



SUBFLOOR PREPARATION GUIDE



SUBFLOOR PREPARATION GUIDE INTRODUCTION

This Subfloor Preparation Guide describes the different types of procedures available to produce the most acceptable substrate possible, ready for the installation of one or more of our products.

All aspects of subfloor preparation and floor covering installation should be carried out in accordance with the appropriate British, European or International standards and follow current good working practices.

During the laying of the floor covering an ambient temperature of at least 18°C must be maintained along with a floor temperature of at least 10°C. The type and condition of the subfloor has a direct influence on the installation and performance of a floor covering and the importance of subfloor preparation cannot be emphasised too strongly.





A substrate should remain stable and be provided with any expansion, contraction and crack inducement joints as necessary.

Before the final treatment to bring a subfloor up to the standard required for the application of floor coverings to begin, the condition of the base must be investigated and any necessary treatments or repairs carried out. Failure to do this increases the potential for premature failure, which is counterproductive and expensive to rectify.

Where application involves questionable substrates the installer must exercise extreme caution and advise the client of the attendant risks involved.

Old or new substrates contaminated with oil, grease, fat or chemicals, faulty concrete, inferior grades of concrete, floors with large cracks or crevices, poor asphalt and tiles are not satisfactory bases for the application of most of our products. Some severe conditions cannot be corrected by normal preparation techniques and the only remedy may well be to uplift and relay the complete subfloor.

Any substrate forming the base on which an F. Ball product is to be applied should be designed to withstand all structural, thermal and mechanical stresses and loads which will occur during service. A substrate should remain stable and be provided with any expansion, contraction and crack inducement joints as necessary. Cracking, unevenness and faults in the substrate may be reflected through the surface treatments and floor coverings.

It must be acknowledged that any shortcomings or failures in a subfloor could lead to a premature failure of the new decorative floor covering.

References

The following British Standards should be referred to when specifying and installing F. Ball products or systems:

- BS EN 312 - Particleboards. Specifications.
- BS EN 314-2 - Plywood. Bonding Quality - Requirements.
- BS 5325 - Installation of textile floor coverings. Code of practice.
- BS EN 622-5 - Fibreboards. Specifications - Requirements for dry process boards (MDF).
- BS EN 636 - Plywood. Specification.
- BS 8201 - Code of practice for installation of flooring of wood and wood based panels.
- BS 8203 - Installation of resilient floor coverings – Code of practice.
- BS 8204-1 - Screeds, bases and in-situ floorings – Part 1: Concrete bases and cementitious levelling screeds to receive floorings – Code of practice.
- BS 8204-5 - Screeds, bases and in-situ floorings – Part 5: Mastic asphalt underlays and wearing surfaces – Code of practice.
- BS EN 17668:2022 - Adhesives for floor coverings. Preparation of adhesive application. Test methods for the determination of corresponding humidity of mineral substrates.

SUBSTRATES AND CONSIDERATIONS

Preparation of the substrate

Application guidance for F. Ball products or systems should be followed at all times and are essential for the success of the finished floor. In order to minimise problems and save any possible additional costs, it is essential that specifiers, clients, main contractors or installers of subfloors such as concrete, sand/cement screeds and calcium sulphate screeds, should have tested and be satisfied that the surfaces are to specification and are adequate for the intended use prior to the installation of our products.

The company recommends the procedures mentioned in this guide for the preparation of concrete, screeds and other surfaces prior to the installation of our products.

In the case of vertical surfaces, extra consideration should be shown due to possibly greater absorbency of many of the surfaces i.e. brick, blockwork, plaster, etc and the surface regularity may be insufficient.

Coverage rates of materials may be affected by the selected method of surface preparation and due allowances should be made for any increase or decrease.

Considerations - Old concrete and screed surfaces.

Old surfaces are often contaminated, worn or degraded and often present a greater risk than new substrates. BS 8204-1 should be used as a guide to good flooring methods. In order to minimise problems and save additional costs, it is essential that specifiers, clients, main contractors or installers of F. Ball systems have the floor tested, and are satisfied that surfaces are adequate for the intended use.

A surface tensile pull-off strength of at least 1.5 N/mm² or in-situ crushing resistance test, with a maximum depth of indentation of 3mm, in accordance with BS 8204-1, is required onto a prepared subfloor before the application of floor smoothing compounds and serves as a good guide as to the integrity of the floor.

Contaminated surfaces

In the case of contaminated surfaces, the depth and type of contamination should be checked to ensure that removal and subsequent adhesion can be ensured. It is often advisable to take cores from the most contaminated areas to be sure of penetration depth and the soundness of substrate. For instance, oil can penetrate many centimetres into concrete, and although the surface may be cleaned, it can migrate back to the surface.

