

fatra

imperio[®]

fatra

thermofix[®]

LAYING REGULATION
IMPERIO
AND THERMOFIX

PN 5411/2003



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1. GENERAL PART

The Specifications are intended for laying components manufactured using the Thermofix technology and Imperio components. The high quality components have the character of a luxury floor covering. They meet the strictest standards of evaluation in terms of appearance as well as service life.

Thermofix components are manufactured in dimensions of 1 200 × 180 mm and 1 829 × 180 mm, 900 × 300 mm and 450 × 450 mm with patterns that imitate natural materials.

Imperio components are manufactured in dimensions of 900 × 150 mm.

The floor covering is intended for all levels of load in accordance with the classification defined in the ČSN EN ISO 10874 standard. It can be applied in the fields of household, commercial and light industry use.

1.1 TECHNICAL PARAMETERS OF THERMOFIX COMPONENTS

TOTAL THICKNESS	2,0 mm	2,2 mm	2,5 mm
USEFUL LAYER THICKNESS	0,4 mm	0,6 mm	0,8 mm
DIMENSIONS	1 200 × 180 mm	1 829 × 180 mm	900 × 150 mm
	900 × 300 mm	-	900 × 300 mm
	450 × 450 mm	-	450 × 450 mm
CLASSIFICATION	tř. 23, 32, 41	tř. 23, 33, 42	tř. 23, 34, 43
COEFFICIENT OF THERMAL CONDUCTIVITY	0,17 W.m ⁻¹ .K ⁻¹	0,17 W.m ⁻¹ .K ⁻¹	0,17 W.m ⁻¹ .K ⁻¹
THERMAL RESISTANCE	0,0118 m ² .k.W ⁻¹	0,0129 m ² .k.W ⁻¹	0,0147 m ² .k.W ⁻¹
IMPACT NOISE INSULATION	7 dB	7 dB	> 7 dB

Specific technical parameters are provided in the relevant PV (Company Standard).

1.2 TECHNICAL PARAMETERS OF IMPERIO COMPONENTS

TOTAL THICKNESS	2,0 mm	2,5 mm
USEFUL LAYER THICKNESS	0,3 mm	0,55 mm
DIMENSIONS	900 × 150 mm	900 × 150 mm
	1200 × 180 mm	1200 × 180 mm
CLASSIFICATION	tř. 23, 31	tř. 23, 33, 42
COEFFICIENT OF THERMAL CONDUCTIVITY	0,17 W.m ⁻¹ .K ⁻¹	0,17 W.m ⁻¹ .K ⁻¹
THERMAL RESISTANCE	0,012 m ² .K.W ⁻¹	0,013 m ² .K.W ⁻¹
IMPACT NOISE INSULATION	7 dB	> 7 dB

1.3 THERMOFIX PACKAGING

	DIMENSIONS (mm)	PIECES IN CARDBOARD BOX			QUANTITY IN CARDBOARD BOX (m ²)			CARDBOARD BOX WEIGHT (kg)		
		TH. 2.0 mm	TH. 2.2 mm	TH. 2.5 mm	TH. 2.0 mm	TH. 2.2 mm	TH. 2.5 mm	TH. 2.0 mm	TH. 2.2 mm	TH. 2.0 mm
BOARDS	1 200 × 180	20	-	16	4,32		3,44	13,5	-	13,0
	1 829 × 180	-	12	-		3,95	-		15,0	
FLOOR TILES	900 × 300	16	-	12	4,32		3,24	13,8	-	12,5
	450 × 450	24	-	20	4,86		4,05	16,5	-	16,0

1.4 IMPERIO PACKAGING

	DIMENSIONS (mm)	PIECES IN CARDBOARD BOX		QUANTITY IN CARDBOARD BOX (m ²)		CARDBOARD BOX WEIGHT (kg)	
		TH. 2.5 mm	TH. 2.0 mm	TH. 2.5 mm	TH. 2.0 mm	TH. 2.5 mm	TH. 2.0 mm
BOARDS	900 × 150	32	26	4,32	3,51	14,3	14,0
	1200 × 180	21	17	4,54	3,67	15	14,8

2. SUBSTRATES

A prerequisite for professional work performance, respectively laying the flooring is a perfect substrate.

Basically a substrate must have the following properties before laying flooring: be flat, free from dust and defects, sufficiently hard and smooth, strong and dry.

The building project must specify the quality of the floor structure, in particular the type of floor levelling compound, bonding agent, layout and thickness of individual layers, insulating and sealing properties and the location of expansion joints.

This data is mandatory as various substrates require different preparatory work. The inspection carried out by the floor layer to ensure the actual floor structure is in compliance with the data specified by the building project, however, applies mainly to checking the quality of the substrate surface and its humidity. Requirements for substrate quality are specified in ČSN 74 4505. If the substrate does not correspond to the specified quality in terms of the flatness and strength parameter, it is necessary to use a levelling compound suitable for the specific application and type of substrate. Before the actual application of the flooring, the levelled surfaces need to be grinded mainly in the corners of rooms and the substrate needs to be thoroughly cleaned of the grinding residue.

