Installation Guidance Note: Sphera SD | EC sheet material

FLOORING SYSTEMS

General Advice

The appearance, performance and durability of the installed floor covering will be determined to a large extent by the quality of the prepared subfloor and the conditions in which they are laid. As with any resilient floor covering, irregularities in the subfloor will be visual in the finished flooring.

The installation of Sphera SD | EC rolls should be carried out in accordance with the national code of practice for the installation of resilient floor coverings if applicable. Areas to receive flooring should be clean, free from other trades or materials, fully enclosed and weather tight. Subfloors should be clean and free of contaminants, smooth, sound, even and permanently dry.

The maximum residual moisture content for subfloors without floor heating should be in accordance with the applicable national standard. Where a national standard does not exist the following requirements apply:

- 2.5% CM for concrete bases and cement screeds
- 0.5% CM for Anhydrite screed

The open time of the adhesive will depend on site conditions and porosity of the base. It is best practice to conduct an adhesive bond test before starting the installation. Bond testing will assist in identifying both the working characteristics of the adhesive (waiting and working time) for the site conditions, and any potential bonding problems.

Always conduct moisture tests on **all** substrates. All ground-based level floors should have an effective moisture barrier.

Areas to receive flooring shall be adequately lit to allow for proper inspection of the substrate, installation and for final inspection.

It is essential that the laying area is at a temperature of 18 to 27 °C for 48 hours prior to, during, and for 24 hours after installation. The material and adhesive should be conditioned in the same environment for at least 24 hours prior to the installation. In all circumstances, the rolls must be acclimatised vertically in the room. Where the floorcoverings have been stored or transported immediately prior to delivery in temperatures below 20 °C, the acclimatization period should be extended to 48 hours.

Ensure that all recommendations for substrate and jobsite conditions are met, prior to beginning the installation. Starting the installation is an implied acceptance of site conditions by the parties involved and liability for any failure directly related to inadequate site conditions becomes the responsibility of the installer and/or flooring contractor.

Prior to acclimatization, rolls should be checked to ensure that the correct design, batch-number and quantity have been received and that the material is in good condition. No claim will be accepted for incorrect design, pattern or obvious damage if the material has been fitted.

Use material from the same batch/dye lot. Although batch to batch consistency is very good, the use of material from the same dye lot, is recommended to avoid visible shade differences.
As with all newly installed floor coverings, Sphera SD | EC should be protected from heavy traffic (particularly high point load wheeled traffic) for 72 hours. New floors can be damp mopped but should not be wet mopped for 48 hours.

Occasionally, contamination from the black backing on the topside of the material might occur. This can be easily removed with clean water or during the initial cleaning.

Underfloor heating

Forbo flooring products may be installed over underfloor heated floors providing the maximum surface temperature of the substrate does not exceed 27 ° C under any condition of use. To enable a secure bond of the adhesive to the substrate, the underfloor heating system should be turned off, or set to the lowest temperature, for a minimum of 48 hours prior to installation of the Forbo flooring material. Prior to, during, and for 72 hours after installation the room temperature maintained at a minimum of 18 ° C. If necessary, an alternate heating source should be used.
The temperature of the underfloor heating system can be increased 72 hours following the installation. When raising the floor temperature, raise gradually so the substrate and flooring material can adapt to the temperature change together. A rapid temperature increase could cause debonding.

Adhesive recommendations and application

When installing Sphera SD | EC low emission EC1 (plasticizer resistant, acrylic dispersion) adhesives are recommended, such as Forbo Eurocol '641 Eurostar Special EL' (conductive adhesive) and Forbo Eurocol '640 Eurostar Special'. (non-conductive adhesive) and always in combination with a copper strip.

Use a TKB S1 trowel for Forbo Eurocol 641 (conductive adhesive) and TKB A2 trowel for Forbo Eurocol 640 (non-conductive adhesive) to apply the adhesive.

Note: Trowels will wear during use, check the trowel both before and during use to ensure that the proper, specified trowel notch is used and maintained. The adhesive must be spread evenly over the entire floor area with particular attention to edges – this will ensure that the sheet is fully bonded at the perimeters.