Adhesion of a Waterproof Surface Membrane (WSM), compound or adhesive may be compromised or in the worst cases be non-existent. If in doubt, do not progress any further work without management instructions. Further discussion with our Technical Service Department may be advisable before proceeding.

WEAK AND DAMAGED SCREEDS

Poorly installed sand/cement or calcium sulphate screeds can result in a weak or friable surface which is unsuitable for the application of subsequent subfloor preparation products and installation of decorative floor coverings. A poorly compacted, damaged, or weak screed should be completely removed by mechanical means and reinstalled correctly. Alternatively, the surface can be treated with a surface reinforcement system such as Stopgap SRS which will quickly penetrate and stabilise the surface of a screed.

Before the application of Stopgap SRS, weak or damaged screeds should be evaluated by either an In-Situ Crushing Resistance test (ISCR) or even a subjective scratch test to evaluate the condition of the subfloor and to demonstrate its suitability. The surface of the screed must be exposed, and all laitance and any previously applied adhesives or smoothing compound residues must be completely removed. The area should be vacuumed to remove all dust and debris so as not to impair adhesion and penetration. Stopgap SRS can be used over heated floors and damp subfloors but should not be used on calcium sulphate screeds where the Relative Humidity is above 85% or over subfloors where movement is anticipated.



LAITANCE

Laitance is often present on new concrete bases, sand/cement and calcium sulphate screeds and should always be removed. Laitance is formed from a mixture of water, cement and the fine particles of the screed or concrete brought to the surface when placing and trowelling. As the concrete or screed cures this mixture dries to form a crust or thin layer (known as laitance) on the surface.

The wetter the mix, and the more it is worked or trowelled, the thicker and usually weaker the laitance will be. The thickness of laitance may vary from, in the best cases, barely measurable - to the worst examples, 6mm or more. Scoring the surface with a steel edge (i.e. a screwdriver) until the main aggregate in the mix is reached will determine the thickness of the laitance.

Laitance is a friable and weak layer, and can either delaminate or be subject to impact damage, or may go to dust when abraded by traffic. Therefore, to ensure the new floor surface and smoothing compound are able to fully bond, the floor needs first to be mechanically prepared to expose the aggregate in the concrete/screed base. The heavier the floor traffic, and the greater the temperature fluctuations that the floor area is subjected to, the more important laitance removal is. If not removed, laitance is a major cause of failure within concrete/screeded floors and may lead to failure of the surface treatment, smoothing compound or floor covering. Unless it has been removed by previous surface preparation techniques, laitance may still be present on old concrete and screeded floors. Removal is vitally important.

Certain propriety brands of screed are formulated not to have laitance present. Should a desiccated surface through poor site conditions/placement be identified on the surface of such screeds then the supplies should be referenced for advice about the complete removal and loose broken material that cannot be adhered to.

To ensure the new floor surface and smoothing compound are able to fully bond, the floor needs first to be mechanically prepared to expose the aggregate in the concrete/screed base.

STEEL FLOORS

Typical areas for steel floors are lifts and ship decks. In any instance the steel (whether mild, galvanized, stainless etc) must be free from corrosion, bright and shiny and suitably fixed to a supportive base. In circumstances where the project is classed as marine (i.e. offshore) an epoxy primer (deck-plate primer) such as Stopgap F77 may then be necessary to prevent future corrosion/rusting.



HOW TO TREAT STEEL DECKS/METAL ACCESS PANELS

- **Offshore:** Stopgap F77 first if off shore.
Stopgap P141 Primer.
Stopgap 1200.
- **On shore:** Stopgap 1200 direct or
Stopgap Fill and Prime
(even over old residues) then
Stopgap 1200/Stopgap 700.

SURFACE PREPARATION TECHNIQUES



The most frequently used methods of surface preparation of concrete or screeded floors are:

- VACUUM RECOVERED DUST-FREE SHOT/GRIT BLASTING**
- MECHANICAL PLANING**
- GRINDING**
- ABRADING**

Floors and their uses vary enormously. Therefore, each method must be judged on its merits and full account be taken of the working environment in which the preparation has to take place. For example, planing may be a perfectly suitable method of preparing a floor in an unoccupied site. However, the resulting dust and noise may preclude it in many other situations. A subfloor mechanical preparation specialist should be consulted regarding the appropriate method.

