Installation Guidance Note: Sphera SD and EC

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.

Forbo floor coverings are manufactured for internal use only. The product performance is not guaranteed for use in external environments.

Subfloor preparation should be carried out in accordance with BS8203:2017 Code of practice for the installation of resilient floor coverings. Areas to receive flooring should be clean, free from other trades, fully enclosed and weather tight. Subfloors should be clean and free of contaminants, smooth, sound and permanently dry.

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 steady 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. Rolls should be stored vertically at all stages of the contract up to installation.

Note: *Where the floor coverings have been stored or transported immediately prior to delivery in temperatures below 10˚C the acclimatisation period should be extended to 48 hours.*

The open time of the adhesive will depend on site conditions and porosity of the subfloor. 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.

Ensure that all recommendations for substrate and site conditions are met, prior to beginning the installation.

Note: *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 may become the responsibility of the installation company.*

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

Use material from the same batch/dye lot and install in roll number sequence. The use of different production batches will always result in visible shade differences. The batch number is clearly marked on the material packaging and must be checked before commencement of installation.

As with all newly installed floor coverings Sphera SD | EC should be protected from heavy traffic for 72 hours or, if the floor is to be subjected to high point load or wheeled traffic, for five days. The floor must **not** be washed for 48 hours after installation.

Underfloor heating

Sphera SD and EC sheet can be used in conjunction with under-floor heating systems. It is imperative that the underfloor heating systems have been previously commissioned and found to be functioning correctly prior to the floor finish being installed. Ensure that the underfloor heating system is switched off 48 hours prior to the floor covering installation commencing and remains off for at least 48 hours after the installation is complete.

During the period of decommissioning of the underfloor heating system, an alternative heating source should be provided, if required, to ensure that the area of installation is kept at a constant temperature of 18˚C – 27˚C.

Gradually increase the temperature over several days by only a few degrees per day until the desired room temperature is reached.

The temperature should never exceed the industry agreed maximum of 27˚C at the underside of the floor covering (the adhesive line). Failure to follow these guidelines can result in the floor covering de-bonding, joints opening, and on some occasions discolouring, all of which can occur within a long or short period of time.

Further information on the requirements for underfloor heated subfloors can be found in BS8203:2017.

Adhesive recommendations and application

When installing Sphera SD or Sphera EC, low emission EC1 (plasticizer resistant, acrylic dispersion) adhesives are recommended.

Forbo Eurocol '641 Eurostar Special EL' (conductive adhesive) is the standard allover adhesive recommendation which must always be used in combination with a copper tape fitment.

For larger installations, a mixed adhesive application is possible using Forbo Eurocol '641 Special EL' (for areas with copper tape placement to ensure system connectivity with the flooring backing) used in conjunction with Forbo Eurocol '640 Eurostar Special' (non-conductive adhesive) to all other areas within the installation where no copper strip is present. This method will require careful planning to facilitate the mixed adhesive application. See diagrams and information below for more details.

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.

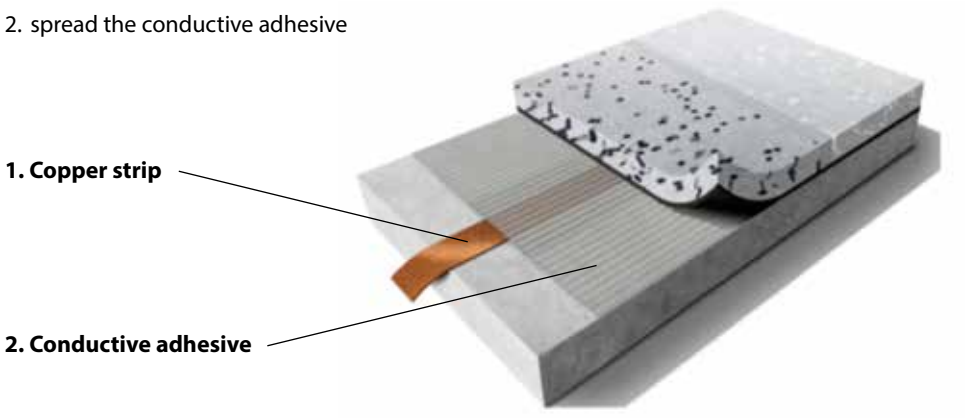
Note: *Trowels will wear during use, check the trowel both before and during use to ensure that the proper, specified trowel notch is used and maintained. The adhesive must be spread evenly over the entire floor area with particular attention to edges – this will ensure that the sheet is fully bonded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

When using the Forbo Eurocol adhesives mentioned above there are two options:

Option A (use of conductive adhesive only):

The entire floor is installed with conductive adhesive (Forbo Eurocol '641 Eurostar Special EL').

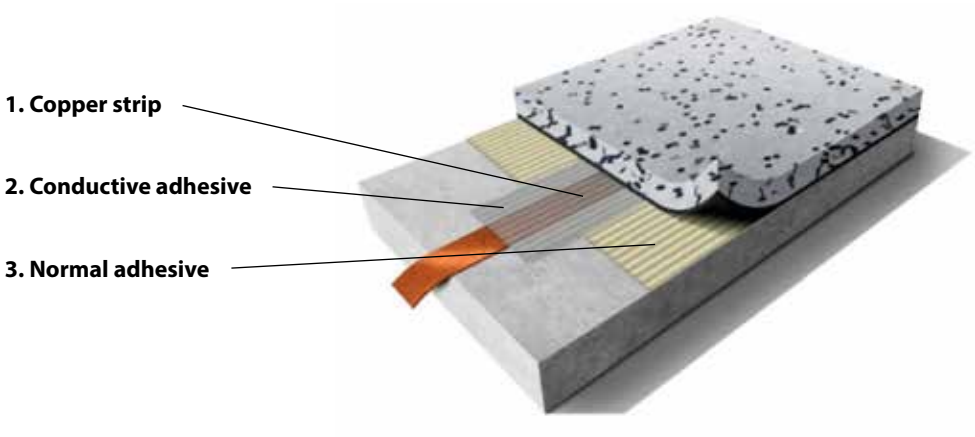
1. stick down the copper tape
2. spread the conductive adhesive



Option B (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 all the parts of the copper strip to ensure consistent contact with the back of the flooring (see image below). The remaining areas not requiring connectivity between the copper strip and flooring backing can be installed with a 'normal' low emission EC1 adhesive (Forbo Eurocol '640 Eurostar Special').

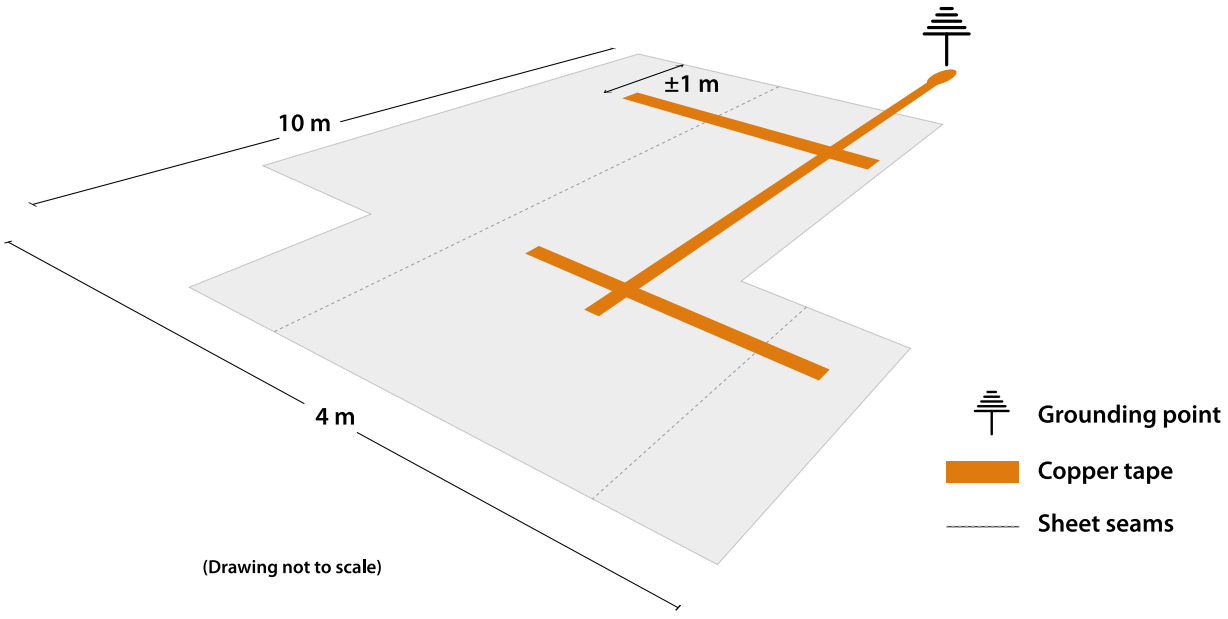
1. stick down the copper tape
2. spread the conductive adhesive on top of the copper tape
3. spread the normal adhesive ensuring no overspill on to the conductive adhesive