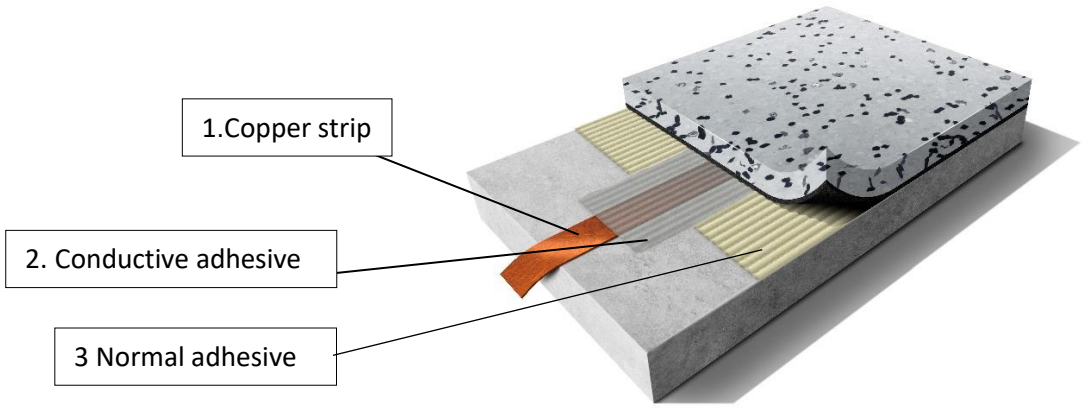
If alternative adhesives are to be used consult with the supplier for more information, guidance and warranty.
Insert here the country or regional recommended Forbo Flooring adhesives

Note: Contact Forbo Flooring Technical Services department for further advice on adhesives and installation in areas liable to be subjected to abnormal temperature variation in use, for example, shops with large windows, conservatories etc.

For the use of adhesive (conductive and non-conductive) there are two options.

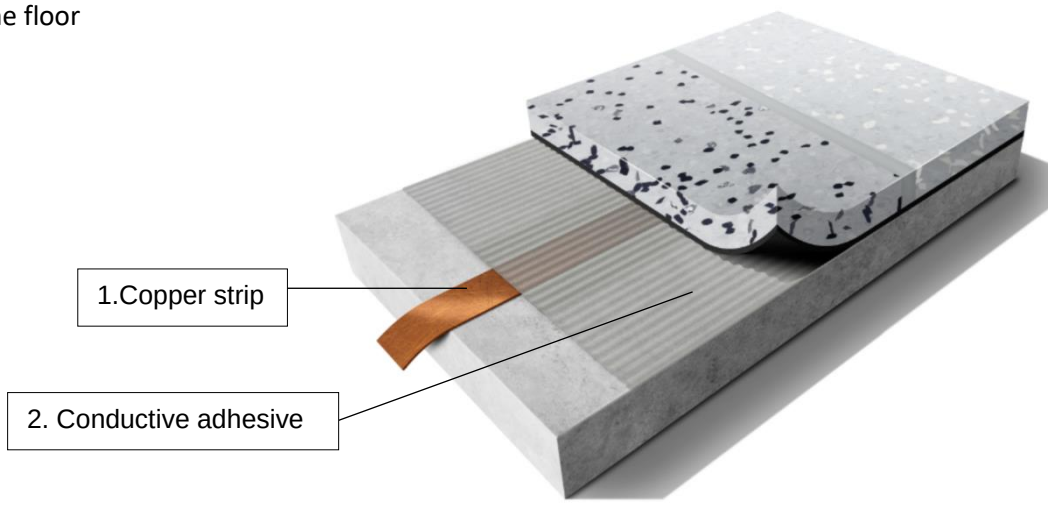
Option A (use of conductive and non-conductive adhesive):
A 100 mm wide band of conductive adhesive (Forbo Eurocol '641 Eurostar Special EL') must be applied over the copper strip (see image below). The remaining areas can be installed with 'normal' low emission EC1 adhesive (Forbo Eurocol '640 Eurostar Special').

1- stick down the copper strip
2- spread the conductive adhesive on top of the copper strip
3- spread the normal adhesive
4- Install the floor



Option B (use of conductive adhesive only):
The entire floor is installed with conductive adhesive.