Mechanical Surface Preparation - Removal, Cleaning and Finishing

Whatever the make or model of surface preparation equipment the principles of the operation remain the same. The capabilities and performance are gauged by machine size, power supply and sizes/grades of accessories selected for the task. Hand tools are readily available for hard to reach areas and preparation of "edges". It is important that the contractor has an understanding of the importance of selecting "The correct method" of mechanical surface preparation to remove, clean or key the existing material(s) ready to receive the specified new products. It is also important to highlight that all grinders, planers and shotblasters and associated hand tools are designed to be used with industrial vacuum systems or heavy-duty filtration units for containment of dust and to prevent dust contamination of the working area.

Key surface preparation principles - Dust-Free Shot/Grit Blasting

This is probably the fastest and most efficient form of old/new floor preparation and for the removal of laitance. The machines used vary in size and are generally operated by specialist concrete preparation contractors or flooring contractors. Horizontal and slightly inclined surfaces are impacted and abraded by steel abrasive/shot propelled at high velocity which cleans and textures the background surface while the abrasive shot and debris is contained and reclaimed by powerful suction processes. The shot is cleaned and recycled for immediate re-use. Up to 1000m² of flooring may be completed in a day. This is a dry process and floor laying may often continue while preparation is progressing in adjacent areas. In many cases old coatings and other contamination may also be removed by this method.

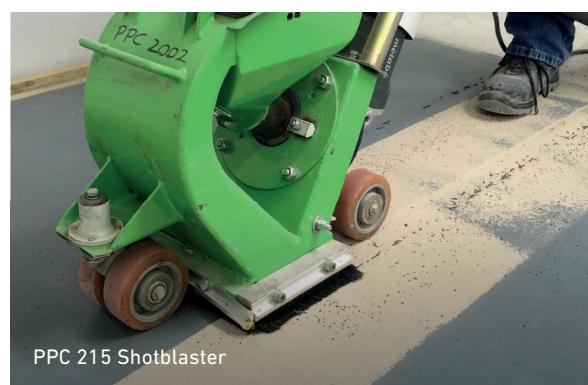
Dust-free shot blasting is far quicker, quieter and cleaner than mechanical planing, scabbling, etc. The type and size of the machine selected will determine production rates achievable and degree of profiling required for the specified material to be applied.

The medium for shotblasting equipment is steel abrasive "Shot". The most common grades are 390, 460 and 550.

Shotblasting can be selected for removal of laitance on new power floated concrete, cleaning and texturing asphalt, surface re-texturing, removal of coatings, steel preparation and exposing aggregate. The disadvantage is the general inability of the machine to remove exceptionally thick, hard or flexible materials i.e. certain epoxy or polyurethane floor surfaces. The specialist contractor using these machines will advise in more detail.

Shotblasting will produce a lining effect commonly known as tramlining. This can be minimised with operator experience, but will be visible when applying sealers or thin coatings. Shotblasting will highlight surface defects in the surface being prepared, this is particularly important when applying to old concrete.

Shotblasting will not effectively remove: soft composition screeds, sticky/bituminous materials or material in excess of ½ mm in thickness.



Mechanical Planing/Scabbling

Often referred to as 'concrete planing', the machines incorporate a drum which carries rows of flails/picks tipped with tungsten. This is an excellent method to remove laitance and other forms of surface contamination.

The finished profile is dependent on the size of the machine and the type and size of the flail selected by the operator.

Various types of flail are available:

- Milling flails are used for the removal of thermoplastic line markings, bituminous and rubber deposits, with minimal profiling to the background surface.
- TCT (Tungsten carbide tipped cutters) are used for cleaning and texturing concrete, asphalt stone surfaces and removal of screeds and coatings, creating a "rippled effect" on the background surface.
- Beam/Star flails are used for cleaning/ removing soft composition materials from hard surfaces/ concrete without damaging the surface but cannot be used on hard materials.

Typical applications are:

- Profiling concrete (TCT flails)
- Removing Thermoplastic lines (Milling flails)
- Removing soft materials (Beam/ Star flails)
- Reducing levels (TCT Flail)

Removing screeds/asphalt in excess of 5mm in thickness. (Picks are used on large ride on models).

Always check that the profile that is produced by the flail/picks selected are suitable for the material to be applied, the type and thickness of surface to be removed and the finished profile produced.

The finished surfaces may be grooved or flat and are generally rougher than using dust-free shot blasting. Greater thicknesses of the substrate can be removed quickly and more effectively than by shot blasting. Mechanical planing is slower and noisier than other methods but when attached to a suitable vacuum cleaner reduces dust to an acceptable minimum.



Mechanical Planing/Scabbling

Grinding/Abrading

Grinding machines are designed for precision, control and safe operation. The process is provided by diamond, tungsten or resin bonded grinding plates fitted to either single or multiheaded machines which rotate.

