Building and Construction Authority

Good Industry Practices for

VINYL FLOORING

IDEAS for

- *Design*
- *Installation*
- *Maintenance*

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FOREWORD

The Building and Construction Authority's (BCA) Construction Quality Assessment System (CONQUAS) has been widely adopted as the de facto national yardstick for measuring the workmanship quality of building projects. To meet rising expectations of homeowners, the Quality Mark (QM) Scheme was launched in 2002 to promote consistent high workmanship standards for private residential developments. To help projects achieve the standard in CONQUAS and QM, BCA has developed a series of publications on Good Industry Practices for different trades.

The "Good Industry Practices – Vinyl Flooring" guide is part of the CONQUAS Enhancement Series which collates and shares some of the good practices adopted by industry practitioners and contractors on how good workmanship quality can be achieved in Vinyl Flooring work. It provides simple and practical illustrations on the types of vinyl flooring, quality checks during manufacture and proper installation methods. Common issues associated with Vinyl Flooring, their causes and possible solutions to address them are highlighted.

This guide is not meant to be a definitive dictation on how Vinyl Flooring must be designed and installed. It only serves to illustrate some of the good practices designers and contractors have adopted while designing and installing Vinyl Flooring. We gratefully acknowledge the contributions of the industry practitioners in the development of this guide and trust that the industry will find this publication useful.

Neo Choon Keong
Deputy Chief Executive Officer
Industry Development
Building and Construction Authority

ACKNOWLEDGEMENT

The "Good Industry Practices – Vinyl Flooring" was developed with inputs from Architects, Developers, Builders, Specialist Contractors and members from various industry associations and organisations.

A Technical Committee was formed to review the contents and good practices identified. We wish to thank the members of the Technical Committee for their valuable contributions.

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We would like to thank the following agencies, organisations and firms for their valuable feedback in the review of this guide:

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- Housing and Development Board
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Ang Lian Aik
Group Director
Construction Productivity and Quality Group
Building and Construction Authority

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1.0 INTRODUCTION

1.1 Background

Vinyl flooring is getting popular with the advancement in manufacturing processes especially in the photo printing technology where it can literally mimic any kind of surface including the texture and carpet pile (woven).

Vinyl flooring is easy and economical to maintain as it resists wear and tear and keep its shine without wax, polish or buffing. Unlike most natural flooring, it is not affected by water and easy to replace.

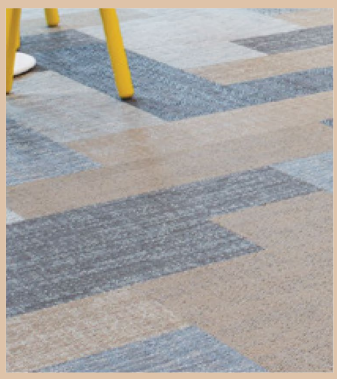
While it is offered as an alternate floor finish over timber, stone, ceramic and carpet in terms of cost and productivity, vinyl flooring also has its challenges especially on increasing awareness on safety and environment aspects.

This guidebook focuses on vinyl flooring applications for new built construction, which comprises the majority usage.

Timber finishes

Stone finishes

Carpet finishes



Printed finishes

1.2 Composition, Construction & Characteristic

The main composition of vinyl flooring is plastic resin manufactured from ethylene and chlorine, i.e. Polyvinyl Chloride (PVC). Currently, it is available in sheet, tile or plank format with solid or rotogravure finishes.

The common thickness ranges from 2mm to 5mm.

Some vinyl flooring is made of recycled vinyl but can be more prone to expansion and contraction.

Vinyl sheet is normally glued down to the substrate. Vinyl tile and plank can be glued (some with self-adhesive option) or laid as floating system with "Lock & Click" or tongue and groove.

Cushion underlayment can be incorporated for better acoustic and comfort.

There is a type of vinyl flooring called Vinyl Composite Tile (VCT) that has very little vinyl as a binder of which 85% are limestone. The advantage is limestone is rigid with minimal movement when exposed to hot or cold temperature. However, it has lower static load resistance and breaks easily due to irregular subfloor surface. In addition, it is susceptible to water and require regular waxing to seal the surface to prevent water penetration. In view of the properties, it is not suitable for local application and hence not be covered in this guide.

1.3 Pros and Cons

Pros

Vinyl flooring is a cost effective option, easy and fast to install with no tonality issue (provided it is from same batch of production). It is not susceptible to moisture as compared with timber, stone, ceramic and carpet. For application with adhesive, urethane or modified-silane adhesives will be a better choice to avoid issues in contact with moisture/water.

Vinyl Flooring can be easily replaced (no hacking involved) and ready for foot traffic almost immediately especially for those that adopts floating installation.

Maintenance cost is low as only daily sweeping or dry mopping is required. The design can also be catered to hide and disguise dirt from day-to-day foot traffic.

Cons

However, it is not as hard as stone and ceramic and susceptible to scratches especially for pure vinyl flooring. This can be overcome by incorporating a special UV coated wear layer with varying thickness to reduce scratch, stain, scuff, gouge and improve chemical resistance.

In addition, not all vinyl flooring are suitable for heavy duty/traffic areas e.g factory, warehouse etc. Please check with the manufacturer for recommendation.

Vinyl flooring, especially vinyl tile and plank can be subjected to peaking and curling when exposed to direct sunlight over a prolonged period.

2.0 DESIGN CONSIDERATION

2.1 Type

Vinyl flooring are mainly classified as homogeneous and heterogeneous.