1- stick down the copper strip
2- spread the conductive adhesive
3- Install the floor



FLOORING SYSTEMS

Electrical grounding - installation and layout

General recommendations:

Before starting the installation make a floor plan (see further advice layout of this guide);

- Position of the sheets
- Right position of the copper strips
- Position of seams (with or without copper strip connection)

Copper strip(s) for electrical grounding must be installed first.
Self-adhesive copper strips are recommended.

Electrical Grounding:

The electrical connection of the copper strips to the grounding point(s) must always be made by a qualified electrician.

Layout of the copper strips:

Layout for rooms smaller than 40 m^2:
Lay a strip of copper tape extending approximately one metre onto the subfloor allowing sufficient excess to extend up to the nearest grounding point.
This layout is recommended for rooms where the shorter side of the room is less than 10m. Lay the copper tape to create a circuit as shown in Figure 1 below. Punch the strip intersection to ensure proper contact and test the conductivity of the copper strip circuit with an appropriate testing device prior to starting installation of the material.
Avoid a seam at grounding point(s). If you weld and you need to trim the weld you may damage or cut the copper strip?

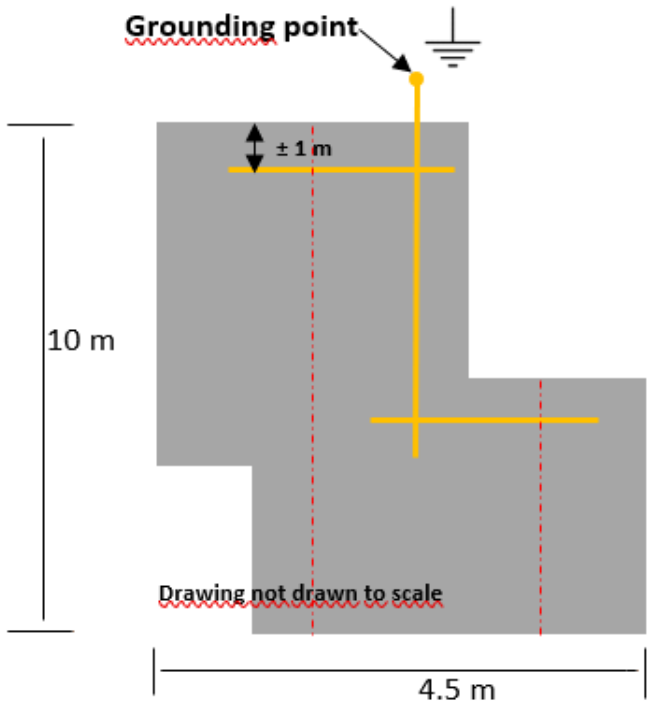


Fig 1.

Layout for rooms larger than 40m2

This layout is recommended for rooms where the shorter side exceeds >20m.

Lay the copper tape to create two circuits on opposite side of the room as shown in Figure 2 below. Punch all strip intersections to ensure proper contact and test the conductivity of the copper strip circuit with an appropriate testing device prior to starting installation of the material.

At all cross seams, a 1m length of copper tape should be fixed to the subfloor along the center line of the sheet length equally spanning the cross seam as shown below.