The diamonds cut, smooth and clean the background surface. There are different grades and sizes of diamond plates/tools and also Polycrystalline Diamond (PCD) especially designed to remove sticky compositions and adhesives.

Grinding would be selected for smoothing concrete, removal of coatings, adhesives, smoothing compounds and contaminants.

Grinding machines are also used to polish a variety of surface finishes.

Grinding an uneven surface will skim across the high profile and not touch the lower ones unless the surface is reduced to the lowest point of the surface being prepared.

Sticky compositions may prove difficult to remove and merely re-disperse the material rather than remove if the correct diamond accessory is not selected. It is important to determine the type and thickness of material to be removed or prepared.

The selection of the wrong type of diamond/resin attachment can prove costly.

There are a number of methods of abrading which include the use of STR machines, carborundum blocks, or abrasive papers etc. These have limited uses and are not generally used on larger areas.

Final Checks

Hardeners and surface sealers frequently interfere with adhesion and should have been removed by one of the methods described above.

Prior to coating or topping, concrete or screeds must first be: free of all contamination and laitance; strong enough to support the coating or topping under the conditions for which the floor is designed. Moisture levels must also be below 75% RH (less than 65% RH for wood floors), 2.5% total moisture by gravimetric, carbide bomb or speed test methods before proceeding with the installation.

Concrete and calcium sulphate screeds must be left for construction moisture to dry out before floor coverings are laid. If there is insufficient time to allow the base to dry naturally or if there is no protection from moisture from the ground, bases with solid Relative Humidity (RH) readings greater than 75% RH (65% RH for solid wood floors) should be treated with the appropriate Stopgap Waterproof Surface Membrane (WSM), following preparation of the concrete or sand/cement screed detailed. New concrete and sand/cement screeds must be left for at least 7 days after placing before being treated with an appropriate WSM.

Stopgap Isolator Membrane can be used in certain situations as a fast track alternative for damp floors.

The measurement of construction moisture can also be undertaken using the carbide bomb method. Readings of less than 2.5% for all cement based subfloors and less than 0.5% for Calcium Sulphate subfloors must be obtained.

Immediately prior to applying any coating, topping or adhesive, ensure that dust from any preparation method employed is removed by vacuuming.

Preparing concrete may be a dusty operation therefore appropriate PPE should be worn and good ventilation should be provided. Protection of walls, furniture and equipment should be planned.

Residues or spillages of other trades such as plaster, paint, cement, oil (and sometimes roofing tar) are frequently present in new constructions and should be removed. Plaster and cement can be chipped up and wire brushed. Paint should be mechanically removed.

Oil, fats and grease cannot be removed by washing. If such contaminants have penetrated into the surface (which is usually the case) the only way of removing them is mechanically.



Adhesive residue removed by grinding

This means dust-free shot blasting, scarifying, scabbling or hot compressed air blasting. Remedial work in meat processing and engineering plants, for example, remains a very difficult problem. Removing the contaminated concrete and re-screeding may be the only solution.

Cores may be taken to determine the depth of penetration and can assist in deciding on whether or not it is possible to prepare a surface for overlaying. It may be necessary to carry out adhesion tests to ensure adequate adhesion is obtained on a contaminated surface.

In certain circumstances the presence of oil may stain the new decorative floor covering. If water flows under partitions, walls, cover mouldings, equipment bases or furniture, these areas will take longer to dry out and may delay the installation. Putting paper or polythene sheet on the floor to keep it clean can retard the drying time.

If old concrete has never been overlaid or painted it should be treated as new concrete. More emphasis must be placed on cleaning and repairing any cracks, holes or eroded areas. Often the best procedure is to remove all contaminated and unsound concrete.

If necessary, repairs to damaged floors should be carried out using products such as Stopgap 400 or Stopgap 460 Exterior Repair Compound prior to applying floor smoothing compounds (please contact our Technical Service Department for further details). The specific concrete repair material must be checked for compatibility with the surfacing system and be of suitable strength for the environment of the finished floor.

NON-ABSORBENT SURFACES

Surfaces that will not allow water to pass through them can be regarded as non-absorbent. Surfaces such as asphalt, ceramic and quarry tiles, granolithic, terrazzo, paints and to some extent power floated concrete can all come under this heading.

Coated Surfaces

Traditional floor paints such as those based on oil or acrylic emulsions should be totally removed. Epoxy or polyurethane paints can be overcoated providing they are in good condition and well adhered to the substrate. Coatings vary considerably in this respect and we would suggest you check adhesion by prior testing to ensure a satisfactory bond is achieved.