Homogeneous vinyl comprises a single layer with a wear layer (preferred) and is usually in solid colours. It is ideal for heavy foot traffic areas e.g. healthcare, office, etc due to its rigidity and toughness.

Heterogeneous vinyl is made up of multi-layers. As it is in layers, it can incorporate various patterns and textures including mimicking wood and stone texture and feel.

Heterogeneous vinyl typically has multiple layers incorporating a non-slip layer (for floating installation), glass fibre reinforced core (for thermal expansion and contraction control), the print and topped with a wear layer.

2.2 Thickness

5mm click and lock vinyl floor tiles are commonly used for residential buildings, whereas 2mm to 3mm vinyl sheets are used for commercial and institutional buildings.

2.3 Wear Layer

The common wear layer is polyurethane (i.e. PU coating) and most recommendations make reference to the thickness of the wear layer for durability and type of application.

The table below summarises the common recommendations:

EU	ASTM	Recommendations
1.0 mm	20 mil	for 15 years commercial or lifetime residential
0.55 mm	12 mil	for 10 years commercial or 30 years residential
0.3 mm	6 mil	for 5 years commercial or 15 years residential

2.4 Thermal Movement and Joints

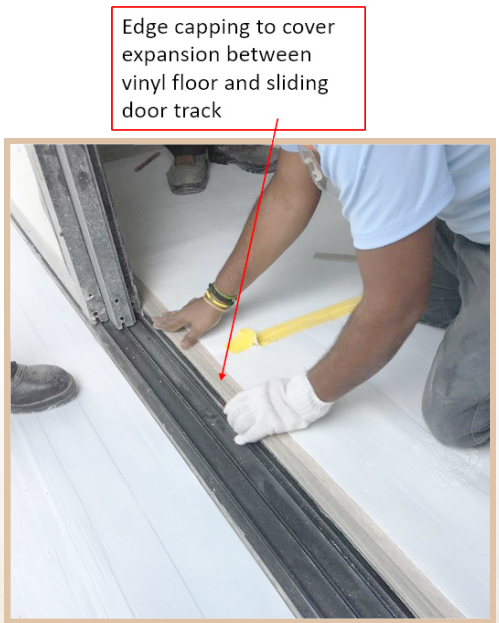
Areas that are exposed to direct sunlight for prolonged period might lead to peak and curl at the edges.

Thermal movement can cause the following:

- Gapping especially at end joints or tent up particularly for vinyl tile and planks;
- Disengagement of interlocking in floating floor or de-bond adhesive; and
- Fading of the surface finishing.

Vinyl flooring with fibreglass reinforcement will help to enhance dimensional stability.

Providing expansion joint at edges of the floor, usually 3mm to 5mm, will help to minimise the impact. It is advisable to avoid butt joint especially with other materials. Finishing off with a capping is an alternative that is commonly done.



It is always good practice to do a mock up at the actual location for long term testing. Always check with the manufacturer for their recommendations.

Ultra violet (UV) shield curtain and window/sliding door will help to minimise impact of peaking and curling at the edge.

2.5 Adhesives

The common adhesives used are as follows:

a. Acrylic – Water Based
b. Urethane – Synthetic resin based
c. Modified Silane – Polymer based

Different types of vinyl have unique properties, which requires usage of correct types of adhesives as per specialist recommendations.

Preferred properties are as follows:

a. Fast drying – normal 3-5 days
b. Low Volatile Organic Compounds (VOCs)

Pressure sensitive adhesive type could be considered for easy replacement of vinyl flooring. In any case, please consult the manufacturer for suitability of location to be used.

Please note that multipurpose adhesive can work well with felt-backed sheet vinyl but not with homogenous vinyl due to plasticizer migration.

Adhesives can be applied using roller, trowel or by spraying.

2.5.1 Acrylic Adhesive

Acrylic adhesive in water dispersion is economical and generally low in VOCs and therefore ideal for indoor application. As it is water-based, excess can be easily removed and will not mess up the surface.

Usage of non-water based adhesive is recommended for areas which have high probability of contacting water (example: area outside washroom).

2.5.2 Urethane Adhesive

Epoxy or polyurethane adhesives are that provide ultimate strength for most of the floor coverings for internal and external application.

However, any excess must be cleaned immediately as it would be difficult to remove once cured. Once the adhesive cured, it is moisture and weather resistance especially for external use.

2.5.3 Modified Silane Adhesive

Modified silanes are one component adhesives which react and cure under the action of moisture. During curing, by polycondensation, it emits methanol. Once cured, it is elastic. There are two types of modified silanes, i.e. polyether or polyurethane. Polyether modified silane is more elastic.

The main advantage of modified silanes is that it does not require primer prior to application. In most cases, cleaning of the surface is enough to ensure adhesion.

Typical properties of modified silane adhesive are as follows:

a. Elastic and flexible
b. Tensile strength between 1 MPa to 4 MPa
c. Maximum elongation of 100% to 300%
d. Very good resistance to moisture or thermal load
e. Extremely resistant to high levels of moisture and alkalinity
f. Adhere to most surfaces with/without primer or activator subject to subfloor condition.
g. Free of water, solvents, VOCs and hazardous chemicals
h. Do not contain harmful isocyanate

2.6 Green Vinyl Flooring

Though vinyl flooring made from virgin vinyl is preferred, for sustainability, recycled vinyl may be added in. Virgin vinyl is the highest grade, pure vinyl with very low impurities used in making vinyl records. The recycled vinyl referred here is the discarded vinyl product, or semi-finished product, that are diverted from waste for use within a new product. Vinyl flooring using recycled PVC from unknown sources are not recommended as it might contain contaminates and toxic, especially heavy metals, and the properties will not be stable.