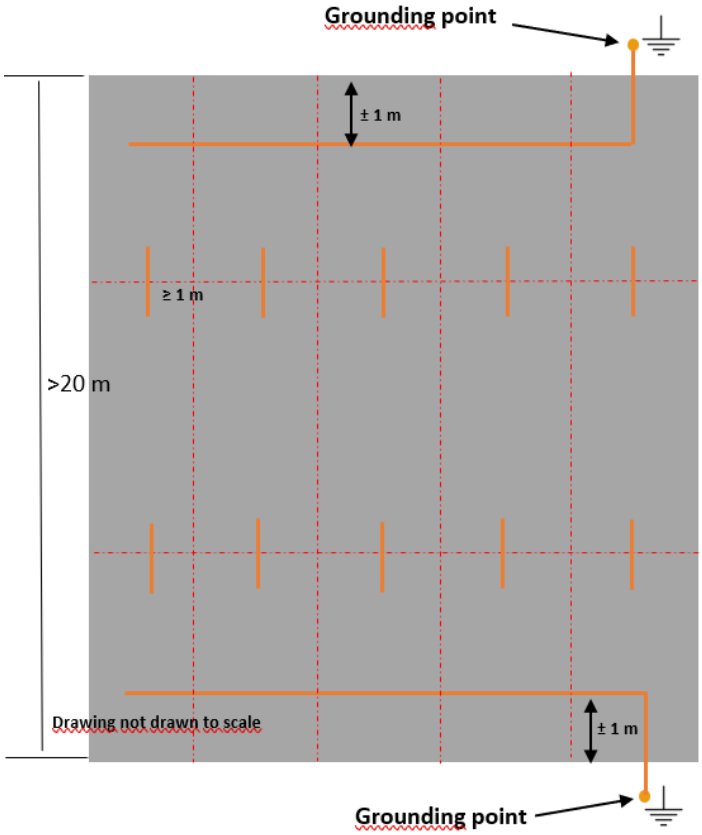


Fig. 2

Installation:

Direction of laying
The following installation advice should be followed in relation to direction of sheet laying.

The product has a unique non-directional design which allows for fitting sheets in the same direction or alternate directions (i.e. cross joins on corridor T-junctions) without losing the overall design aesthetic. In main field areas, it is recommended to fit the sheets in the same overall direction.

Cutting and fitting
Each sheet should be scribed to fit and the factory edge removed before cutting the seam. Seams should be overlapped and under-scribed or cut with a Forbo trimmer to form a close butt joint. See fig. 3 & 4.

Note: If the factory edges are straight and undamaged the installer may decide to cut only one factory edge. Liability for any failure directly related to cutting only one factory edge becomes the responsibility of the installer and/or flooring contractor.

Scribe the long side of the sheet to the wall first. Place the sheet back against the wall and trim the factory edge on the opposite side of the sheet using a seam cutter or by striking a chalk line and cutting through the sheet following this line with a straight and utility knife. Trace the line of the trimmed edge onto the subfloor with a pencil.

With the sheet fitted correctly in position along the length, and the ends riding up the end walls, trim the factory edge on the opposite side of the sheet using a seam cutter or by striking a chalk line and cutting through the sheet following this line with a straight and utility knife.


Fig. 3


Fig. 4

Trace the line of the trimmed edge onto the subfloor with a pencil. This line acts as a guide line.

Place a ruler or straight edge, at right angles to the sheet. Across the edge of the sheet draw a cross check on both material and subfloor (Fig. 5). Fold one end of the sheet back on itself, pull the other end clear by about 25mm from the wall (fig. 6). Position the sheet to lie flat on the floor, with the edge true to the guide line. Set the bar scriber at the distance that the cross check has opened up (fig. 7).

Keep the scriber parallel to the guide line and scribe the end of the sheet (fig. 8). Cut the material along the scribe line. Check fit to the wall, with the aid of the cross checks and the guide line.

Scribe and cut the other end of the sheet using the same method.

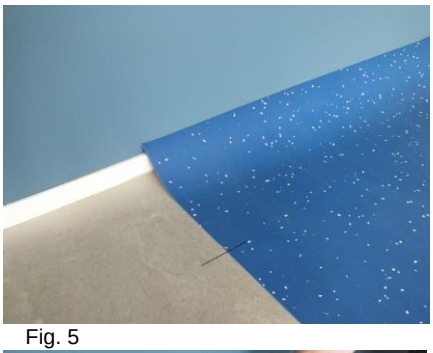


Fig. 5

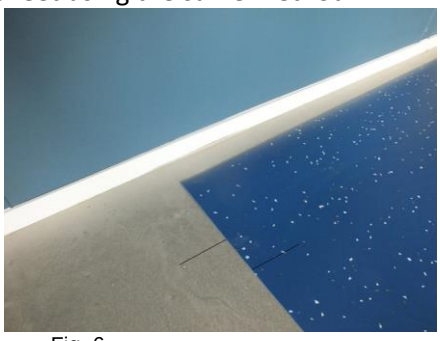


Fig. 6

Fig. 7

Fig. 8

Fitting long lengths

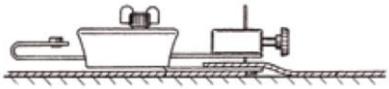
During the manufacture of sheet vinyl's the material is stretched slightly in the length. Often the first opportunity it has to relax fully is when it is unrolled, scribed and folded back for the spreading of the adhesive. If the length being fitted is a long one, this relaxation can be significant enough for slight shrinkage to occur, leaving the fitted end a little short of the wall once folded down again into the adhesive.