The coating should be cleaned using Styccoclean C140 then either primed with neat Stopgap P141 followed by the recommended smoothing compound or the adhesive applied direct to the paint (please contact our Technical Service Department for further information on product selection).

However, in the majority of cases identifying the type of paint or coating will be difficult and it is most likely it will be brittle, worn, peeling or flaking off the substrate and is therefore not good enough to receive either a smoothing compound or adhesive. The easiest method of removing old paint is usually dust-free shot blasting.

Chemical Hardening and Waterproofing

Admixtures and Curing Agents

All these products are designed to generally repel water from entering into the concrete or screed or to form a barrier to prevent moisture escaping and adhesion will be impaired if a water based smoothing compound, adhesive or waterproof surface membrane is applied.

The substrate should be prepared by mechanical means such as contained shot blasting. If a waterproofing admixture is known to have been used, further testing should be carried out with the proposed system to ensure complete compatibility and adhesion to the host substrate.

Some acrylic based curing agents may be overcoated with certain Styccobond adhesives and advice should be sought from F. Ball Technical Services before proceeding. If in doubt always mechanically prepare the surface.



Waterproof Surface Membranes

Membranes such as Stopgap F77 can be overcoated with smoothing compounds or certain adhesives. When applying a smoothing compound onto an epoxy waterproof surface membrane, the surface should be primed with neat Stopgap P141 and allowed to dry before proceeding with the compound. Stopgap 1200 and Stopgap 1500 can be applied to Stopgap F77 without priming within 24 hours, other compounds need to be primed first. All compounds can be applied direct to Stopgap F78 within 12 hours without priming.

Adhesives such as Styccobond F40, F41, F46 and F47 can be applied direct to Stopgap epoxy waterproof surface membranes, although when installing resilient floor coverings, we would recommend applying a smoothing compound to provide a sufficiently smooth surface.

Please refer to the data sheets or F. Ball Technical Service Department for further information on these products.

Asphalt

The asphalt should be flooring grade, comply with the requirements of BS 8204-5 and be the correct grade for its service condition. Providing the flooring grade asphalt is in good condition, sound, strong, has not suffered rutting or any sign of softening and is free from any form of contamination, the surface should be cleaned with Styccoclean C140, rinsed with clean water and allowed to dry. The surface should then be primed with neat Stopgap P141 and allowed to dry followed by the application of 3mm of the appropriate Stopgap floor smoothing compound.

Stopgap 1200 or Stopgap 1500 can be applied direct without the need to prime.

Ceramic, Terrazzo and Quarry Tiles

Providing they are sound and well bonded to a solid base with no cracks or lipped tiles, the surface should be mechanically prepared by either shot blasting or grinding. The surface should then be cleaned using Stycoclean C140, rinsed with clean water and allowed to dry. The tiles should remain well bonded after this process. Prime the surface with neat Stopgap P141, allow to dry, then a minimum 3mm skim application of the appropriate Stopgap floor smoothing compound.

Ceramic, terrazzo and quarry tiles are unaffected by moisture but dependant on their water absorption may be sufficiently permeable to allow the passage of moisture vapour and are often laid in areas which do not incorporate a damp proof membrane. Where this is the case, Stopgap F77 Waterproof Surface Membrane can be applied, providing the substrate has been sufficiently prepared by mechanical means and the grout lines lightly raked to remove any contaminants. In both cases this should be followed by priming with neat Stopgap P141 and allowed to dry before applying a minimum 3mm of the appropriate Stopgap floor smoothing compound.

If either method is not possible, lift the tiles and relay the floor. Stopgap Isolator Membrane may also be used in certain situations.



Note:

Stopgap 1200 can be applied direct without the need to prime. Stopgap 1500 can be applied directly over old adhesive residues such as bitumen and carpet tile tackifiers without the need for priming. Old installations may involve a substrate consisting of ash, sand or soil which can become unstable if covered up. Checks should be carried out to establish the integrity and makeup of the substrate. Under no circumstances should F. Ball and Co. Ltd. products be laid on these areas.

Power Floated Concrete Slabs

These should be treated in the same way as traditional concrete and sand/cement screeds. In some cases it is possible to use a pressure sensitive adhesive such as Stycobond F46 or F47 or a tackifier adhesive such as Stycobond F40 or F41 direct to the power floated slab, providing the moisture content of the slab is below 75% RH. Checks should be made with Technical Service before proceeding.



Note:

Most power floated slabs will be treated with a curing agent. In most cases this will be acrylic based, however, wax based curing agents or certain silicate based products may be present that will inhibit the bond to these surfaces and should be removed by mechanical means such as shot blasting. Power floated concrete slabs, especially those treated with curing agents, will take a considerable amount of time to dry, if the RH level is greater than 75%. Waterproof surface membranes such as Stopgap F77 should be used providing the surface has been shot blasted.

Adhesive Residues

Any old adhesive residues should be removed by mechanical methods such as scraping, shot blasting and grinding etc.

Certain compounds such as Stopgap 1200 and Stopgap 1500 are able to cope with firmly adhered and hard adhesive residues that are not water soluble. However, for all other smoothing compounds at least 75% of the floor area should be exposed, followed in most instances by the application of neat Stopgap P131, allowed to dry and then the application of the appropriate Stopgap smoothing compound. Please refer to Technical Service for product selection.

Any remaining adhesive on wooden floors should be overpinned with a minimum 6mm flooring grade plywood and thoroughly secured at 100-150mm centres (see wooden floors).

Existing Floor coverings

Most floor coverings such as flexible vinyl, linoleum, rubber and textile floor coverings must be removed and the substrate thoroughly prepared before fully bonded floor coverings can be laid. Whilst there is a risk involved, some thermoplastic tiles can be overlaid with Stopgap 1200 or Stopgap 1500 providing the tiles are firmly bonded to the subfloor and all traces of polish or any other contaminant which would prevent good adhesion are removed e.g. with Styccoclean C140 Floor Cleaner.

If this cannot be achieved then the tiles must be removed, and the substrate suitably prepared. With some carpet tiles it is, however, possible to install direct to existing resilient and smooth floor coverings with Styccobond F41 adhesive providing there are no surface treatments that will prevent adhesion.



Note:

1. If in doubt remove all traces of adhesive residues back to a clean, sound micro-textured dust free substrate.
2. Highly trafficked areas and areas subject to high temperatures such as conservatories, should be mechanically prepared to remove all adhesive residues, primed with dilute Stopgap P131, allowed to dry and a high strength smoothing compound applied such as Stopgap Fast-Track 30 or Stopgap 300 followed by the recommended adhesive.

Note:

Certain vinyl tiles were made using asbestos, and professional advice should be taken before proceeding to remove these types of tile and their adhesives. Generally with older buildings, these types of tiles were often laid on floors that did not contain a Structural Damp Proof Membrane.

Stubborn, existing floor coverings can be removed using a process called Multistripping whereby a blade or pick is attached to the front of the machine, which cuts into/lifts under the surface finish to be removed.

Typical applications are: removal of vinyl, rubber, carpets, fully bonded wood flooring, ceramic, stone and terrazzo tiles. Multistripping can also be used to remove smoothing compounds, adhesives, thermoplastic markings and scrape surface contaminants.

Always consider:

- The type of material to be removed.
- Single or multiple layers.
- The composition and thickness of the substrate.
- Weight and download applicable to the process.
- Power requirements of the machine specified.

Always consider the working environment, access to area and risk of flying debris.

Additional methods of preparation may be required prior to the application of the new materials specified.

If in doubt contact a surface preparation expert for guidance.

Composition Floors

Floors constructed of magnesium oxychloride cement (magnesite) will be adversely affected by dampness rising from the ground if they are covered with an impervious layer. Unless it can be established that the composition floor is adequately protected against rising dampness, it must be removed, and the base made good before floor coverings are installed. If the floor is protected against dampness, then cracks and small hollows should be patch filled and the whole area skimmed with a minimum 3mm of the appropriate Stopgap smoothing compound.

Calcium Sulphate Screeds

In all cases, calcium sulphate screeds, which includes anhydrite and Alpha hemihydrate screeds should be sound and stable. All laitance should be removed during the initial grinding stage, however, this is not always the case and checks should be made prior to proceeding with the application of any material. If laitance still exists, this should be mechanically removed by further grinding/sanding and the dust must be fully removed by vacuuming – instruction should be sought from the manufacturer of the screed. It is imperative that checks are also made to determine the moisture content of the floor and this is carried out using a hygrometer in accordance with British Standards BS 5325, BS 8201 and BS 8203. A reading of less than 75% RH for textile / resilient and less than 65% for wood must be obtained. Where construction moisture measurement is required using the carbide bomb method, readings of less than 0.5% must be obtained. Prime using Stopgap P121 which should be applied in two coats, the first being diluted with an equal part of water then allowed to dry before a second neat coat is applied prior to the application of Stopgap 1100 smoothing compound or suitable Stycobond adhesive.

A close-up photograph of a man's hands and arm as he uses a long, thin metal tool to spread a white, viscous material, likely calcium sulphate screed, onto a floor. The floor has some greenish stains and a red mark. The man is wearing a dark blue short-sleeved shirt.

In all cases, calcium sulphate screeds, which includes anhydrite and Alpha hemihydrate screeds should be sound and stable.

WOODEN FLOORS

All wooden floors must be structurally sound, level, smooth, dry and clean. Adequate ventilation should be provided to suspended timber floors at ground level to ensure that the moisture content of the wood is maintained at equilibrium.

Worn or uneven floorboards should either be replaced or levelled by sanding, planing or by patch filling with Stopgap Green Bag/114 Liquid, Stopgap 1200 or Stopgap 1500 floor smoothing compound, before finally covering with plywood conforming to BE EN 636 Class 2 (Suitable for use in humid conditions) and should be constructed with hardwood veneer and EN314-2 Class 3 (exterior) for the glue bond.

The sheets should be fixed using screws in a line 12mm in from the sheet edge at 100mm centres and at 150mm intervals at intermediate centres across the sheets and all joints should be staggered.

Wood blocks laid on ground floors must have an effective damp proof membrane incorporated in the concrete subfloor. They may be overlaid with a suitable grade of plywood (secured with screw fixings and either Stycco Flex, Styccobond B95 or as described above). However, it must be ensured that the wood blocks are well bonded and remain fully secured to the subfloor and that the plywood overlay and wood blocks remain dry during the life of the installation.

If these conditions can not be met, then the wood blocks must be removed and the subfloor made good with either a flooring grade asphalt (complying with BS 8204-5) or a modified sand/cement screed incorporating an effective damp proof membrane. Alternatively, apply Stopgap F77 WSM, Stopgap P141 Primer, Stopgap 600, Stopgap P131 and Stopgap 300 smoothing compound.

Wood blocks are not suitable for direct application of sheet or tile flooring because of the continuous differential movement of the blocks and the risk of the wood block design showing through the floor covering surface.

Wooden floorboards (including butt jointed and tongue and groove boards) must be overlaid with a minimum of 6mm plywood overlay, screw fixed at the centres outlined above to provide a rigid, deflection free, substrate. They may then be primed using dilute Stopgap P131 Primer and Stopgap 700 applied at minimum thickness of 2mm and a maximum thickness of 10mm applied.



Wood mosaic panels require over pinning with flooring grade plywood in all cases. This is not practical on solid floors and panels should therefore be removed, along with any adhesive residues.

If panels laid over a flexing timber floor need patch filling, Stopgap 1200 or Stopgap 1500 floor smoothing compound should be used. In all other respects wood mosaic panels should be treated as for wood block.

Floating chipboard must be overlaid with 6 mm plywood, but screw-fixed chipboard can be primed with Stopgap Fill and Prime, then smoothed with Stopgap 700, in the following circumstances.

- The chipboard must be a minimum 18 mm flooring grade (P4 to P7).
- The chipboard must have glued tongue-and-groove joints.
- The chipboard must be uncoated. If it has a waterproof coating, it will also need to be overlaid with 6 mm plywood.

Plywood must always be overlaid with Stopgap 700 prior to the installation of a resilient floor covering or feathered with Stopgap Micro Rapid in lighter duty areas. Some textile floor coverings can be directly applied to chipboard.

Stopgap Fill and Prime should be used where the base is either: Chipboard P5 or OSB (grade 3) providing it's mechanically screw fixed and glued at the joints. After the Stopgap Fill and Prime has been applied – Stopgap 1200, Stopgap 1500 or Stopgap 700 can be used, therefore omitting the requirement of plywood.

MDF should conform to BS EN 622-5

Where MDF panels are used they should always be overlaid with plywood as described above.

Raised Access Modular Floors

These are designed to give ready access to underfloor services. All modular units must be structurally sound, level, smooth and free from contaminants. New floors should be degreased using Styccoclean C140 and allowed to dry before applying the adhesive. Backed carpet tiles secured with a tackifier such as Styccobond F41 are suitable for this type of base.

It may be suitable to overlay the panels with plywood as described in the previous section or as an alternative panels that are clean and dry that have been screw fixed to the pedestals and primed with Stopgap P131 primer may receive a minimum thickness of 3mm of Stopgap 700 or Stopgap 1200 or Stopgap 1500.

As an easier, quicker, and thinner option, the area could instead be primed with Stopgap Fill and Prime and smoothed with either Stopgap 700, Stopgap 1200 or Stopgap 1500. Stopgap Fill and Prime is a two component, flexible cement primer that is flexible with thixotropic properties to allow the filling of joints. Stopgap Fill and Prime should be applied using a steel trowel and spread evenly on to the prepared substrate providing a smooth, uniform surface. The consistency has been designed so that joints in raised access panels are filled. However, for application over wide joints it is advisable to mix a unit with reduced liquid content and fill the joints prior to a subsequent coating of Stopgap Fill and Prime mixed to standard consistency. Then apply Stopgap 700 or Stopgap 1200 or Stopgap 1500.

Please note that where this process has been carried out there is no longer any access to the panels underneath.

SUBFLOOR PREPARATION GUIDE UNDERFLOOR HEATING

Underfloor heating is a major growth sector in the flooring industry. Traditionally, underfloor heating would be hot water pipes topped with a 65mm thick sand/cement screed, however far more options are now available to customers. Retrofit systems are becoming increasingly popular and are deemed to be quicker and more cost-effective alternatives to the traditional systems.

The retrofit market systems can be either electrical or hot water fed systems and a large amount of the designs also include an assortment of insulation options to help with efficiency and maximise the heat output within the room.

Due to the varying types of systems being produced, it is not possible to offer a 'one size fits all' approach as each underfloor heating system design will have its own demands and requirements.

Therefore, our Technical Service department should be consulted regarding the correct preparation products and techniques to adopt when carrying out floor covering installations.

Conclusion

It must be appreciated that these recommendations are general. Modifications may be required according to the floor system used and the service conditions under which the surface has to adequately perform. If there is any doubt seek further advice from our Technical Service Department before proceeding with the application of our products.

The company will be pleased to check advice given by a contractor or applicator of F. Ball products. However, because we may be unaware of every situation where our products are supplied, it is impossible to check all sites where F. Ball materials are used. This information is therefore to be used only as an informed guide to floor preparation methods.

The responsibility for the preparation of any substrate must remain with the installer. Because of the wide variety and uses of our materials, the Company is always more than willing to offer help and assistance with individual flooring problems.

The detail in this information guide is given in good faith and is based on results gained from experience and tests. However, all recommendations or suggestions are made without guarantee, since the conditions of use of the floor and the placement of materials are beyond our direct control. Please contact our Technical Service Department for further advice.

TRAINING COURSES

F. BALL CENTRE OF EXCELLENCE



The F. Ball Centre of Excellence offers free training for all flooring professionals, including specialist courses for both apprentices and seasoned professionals, led by experts from the company's technical/training department, covering subfloor preparation and floor covering installation through practical demonstrations and exercises using a range of high-performance F. Ball products.

Our state-of-the-art training and demonstration facility located in Staffordshire, offers a dynamic, hands-on learning experience.

The F. Ball Centre of Excellence reflects our aim of inspiring the highest levels of professional skill along with knowledge of cutting-edge flooring installation methods to help flooring contractors work to ever higher customer expectations with increasing ease and efficiency.

We offer FREE training courses to all flooring professionals, which run all year round, including one and two-day courses on subfloor preparation, including moisture measurement and management, and adhesive selection.

New courses include a three-day course on achieving optimum results when installing luxury vinyl tiles, a four-day masterclass on subfloor preparation and floor covering installation for apprentices, and a two-day women in flooring course.

For more information about the F. Ball Centre of Excellence and to book a place on a course, visit www.f-ball.com/training, telephone 01538 361633 or email us at training@f-ball.co.uk.

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FURTHER ESSENTIALS FROM F. BALL

F. Ball are the UK's leading manufacturer of adhesives and floor preparation products for the commercial sector and offer a wide range of specialist products and ancillaries to suit most flooring applications and floor coverings.

Specialist products include instruments for moisture measurement and F. Ball supply a range of Waterproof Surface Membrane products to complement their Compound and Adhesive products, while a range of 'Tubed' products are available to help contractors with tasks such as sealing skirtings or fixing nosings, alongside a range of tools and applicators.

The F. Ball Recommended Adhesives Guide (RAG®) is produced annually and matches adhesives to more than 6,000 brand name floor coverings from over 200 leading international manufacturers.

Each recommendation is approved and endorsed by the floor covering manufacturer concerned.



Stopgap F78, Stopgap F77 Kit, Hygrometer and CMEX5 (21°C Probe Screen).

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To help contractors get the best results, F. Ball provide a one-to-one product recommendation and advice service to all sectors of the international flooring industry. The F. Ball Technical Service Department is only a telephone call, social media message/website live chat or email away and currently take in excess of 12,000 enquiries per year.

This is backed up by on-site support for contractors provided by a dedicated and expert team of Technical Representatives covering the UK and Ireland. F. Ball products are backed by a highly rated guarantee and all Adhesives, Floor Smoothing Compounds and Preparation Products are guaranteed against manufacturing defects and are suitable for the conditions, sites and traffic described in our current technical data.



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