Reusing vinyl is a matter of melting down the old product and blending it with virgin resin to produce the new vinyl flooring.

There are environmental friendly vinyl flooring certified by Singapore Green Building Council (SGBC)which is commonly used in Singapore.

2.7 Plasticizers

Plasticizers are chemical added to vinyl to make it flexible. Avoid using vinyl flooring that uses phthalates as plasticizer as it may cause health issues (including reproductive issues) and some are even known to be carcinogens. Bio-based plasticizers are a good alternative as it does not pose a health risk or harm the environment.

Some plasticizers can react with adhesive and cause a problem called plasticizers migration. The chemical reaction will loosen the adhesive, discolour and soften the vinyl flooring.

2.8 Specification

Listed below are common specifications for vinyl flooring where applicable.

	STANDARDS	SPECIFICATION
Dimensional Stability	EN ISO 23999	≤ 0.25% for tile ≤ 0.40% for sheet
Curling (after exposure to heat)	EN ISO 23999	≤ 2 mm
Residual Indentation	EN ISO 24343-1	≤ 0.10 mm and ave 0.03 mm
Wear Layer thickness	EN ISO 24340	1.0 mm 0.55 mm 0.3 mm
Total Thickness	EN ISO 24346	-10% / +13% (average) and not more than 0.1mm
Total Weight	EN ISO 23997	+13% / -10%
Abrasion Resistance	EN ISO 10581 (Homogeneous type) EN ISO 10582 (Heterogeneous type)	Type 1
Slip Resistance	SS485 EN 13893 (dry floor) DIN 51130	Coefficient of friction ≥ 0.4 (dry floor) Class DS R10-R11 (horizontal) R12-13 (slope)
Castor Chair Resistance	EN ISO 4918 EN 425	Pass (occasional/continuous use) Type W castor
Light Stability (Colour fastness to artificial light)	EN ISO 105-B02	Rating ≥ 6

	STANDARDS	SPECIFICATION
Flammability / Smoke Emissions	EN 13501-1 or EN 14041 or EN ISO 9239-1	Bfl-s1
Flame Spread / Ignition	EN 13501-1 or EN 14041 or EN ISO 9239-1	Sprinkler-protected (sleeping) Class C Sprinkler-protected (non-sleeping) Class D Non-sprinkler-protected (sleeping) Class B Non-sprinkler-protected (non-sleeping) Class C
Cigarette Burn resistance	EN 1399	min Class 3
Stain and Chemical Resistance	EN ISO 26987	Class 0
Seam Strength (welded joint)	EN 684 ISO 16906	Average ≥ 240N/50mm Individual ≥ 180N/50mm Pass
Fungi and bacteria resistance	ISO 846 (Method A – Fungal Growth Test and C – Resistance to Bacteria)	Does not favour growth
Locking Strength (click and lock tile/plank flooring)	ISO 24334 (based on measurement at F0.2mm)	5mm thick Long Side – 1.30 KN/m End Face – 2.50 KN/m
Form of Delivery	EN ISO 24344 (for rolls) EN ISO 24342 (for tiles)	
Furniture Leg	EN 424	No damage
Flexibility	EN ISO 24344	Method A - No cracking
Toxicity test (Toxic Fume)	BS EN 45545-2 EN ISO5659-2	CIT < 0.75
Phthalate Content	EN 14041:2018	Refer to EN 14041:2018 Table 4 ≤ 1,000 mg/kg
Lead Content (for recycled vinyl)	EN 14041:2018 EN 1122:2001	Refer to EN 14041:2018 Table 4 ≤ 1,000 mg/kg
Cadmium Content (for recycled vinyl)	EN 14041:2018 EN 1122:2001	Refer to EN 14041:2018 Table 4 ≤ 100 mg/kg

3.0 INSTALLATION

3.1 Methods

In general, there are 2 methods of installation:

- Glue-down
- Floating

Vinyl sheets are usually glued-down. Vinyl planks or tiles can be glued or installed as floating system. For floating system, some are joined with tongue and groove or commonly now in Click-and-Lock system for better stability and level.

For tongue and groove system, gluing down at the edge is normally done to prevent movement, especially at the entrance.

Floating method requires more preparation and better condition of substrate than glue-down method even though vinyl flooring is flexible.

Glue down method requires the adhesive to harden for at least 24 to 72 hours before it is ready for traffic.

3.2 Moisture in Concrete and C&S (Cement and Sand) Substrates

For concrete substrate, BS 8203 states that humidity levels must not exceed 75% relative humidity (Hygrometer Test).

Alternatively, test with a moisture meter and it should not exceed 6% However, please take note of the limitation of the depth using moisture meter. When in doubt, drill a hole and insert a probe to check moisture deeper. Most moisture meter will have a connection for the probe.