To avoid this, scribe and fit one end of the sheet and then stick all but the last 1½-2 metres at the other end before scribing and fitting this end. Any relaxation during the folding back of such a short length will not be significant. The full length must be stuck and rolled while the adhesive is still active.

Lay the next sheet alongside the first fitted sheet with the sheet ends lapping up the wall and the edge of the sheet overlapping the previously fitted sheet by approximately 2cm. Trim the factory edge of the opposite side of this sheet as above and trace the line of the trimmed edge onto the subfloor with a pencil.

Scribe and cut each end of this length as for the first sheet. Be careful with scribing and cutting at the copper strip. There is a risk to damage or cut the copper strip.

Cut the seam using a seam cutter or under scriber to form a close butted seam (see below).



Repeat this process for each subsequent sheet length. The final length which abuts the opposite wall should be cut and fitted using the method described for the first length.

Note: factory edges should always be trimmed to form a true edge for seaming

Following these recommendations will give the installer the best opportunity to manage the open and working time of the adhesive to ensure transfer of the adhesive to the backing of the floor covering.

Adhering the sheet
Pull back the sheet length to approximately halfway.

Spread the adhesive using the appropriate notched trowel ensuring that the correct trowel notch in maintained throughout the installation – see adhesive guidance above.

Lay the sheet into the adhesive after the appropriate waiting time and rub the sheet with a rubbing board or glider from the centre outwards to remove any trapped air between the sheet and the adhesive.

Note: Ensure that the sheet does not move during this process and that the close butt . are maintained when placing the vinyl sheet into the adhesive.

Roll the sheet with a 50-70 kg roller [insert local weight if different], rolling in all directions to ensure a firm bond. It is important to only spread sufficient adhesive that can be covered within the open time of the adhesive.

Areas that cannot be rolled with the large roller e.g. abutments such as door frames or skirting boards should be rolled with a hand roller or pressed into the adhesive with a rubbing hammer.

Always clean away excess adhesive with a damp cloth before it is allowed to dry.

Note: All seams should be hot welded with matching weld cable

Seam Grooving and welding

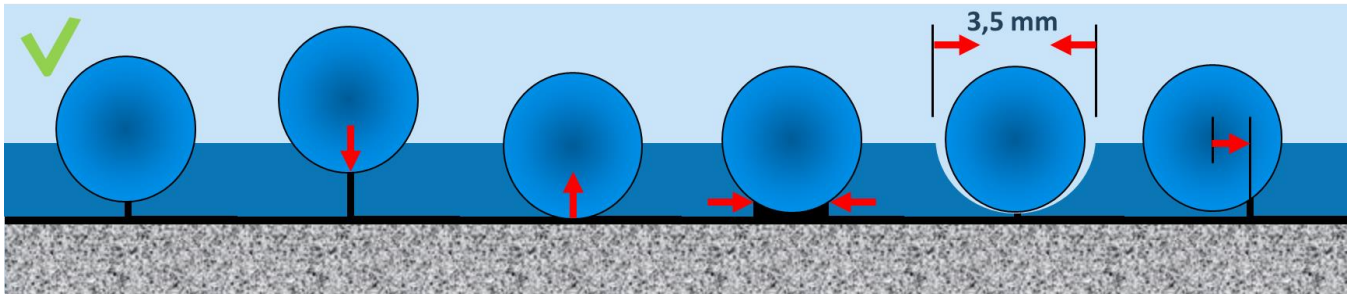
Grooving

Seams should be grooved to a depth of 1.3 – 1.6 mm deep for 2.0 mm material.

A 'P' Type groover is recommended for manual grooving of seams, however, automatic or power groovers may be more productive on larger installations.

The standard blade groove width for 4 mm welding rods is 3.5 mm.

Note: Triangular or square grooves are not acceptable



proper depth groove centered	groove too shallow	groove too deep	seam gapped too wide	seam grooved too wide	groove not centered
Optimum strength weld	May "blow out" Weak weld	Hard to weld Weak weld	Hard to weld Weak weld	Hard to weld Weak weld	Weak weld

Welding

Switch on the hot air gun and allow 5 to 7 minutes for it to reach the selected temperature. Sphera should be welded at a temperature of approximately 400 – 450 °C. (see weld gun manual for setting details). Fit the welding nozzle before switching on the hot air gun.