Layout of the copper strips for rooms smaller than 40m²:

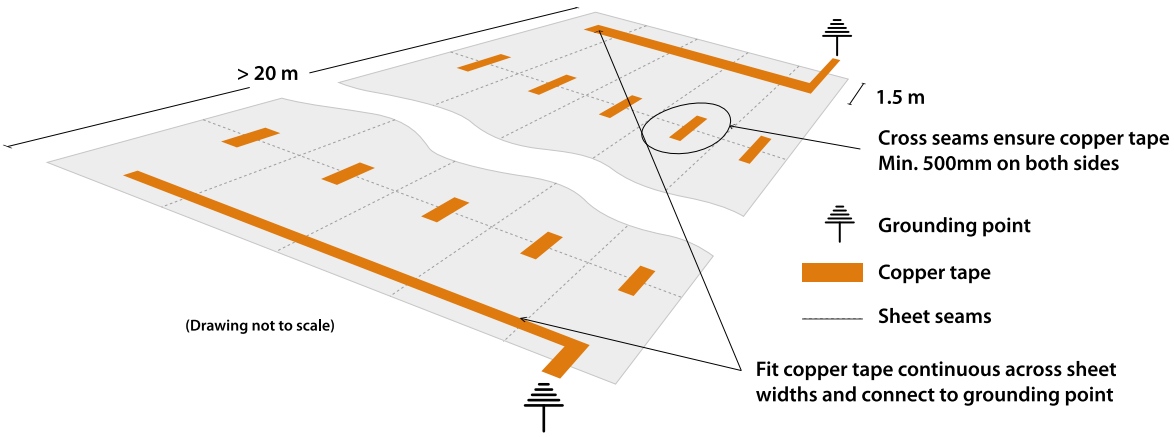
Lay a strip of copper tape extending approximately one metre onto the subfloor allowing sufficient excess to extend up to the nearest grounding point.

For areas with multiple sheet widths, ensure all sheets are connected together with a copper tape as shown below.



The floor covering is adhered to the full room with Eurocol 641EL conductive adhesive (Option A above), no further copper tape is required.

Layout of the copper strips for rooms larger than 40m²:



Mixed adhesive type application

The layout above is recommended for rooms larger than 40m² requiring copper tape linkage between the individual sheets across the widths and at ends of cuts/roll lengths. The floor covering may be adhered using a combination of Eurocol 641 Special EL and Eurocol 640 adhesives (option B above) or fully bonded allover using just Eurocol 641 Special EL (Option A) to provide full connectivity.

Note: *if alternative third party adhesives are to be used, consult with the supplier for more information, guidance and warranty.*

Layout of the copper strips for rooms larger than 40m²

The layout above is recommended for rooms where the shorter side exceeds 20m.

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

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

Note: *Avoid seams close to grounding points to prevent the risk of damaging the copper tape when welding the seam or trimming the weld cable.*

Note: *In large areas, additional earthing points may be required for ease of testing and/or added protection.*

Note: *For rooms where the shorter side is greater than 10m but less than 20m, the connecting copper tape for grounding is set out as per the diagram above but the line of tape connected to the grounding point/s may be laid to one long side of the room only. If cross seams are present, they still require connecting tape at the cross seams.*

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

Electrical grounding – layout and installation

General recommendations:

Before starting the installation make a floor plan (see further advice in the layout section of this guide) considering:

- Position of the sheets
- Location of earthing points
- 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.

Lay the copper tape to create a circuit as shown above. Punch the copper tape at intersections to ensure proper contact and test the conductivity of the copper tape circuit with an appropriate testing device prior to starting installation of the material.

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 seam cutter to form a close butt joint.

Note: take care not to damage the copper tape when cutting seams

Always check the recommend direction of laying before cutting sheet length.

Cut the sheet material to the required lengths and then back roll each cut length before cutting to fit in order to release any roll tension from the winding of the sheet.

Back rolling
Sheet vinyl products are tightly rolled in the factory. The tension caused by this process will mean that the goods will shrink a little in the length when unrolled. It is recommended to reduce the effect of shrinkage by re-rolling the cut lengths of sheet back on themselves and allowing to stand in this state for 15 minutes prior to unrolling again and commencing fitting.

It is recommended that the roll lengths are rolled out and laid out flat in the installation area to acclimatise for 24 hours at a minimum temperature of 18˚C prior to commencing fitting the sheet.

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 seam cutter to form a close butt joint (See below).

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.





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. 1). Fold one end of the sheet back on itself, pull the other end clear by about 25mm from the wall (Fig. 2).

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. 3).

Tip: *As an alternative to pulling the sheet length back, the roll core may be placed under the sheet to create the necessary gap between the sheet end and the wall. This will also help to prevent creasing the sheet when pulled back.*

Keep the scriber parallel to the guide line and scribe the end of the sheet (Fig. 4). Cut the material along the scribe line. Check fit to the wall, with the aid of the cross checks and the guide line.

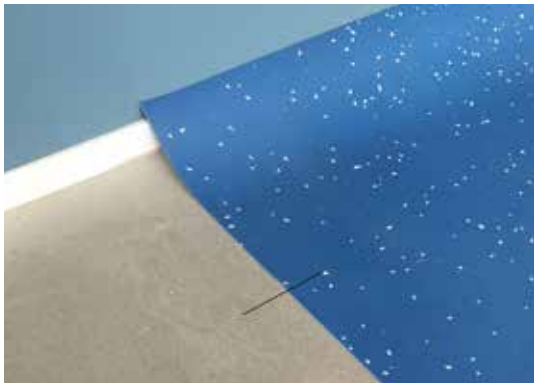


Fig. 1

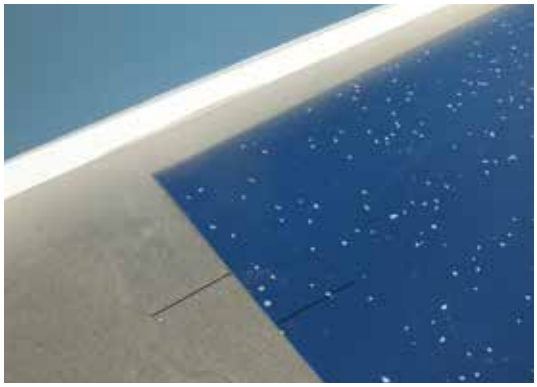


Fig. 2



Fig. 3



Fig. 4

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

Fitting long lengths

During the manufacture of sheet vinyl 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 1.5 to 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.

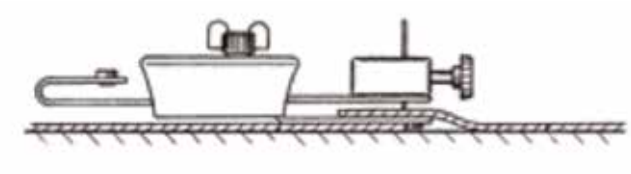
Lay the next sheet alongside the first fitted sheet with the sheet ends lapping up the wall and the edge of the sheet overlapping the previously fitted sheet by approximately 2cm. Trim the factory edge of the opposite side of this sheet as above and trace the line of the trimmed edge onto the subfloor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

Scribe and cut each end of this length as for the first sheet.

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

Adhering the sheet
Following these recommendations will give the installer the best opportunity to manage the open and working time of the adhesive and ensure that the flooring material is placed into wet adhesive.

Pull back the sheet length to approximately half way.

Note: *Placing the roll core on the sheet at the point of the fold to support the material whilst folded back will help to prevent creasing the sheet whilst spreading the adhesive.*

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

Note: *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.*

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: *check the adhesive manufacturers' guidance for waiting time and the open time of the adhesive.*

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

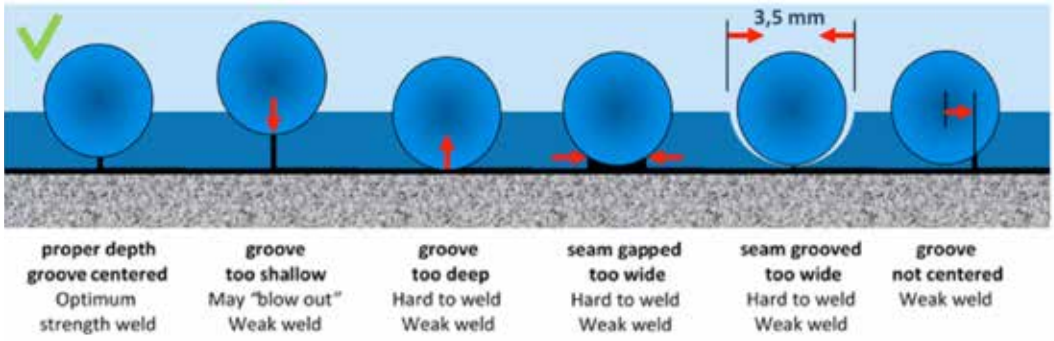
Roll immediately with a 68 kg roller, rolling in all directions to ensure a firm bond.
It is important to only spread sufficient adhesive that can be covered within the open time of the adhesive.