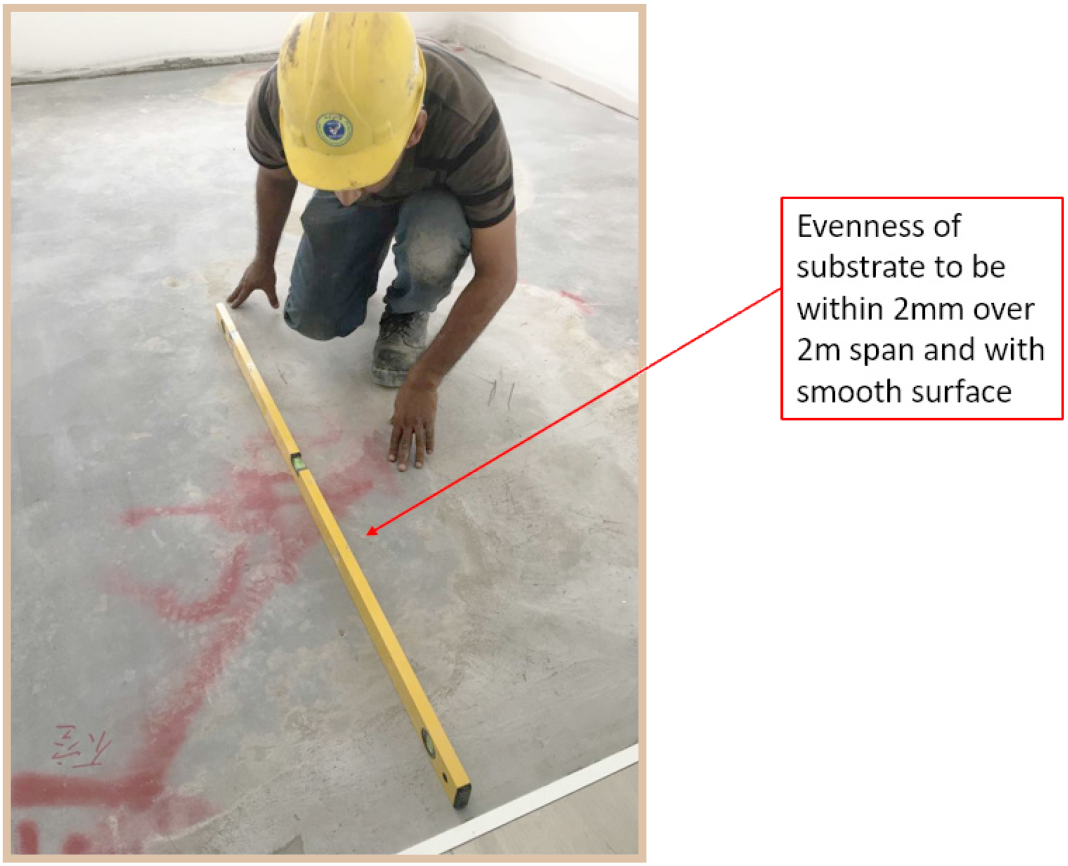
Checking the casting date of the concrete slab and C&S substrate will help to ensure they are properly cured. High moisture/dampness issues should be resolved before laying levelling compound on any floor coverings.

Concrete/C&S Screed substrate moisture should not exceed 75% relative humidity (Hygrometer Test) or 6% using a moisture meter

3.3 Level of Concrete and C&S Substrates

The surface level of substrate should not be more than 2mm over 2m span and with smooth surface. Pre-packed smoothing and self-levelling compound is good for improving the levelness of substrate. It is usually quick set and ready for installation shortly.

For vinyl flooring, smoothness of the substrate is critical to avoid telegraphing the imperfection in the substrate to the surface due to the thickness and flexibility.



3.4 Curing Compound, Sealer, Hardener Issue

For installation of vinyl flooring with adhesive, residue of curing compound, sealer and hardener on the concrete/screed might affect adhesion.

To test, sprinkle water on concrete/screed surface and observe. If water start to be absorbed in 15-20 seconds, likely there is no residue. If water stays beaded up, it is likely there is still residue of curing compound/sealer.
Watch out for areas near walls as the curing compound might dissipate at slower rate due to lower traffic.

Possible solutions are shot blasting or mechanically abrading the concrete/C&S surface to remove the residue. Using acid to chemically remove the curing compound is not recommended as residue will affect bonding and not environmental friendly if discharged to drainage system.

3.5 Acclimatization

Prior to the installation, vinyl flooring requires at least 48 hours of acclimatization to avoid latent defects like opening or curling of joints. Vinyl will expand and contract depending on the temperature and air humidity.

3.6 Equipment

3.6.1 Vinyl Sheet Floor (glue-down method)

a. Sharp Utility Knife – for cutting and trimming
b. Straight edge – for cutting seam
c. Roller/brush/Grooved Spatula – for applying adhesive
d. Roller/push broom – for installation and removal of air bubbles
e. Hot Air Hand Tool – for softening vinyl and adhesive for dressing
f. Heat Weld – for welding the seam with a weld rod
g. Auto Groover and Hand Groover – for cutting groove for heat welding
h. Spatula/Trimming knife – for skiving welded seam

3.6.2 Vinyl Tile/Plank Floor (floating method)

a. Sharp Utility Knife – for cutting and trimming
b. Double sided tape – alternative for holding down area to prevent movement particularly at door area
c. Roller – for levelling the joint
d. Pull bar – for closing stubborn seam
e. Rubber mallet – for compacting

Tools for installing vinyl plank

3.7 Handling and Storage

To observe supplier's instruction in storing the vinyl flooring and adhesive. Handle with care including condition of the storage area and stacking instruction to avoid distortion of the material.

In general, vinyl sheet in roll should be stored upright.

Materials from different batches of production need to be identified to avoid tonality issues.