If the gun is resting on the floor, ensure that the nozzle is not directed at the floor or anywhere dangerous.

Weld guns will vary, so it is always advisable to practice weld techniques first on a piece of waste material to match the correct air gun temperature with welding speed. Sphera should be welded with a 4mm Speed weld nozzle.

Make sure the groove is thoroughly clean before beginning to heat weld. Make sure that all electrical cables are laid out without tangles and that there are no obstructions along the seam to be welded.

Cut the welding cable to a consistent and generous length or unwind sufficient weld rod from the reel and put the reel in a position where you are working towards it. Have the power cable ahead of you if possible.
Start at a wall. Thread the cable through and weld moving backwards, away from the wall, maintaining a slight downward pressure so that the weld nozzle will force the weld cable into the groove. Do not let the cable melt in the nozzle.

A good weld is obtained by the correct combination of temperature, speed and downward pressure. The weld cable should be allowed to melt enough so that the melted rod reaches the bottom of the groove, making a little burr along the sides.

Trimming

Note: To avoid unintended damage to the floor covering Forbo recommends the Mozart knife for trimming the weld cable. If a sharp spatula is being used special care should be given to avoid damaging the sides of the seams.

While the cable is still warm trim off most of the top half of the cable down to approximately 0.5mm using a sharp spatula and slide or Mozart knife which fits over the cable. This enables the cable to cool more quickly and enables a quick first cut to be made without risk of gouging the material.

The welding cable will dish slightly (concave downwards) as it cools. Wait until the material is completely cool before trimming flush with the surface of the sheet with a Mozart knife or a sharp spatula angled slightly across the line of cut.

Mozart knife

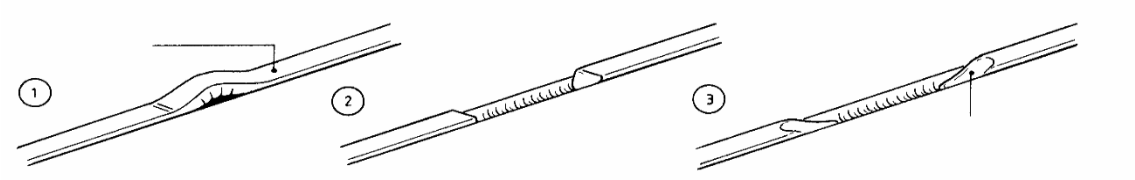
Spatula

Slide

Note: Making the final trim while the welding rod and material is still warm can result in the weld cable dishing of the weld cable. This may result in subsequent seam soiling problems or cause permanent damage to the surface of the flooring.

Joining up a weld

To join a weld in the middle of a seam trim off the loose ends and chamfer down the section to be overlapped with a hand groover. Ensure hot air gets into the groove and heats the cable. As the gun travels over the un-welded section apply pressure and carry the weld on over the section to be joined. Allow to cool and trim as normal.



<u>On completion of the installation</u>

First impressions may have more impact on the client than hours of skilled fitting.

The completed installation should be cleared of scrap material and debris, the floor swept or vacuumed, and any traces of adhesive residues removed from the floor and skirtings.

If the floor covering is to be protected from other trades or site traffic prior to project completion, a protection product should be chosen that is appropriate for the type and level of traffic likely to be experienced and the potential for impact, scratching or indentation damage.

In many cases it is customary for the initial floor preparation to be left, or subcontracted, to a professional cleaning and maintenance contractor who will have the staff and equipment to do the job thoroughly.

Important note for conductive installations: Do NOT apply any wax or emulsion floor finishes in ESD protected area as these will adversely affect the conductive properties of the floor.

Electrical resistance testing after installation:
Point-to-ground electrical resistance tests according to approved relevant standards should not be carried out earlier than 14 days after installation. First random control measurements can be made after 24 hours.

If the optimum performance of any new floor covering is to be achieved, it is important that the correct cleaning and maintenance procedures are used from day one. Cleaning and maintenance guides for all Forbo Flooring products are available for download at: *Insert local web link to product download page*

If in any doubt contact us: