 mm, 50 mm.

Accessory type: Specify required accessories, such as nosings, wedge fillets, tile edge trim, wall and capping trim and state whether they are to be a proprietary item, purpose-made or formed.

For floor wastes to wet areas consult with manufacturer for special requirements, e.g. flanged fittings to clamp over finish, and coordinate with **SANITARY DRAINAGE** in 0802 Hydraulic design and install.

### Control joints schedule – proprietary slide plate

	A	B	C
Location			
Product			
Material			
Insert colour			

The codes in the header row of the schedule designate each application or location of the item scheduled. Edit the codes to match those in other contract documents.

Location: State here or show on drawings.

Product: Nominate the product type suitable for the anticipated movement.

Material: e.g. Stainless steel.

Insert colour: Nominate colour or omit if there is no insert.

### REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1428		Design for access and mobility
AS/NZS 1428.4.1	2009	Means to assist the orientation of people with vision impairment - Tactile ground surface indicators
AS/NZS 1859		Reconstituted wood-based panels - Specifications
AS/NZS 1859.4	2018	Wet process fibreboard
AS 1884	2021	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2908		Cellulose-cement products
AS/NZS 2908.2	2000	Flat sheets
AS 4586	2013	Slip resistance classification of new pedestrian surface materials
AS 4663	2013	Slip resistance measurement of existing pedestrian surfaces
AS ISO 9239		Reaction to fire tests for floor coverings
AS ISO 9239.1	2003	Determination of the burning behaviour using a radiant heat source
AATCC TM 134	2019	Electrostatic propensity of carpets
EN 650	2012	Resilient floor coverings - Polyvinyl chloride floor coverings on jute backing or on a polyester felt backing or on polyester felt with polyvinyl chloride backing - Specification
EN 651	2011	Resilient floor coverings - Polyvinyl chloride floor coverings with foam layer - Specification
EN 688	2011	Resilient floor coverings. Specification for corklinoleum
EN 1081	2018	Resilient, laminate and modular multilayer floor coverings - Determination of the electrical resistance

EN ISO 10581	2020	Resilient floor coverings - Homogeneous poly(vinyl chloride) floor covering - Specifications
EN ISO 10582	2018	Resilient floor coverings - Heterogeneous poly(vinyl chloride) floor covering - Specifications
EN ISO 10595	2012	Resilient floor coverings - Semi-flexible/ vinyl composition (VCT) poly(vinyl chloride) floor tiles - Specification
EN ISO 10874	2012	Resilient textile and laminate floor coverings. Classification
EN 12104	2023	Resilient floor coverings - Cork floor tiles - Specification
EN 13845	2017	Resilient floor coverings - Polyvinyl chloride floor coverings with particle based enhanced slip resistance - Specification
EN ISO 24011	2012	Resilient floor coverings - Specification for plain and decorative linoleum
ISO 10580	2010	Resilient, textile and laminate floor coverings - Test method for volatile organic compound (VOC) emissions
<b>The following documents are mentioned only in the <i>Guidance</i> text:</b>		
AS ISO 717		Acoustics - Rating of sound insulation in buildings and of building elements
AS/NZS ISO 717.1	2004	Airborne sound insulation
AS ISO 717.2	2004	Impact sound insulation
AS 1428		Design for access and mobility
AS 1428.4	1992	Tactile ground surface indicators for the orientation of people with vision impairment
SA HB 197	1999	An introductory guide to the slip resistance of pedestrian surface materials
SA HB 198	2014	Guide to the specification and testing of slip resistance of pedestrian surfaces
BCA Table S7C3	2022	Fire resistance - Fire hazard properties - Floor linings and floor coverings - Critical radiant flux (CHF in kW/m <sup>2</sup> ) of floor linings and floor coverings
CCAA Data Sheet MC	2007	Moisture in concrete and moisture-sensitive finishes and coatings
GBCA Buildings	2021	Green Star Buildings
NATSPEC DES 001		Slip resistance performance
NATSPEC DES 008		Preparation of concrete substrates
NATSPEC DES 020		Fire behaviour of building materials and assemblies
NATSPEC DES 027		Impact sound insulation
NATSPEC DES 032		Airborne sound insulation
NATSPEC GEN 006		Product specifying and substitution
NATSPEC GEN 024		Using NATSPEC selections schedules
NATSPEC TR 01		Specifying ESD
DIN 18032		Sport halls - Halls for gymnastics, games and multi-purpose use
DIN V 18032-2	2001	Floors for sporting activities - Requirements, testing
EN 12235	2013	Surfaces for sports areas - Determination of vertical ball behaviour
EN 13036		Road and airfield surface characteristics - Test methods
EN 13036-4	2011	Method for measurement of slip/skid resistance of a surface - The pendulum test
EN 14808	2005	Surfaces for sports areas - Determination of shock absorption
EN 14809	2005	Surfaces for sports areas - Determination of vertical deformation
EN 14904	2006	Surfaces for sports areas - Indoor surfaces for multi sports use - Specification.