3.8 Vinyl Flooring with stripes

For vinyl woven flooring with stripes (especially woven flooring), the stripes should be oriented toward the light direction (window) or lengthwise within the room (traffic direction).

For corridor, the stripes should be laid in the same direction of the traffic flow.

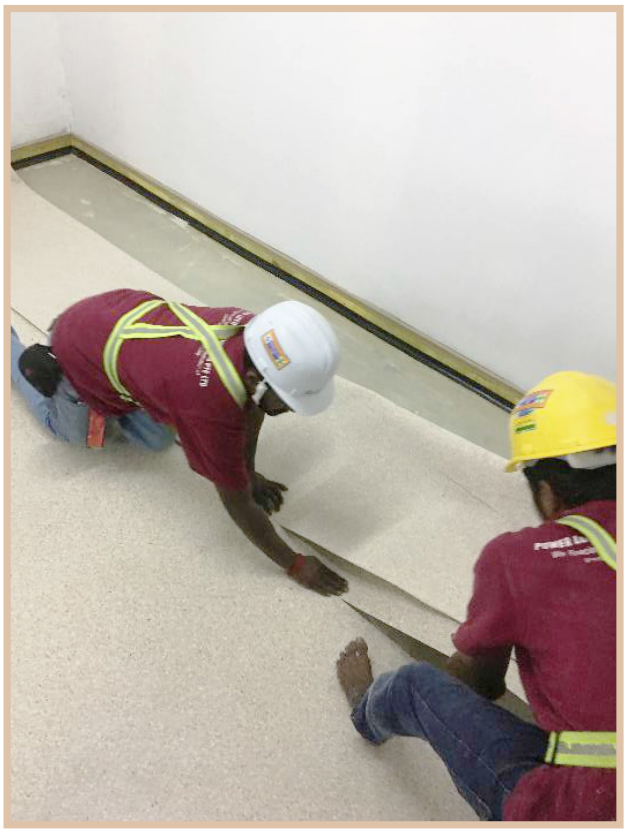
3.9 Installation Guides

3.9.1 Preparation

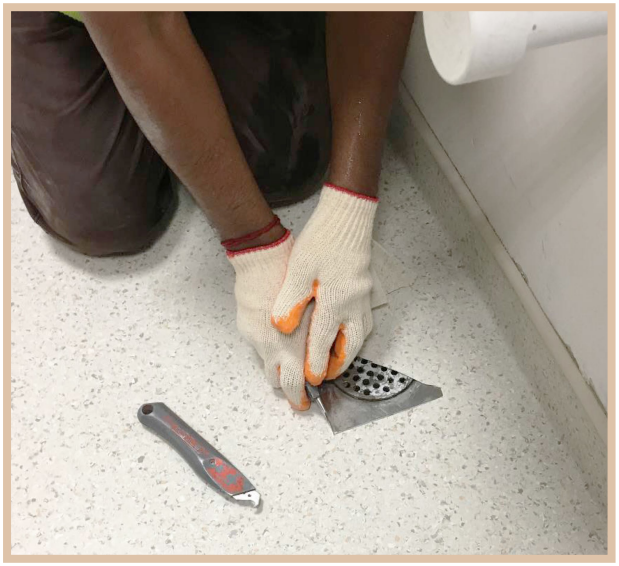
a. Check level of substrate specially to flush with other floor finishes or divider.
b. No hollowness for concrete and screed substrate. For other substrate, ensure it is rigid and sound.
c. Check moisture level of concrete and screed substrate.
d. Ensure other wet trades are completed and area can be sealed to prevent contact with rainwater.
e. Depending on the site condition, ensure wall finishes are completed and door frame installed.
f. The floor to receive vinyl flooring should be clean, smooth, flat and dry. All holes and cracks must be patched.
g. Evenness of substrate not more than 2mm over 2m span.

3.9.2 Glue-down Vinyl Sheet

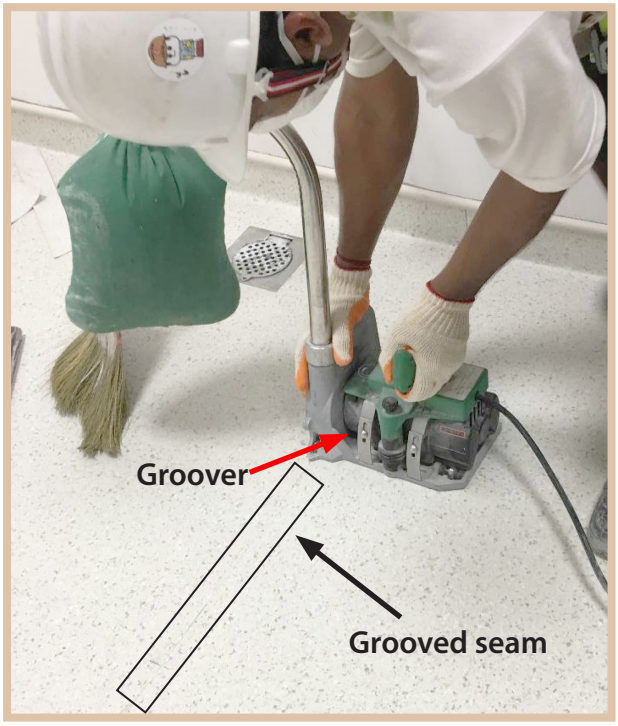
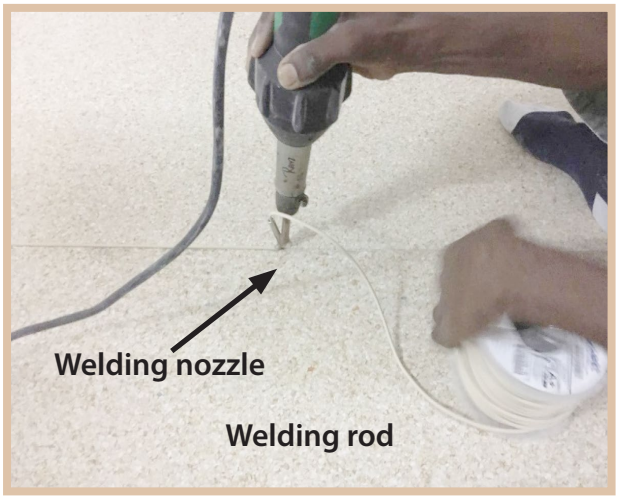
S/NO	PROCEDURE	PHOTOGRAPHS
1	Plan the installation, especially on the direction of the roll. For large space, mark the edge on the floor to ensure alignment.	
2	Depending on the choice of adhesive, a primer coat may be required for better bonding	

S/NO	PROCEDURE	PHOTOGRAPHS
3	Install vinyl sheet roll according to installation plan. Lap fold vinyl sheet one half at a time and roll a thin consistent adhesive using the paint roller. Based on manufacturer's recommendation, allow for the adhesive to dry (tacky to touch state) before laying back the vinyl sheet. If the adhesive is not completely dry before installing the vinyl sheet, bubbles may be trapped under the vinyl sheet.	 Position the vinyl sheet in place so that no shifting can occur. Do not lift the vinyl sheet into place as it may shift slightly and wrinkle. Recommended to work without shoe when working on top of vinyl flooring to avoid damages due to grits.
4	Start from the centre, remove air under the vinyl sheet using a roller or push broom. Do not twist the vinyl sheet when placing it onto the adhesive. Repeat installation process for the remaining half of the vinyl flooring.	

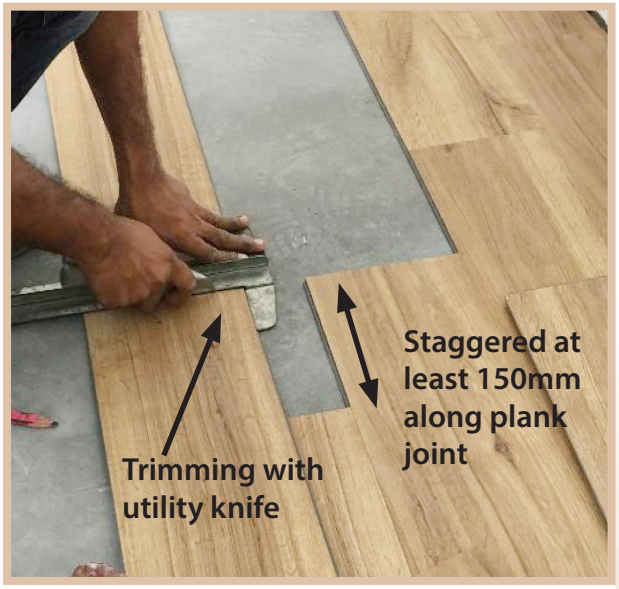
S/NO	PROCEDURE	PHOTOGRAPHS
5	Trim excess material along walls and corners using a sharp utility knife leaving at least 50mm excess for final trimming later.	 At least 50mm excess of vinyl sheet for final trimming
6	For vinyl sheet dressing up to skirting, it is recommended to provide a rounded foam/ coving fillet at edge to prevent damaging the vinyl sheet at sharp bend. Blower may be used to soften the bended edge for the upturn. A wall capping strip is commonly used to tuck the vinyl sheet under for terminating at wall.	 Wall capping strip Rounded foam/ coving fillet at edge to prevent damage to vinyl sheet due to sharp turn

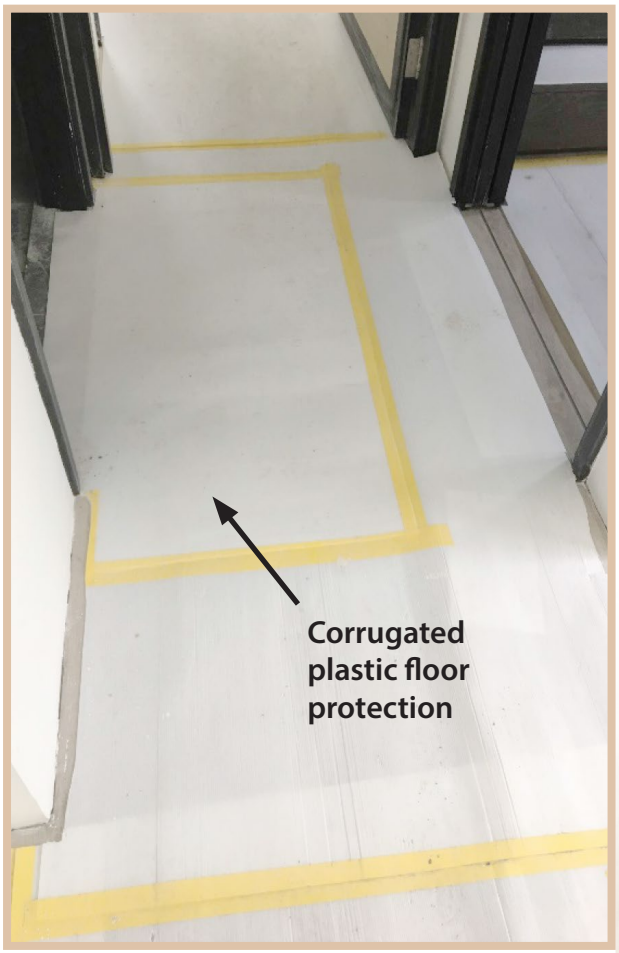
S/NO	PROCEDURE	PHOTOGRAPHS
7	For working at corners and projection (e.g. floor trap cover, etc.), make relief cut to allow the material to lay flat before the final cut. Final trimming should be done by cutting in with a sharp utility knife or trimmer allowing a minimum 3-5mm expansion gap. Final cut must be made before applying the adhesive. Seal joints with cut edge around fittings with silicone mastic.	

3.9.3 Heat Weld seaming the joint

S/NO	PROCEDURE	PHOTOGRAPHS
1	Grooved seam with a groover to recommended depth to form a "V" shape groove.	
2	Install the correct diameter of welding nozzle and weld rod to the Heat Weld as recommended by the supplier Clean welding nozzle with a wire brush to clear debris Check temperature of welding nozzle before welding as recommended. Move Heat Weld along the grooved seam with the weld rod feeding through the welding nozzle at recommended speed and temperature.	
3	Wait for weld rod to cool down before cutting off the surplus.	

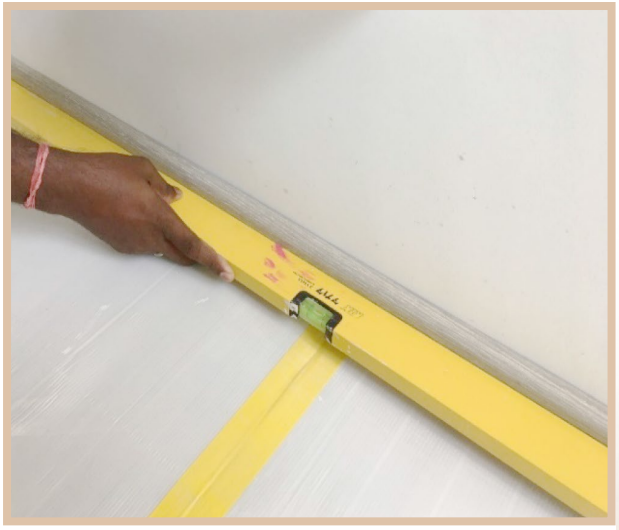
3.9.4 Floating Vinyl Plank

S/NO	PROCEDURE	PHOTOGRAPHS
1	Plan the installation according to the approved layout. In most cases, the plank is laid parallel to the entrance to minimise movement caused by traffic and for aesthetic purpose. Some manufacturer/consultant may prefer the first plank to be glued to avoid movement. For tongue and groove (T&G) or in Click-and-Lock, the tongue is cut off for the first row using a utility knife. For Click-and Lock, the next piece is inserted at a slight angle to click into place.	
2	For cutting to length, use utility knife and snap. Trimming with utility knife may be required for loose edge.	

S/NO	PROCEDURE	PHOTOGRAPHS
3	A rubber mallet is normally used to compact the planks. A small roller may be used to level the joint if necessary. Allow a minimum 3-5mm expansion gap at edges and around door frame and fittings. Seal joints with silicone mastic or cap with a trim. For transition with different floor finishes and butting with sliding door frame, a cap/ trim is recommended to accommodate expansion.	
4	Clean to remove glue/remains from the installation process. Keep area clear from traffic for 24 hours (for glued area) Protect the vinyl flooring if needed. After installation, surface of vinyl flooring needs to be protected from damages before handing over. One of the preferred choices is light corrugated plastic sheeting. The advantages are as follows: a. Lightweight, strong and durable b. Impact resistant c. Reusable d. Water resistant For branded type like Plasti-Shield, it is certified to be non-toxic, resistant to chemicals and flame retardant. In any kind of protection, it is recommended to tape all the joints and edges to prevent dirt or water from being trapped underneath.	

3.9.5 Skirting for Vinyl Plank

S/NO	PROCEDURE	PHOTOGRAPHS
1	The installation of skirting is usually done after the installation of vinyl flooring and protection cover. Apply adhesive evenly on the back of the skirting and glue it onto the wall. Alternatively, uPVC skirting is used where the inner profile is either nailed or glued. It is capped with a laminated outer profile. Some products come with self-adhesive tape for easy mounting of inner profile to wall.	 

S/NO	PROCEDURE	PHOTOGRAPHS
2	Fix in masonry nails at regular interval along the skirting to enhance fixing to the wall.	
3	Check for squareness and alignment of skirting after installation. The requirement for skirting squareness and alignment are not more than 4mm over 300mm and 3mm over 1.2 m respectively.	 Checking for skirting squareness.  Checking on skirting alignment.

S/NO	PROCEDURE	PHOTOGRAPHS
4	Seal off the joint between skirting and wall joint with sealant.	

3.10 Repairing

For vinyl floor tile/plank, the recommended approach is to replace marred or damaged tile/plank. As most vinyl floor tile/plank are flexible, cutting the tongue of the replacement piece may not be necessary as it can be bent and inserted into the groove in existing tile/plank. If cutting the tongue is required, apply adhesive for bonding to the substrate. Cover with wax paper and add weight over glued area to ensure perfect patch until properly cured.