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 forming and grooving
Seams should be grooved to a depth of approximatley 2/3rds of the material thickness. A 'P' Type groover is recommended for manual grooving of seams, however, automatic or power groovers may be more productive on larger installations.



Welding
Switch on the hot air gun and allow 5 to 7 minutes for it to reach the selected temperature. **Sphera SD | EC 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 SD | EC should be welded with a 5mm Speedweld 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.

Trimming
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.

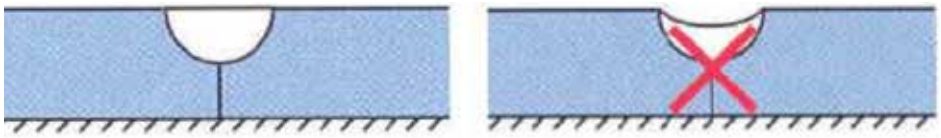
The welding cable will dish slightly (concave downwards) as it cools. Wait until the material is completely cool before trimming flush with the surface of the sheet with a sharp spatula angled slightly across the line of cut or Mozart knife.

Note: *To avoid unintended damage to the floor covering, Forbo recommends the use of 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.*

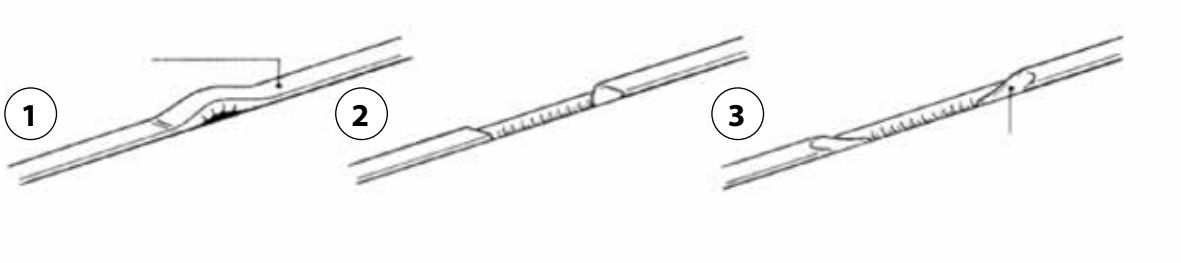


Mozart knife **Spatula** **Slide**

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.



Perimeter sealing
If the purpose of specifying welded seams is to prevent the risk of moisture getting under the floor covering then logically the specification must ensure that perimeters are also sealed, together with any areas where pipes, etc. come up through the floor covering. Perimeters can be sealed with a suitable waterproof and mould resistant flexible sealant.

On completion of the installation

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.

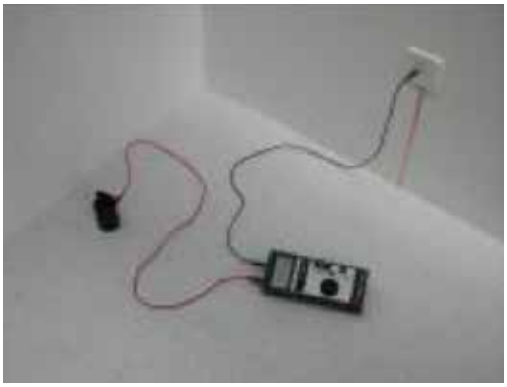
The use of the wrong type of cleaning products and/or abrasive cleaning pads can damage the flooring.

If the optimum performance of any new floor covering is to be achieved, it is important that the correct cleaning and maintenance products and procedures are used from day one.

Cleaning and maintenance guides for all Forbo Flooring sheet vinyl products are available for download at:
www.forbo-flooring.co.uk/downloads

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: **www.forbo-flooring.co.uk/downloads**

Cleaning and maintenance guides should be passed onto the main contractor, client or end user as appropriate on completion of the installation, and before any hand over clean is started.

If in any doubt contact us:

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Additional Reference documents and information:

- Forbo Floor Coverings Installation Guide: **www.forbo-flooring.co.uk**
- BS8203:2017
- The CFA Guide to Contract Flooring (Tel: 01159 411126)