For vinyl sheet, small cuts and scratches can be patched using a clear liquid seam sealer (water based resin). Start by cleaning the damaged area with lacquer thinner and apply the sealer. Upon drying, the repair will be virtually invisible.

For serious damages like burns or tears, the damaged area will be cut (i.e. using double cut method to ensure perfect match) and press in the replacement patch with adhesive. Prying out the cut damaged vinyl patch may require heating with electric heat gun to soften the existing adhesive especially when it is a non-pressure sensitive adhesive. Cover area with wax paper and add weight over patched area until cured to ensure perfect patch.

4 MAINTENANCE

4.1 Recommended Maintenance

The recommended maintenance for vinyl flooring are as follows:

a. Place protective pads for heavy furniture or appliances
b. Use mat at entrance (with slip resistance backing) to minimize soiling and scratching
c. Avoid rubber-backed mat as it might permanently stain some vinyl floors
d. Sweep or vacuum regularly
e. Wipe up spills immediately
f. Damp mop with approved cleaner for deeper cleaning
g. Avoid oil soap and dish washing detergent as it will leave a soapy residue that dirt will stick on.
h. Avoid placing hot objects on the vinyl floor

4.2 Common issues

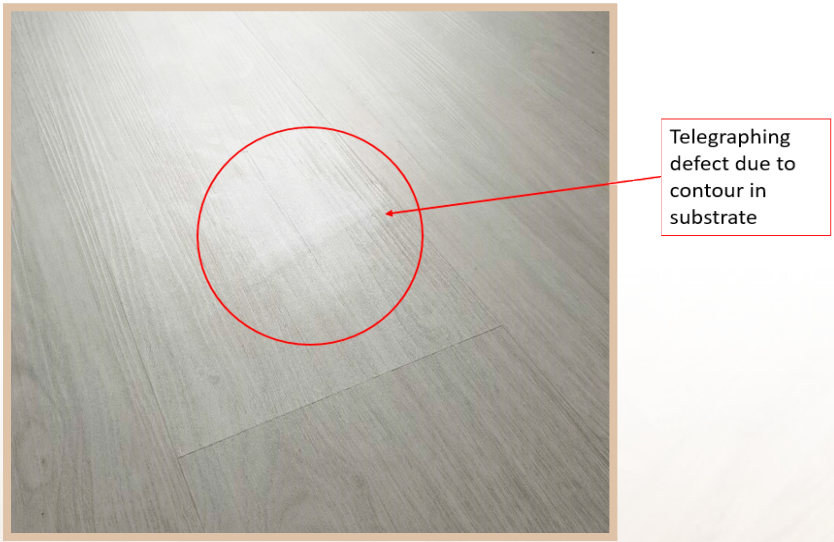
4.2.1 Telegraphing

Visible swirls or pattern on surface of vinyl floor are caused by the impression of some unevenness of the substrate below. It is usually more visible on vinyl floor sheet with matte finishes.

It may be due to poor installation, maintenance method or type of vinyl floor material.

For installation, it can be avoided by:

a. Levelling the floor with a smoothing and self-levelling screed or grinding off protruding areas
b. Cleaning the surface
c. Ensure the correct moisture in screed or concrete slab
d. Ensure the adhesive is properly dried
e. Sufficient and proper rolling. Do take note of the recommended weight of the roller.



4.2.2 Bubbling/Detachment

To avoid bubbling in installation of vinyl flooring with adhesive, allow the adhesive to dry to a firm tack before laying.

As vinyl flooring is impervious, it prevents excess moisture from evaporating and in the long term, detachment and bubbles may occur. Always check the moisture level in substrate prior to installation.

4.2.3 Tonality

Different production batches of vinyl floor material may have a slight deviation in gloss, colour, texture or pattern. To avoid such issue, do ensure the material used is of the same production batch.

For installation of vinyl floor tiles/planks, it is a good practice to blend at least two cartons for better tonality control.

4.2.4 Failure of heat welded seam

Slit seams or inconsistent seam gaps are workmanship issues. Slit seams will appear dull or dingy and are not acceptable in healthcare environment as bacteria and germs may harbour at the opening. It is also recommended to heat weld the seam 24 hours after the adhesive is being applied.

The recommendations are to:

a. Follow manufacturer's recommendation, especially on the required temperature for fusing the welding rod and depth of the groove.
b. Practice first before actual welding.
c. Recommended to use auto groover instead of hand groover for better consistency. Use hand groover only for area that cannot be reached by auto groover.
d. Ensure welding tool is properly cleaned as residue at the nozzle might affect the consistency of the temperature and result in poor seam joint. Use a wire brush to clean the nozzle.
e. Ensure that the speed nozzle is the correct diameter of the welding rod.
f. Ensure the welded seam is cooled before trimming the excess as welding rod has a natural tendency to shrink as it cools.

4.2.5 Peaking and Curling in Vinyl Tile/Plank

As explained in 2.4, occurrence of peaking and curling in vinyl tile/plank is mainly due to thermal movement especially if the flooring is subjected to prolonged direct exposure to the sun. It is always good practice to do a mock up under the same conditions for long term testing to test out manufacturer's recommendation.

5.0 REFERENCES

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52 Jurong Gateway Road, #11-01,
Singapore 608550

Contact centre:
1800-3425222 (1800-DIAL BCA)
Tel: +65 6534 0219 (for Overseas Call)
Fax: +65 6334 4287
Email: bca_enquiry@bca.gov.sg

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