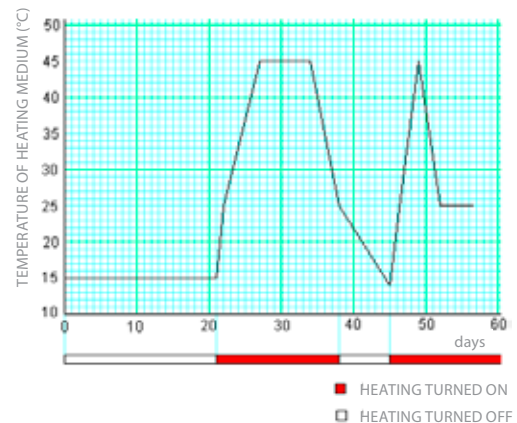
When applying a levelling compound, proceed according to the instructions of the manufacturer as stated on the packaging. The actual check of the quality of the substrate is performed using tools and equipment:

- > measuring (weighing) 2-metre rod with measuring wedges to check the flatness,
- > measuring instruments for determining the moisture content of the substrate,
- > hardness tester to determine the hardness of the substrate,
- > thermometers and moisture-content indicators for measuring the climate in rooms.

2.1 APPLICATION ON SUBSTRATES EQUIPPED WITH AN UNDERFLOOR HEATING SYSTEM

When laying flooring on an underfloor heating system, it must be run before installation to ensure the substrate is thoroughly dried. Each underfloor heating system has conditions of operation given in relation to the heating system and substrate used. In order to avoid functional problems, all standards and regulations provided by the manufacturer of the heating system must be strictly complied with. In terms of screed with a thickness of up to 70 mm with the heating pipe led through the middle of the layer, the temperature of the heating medium is increased by 10 °C/day until the temperature of 45 ± 5 °C is reached, which is maintained for a period of 12 days. Then the temperature of the heating medium is decreased by 10 °C/day to the initial temperature prior to the start-up cycle of the heating system. After the temperature has decreased to 15 °C, a second heating cycle is performed until the maximum temperature is achieved (see Graph 1) and then the residue moisture must be measured. A record must be kept on the course of the heating test and signed by parties involved, which the contracting party will present prior to commencing the installation of the floor covering. In order to take a sample for measuring, the sampling points must be marked at the time of installation of the heating pipes. The maximum allowable residual moisture is 1.8 % CM for cement and 0.3 % CM for anhydrite screeds. If the permissible residual moisture is not met, then it is necessary to continue heating to the temperature of the medium (45 ± 5) °C. The heated screed must not be covered by any building or other materials. When heating the screed, it is necessary to ventilate the room for a short while in regular intervals.

Graph 1 – An example of a start-up diagram for underfloor heating



Lay the flooring immediately once the permissible residual moisture has been achieved. If more than 7 days have passed between humidity test and laying flooring or any processes involving moisture (wall painting etc.) have been carried out during this period of time, new humidity measurement using CM device should be made.

Recommended surface temperature during floor installation is approx. 18 °C and this temperature should also be maintained 24 – 72 hours after the end of the flooring process (until the bonding agent has cured). If the underfloor heating system is turned on prematurely, it can cause the residual moisture in the bonding agent to evaporate and thus be the cause of the formation of a bump in the flooring. For the entire duration that the underfloor heating system is not in use, an alternative solution must be provided that will ensure the optimum temperature for laying the floor covering:

- > 3 days after laying the floor, the temperature of the system must be increased gradually, however, at maximum to a temperature of 28 °C of the substrate's surface.
- > Suitable bonding agents for underfloor heating must be used.
- > The floor can be loaded with traffic once the bonding agent has cured.

CM device



2.2 CONCRETE SUBSTRATES

The surface of concrete substrates must comply with the requirements stated in section 2 of these Specifications. Humidity of not heated concrete base must not exceed 3.5 % vol, measured by weighting test (2.0 % CM – carbide method). Humidity of heated concrete base must not exceed 3 % vol (1.8 % CM).

The minimum required value of tensile strength of the surface layers of the screed below the surface layer made from plastic coverings in offices is 1.0 MPa, and 0.8 MPa for surfaces that are not exposed to traffic. Use suitable patch materials to improve flatness, reduce roughness and equal absorption capacity of base concrete.

Flooring must not be laid in rooms that do not have a cellar, if they are not sufficiently insulated against ground moisture, and in rooms with an underfloor heating system if the temperature of the surface exceeds 28 °C.

2.3 ANHYDRITE SUBSTRATES

Anhydrite screed (AFE) is made from an anhydrite bonding agent, aggregates (sand, gravel) and water. Additives are often used to modify the chemical or physical properties of the screed, e.g. workability, hardening or solidification.

Today the term "anhydrite screed" is often replaced by the term "calcium-sulphate screed".

These materials are increasingly used in constructions since they are easy and quickly to apply.

AFE is applied as a liquid self-levelling mixture. With respect to the processing method, it is possible to guarantee uniform values of strength and evenness tolerance, which are not attainable using mixtures with a small amount of mixed water. Unlike conventional cement screeds, additional deformations do not occur in AFE. Another advantage is the possibility to create large surface areas without joints.

However, it is necessary to point out 2 disadvantages of applying floor covering on AFE:

- > screed moisture,
- > surface strength.

Before laying the floor covering on AFE, the floor layer must adhere to the following instructions and principles.

The empiric rule is applied in determining the required curing time in order to achieve to permissible residual moisture content of AFE with a thickness of up to 40 mm: approximately 1 week of drying for every 10 mm. If the thickness of AFE exceeds 40 mm, the drying time is extended more than proportionally, i.e. approximately two weeks for each additional 10 mm. These values from practice always assume standard climate conditions. Under extraordinary climate conditions, such as high air humidity, the empiric rule can not be applied. If the thickness of AFE is 7 cm or more, the duration for achieving an acceptable level of residual moisture is extremely prolonged.

In order to determine the residual moisture of the substrate, use the carbide method – CM instrument. Residual moisture of an unheated substrate from AFE must not exceed 0.5% CM before laying an impermeable floor covering. In the case of a substrate with underfloor heating, the moisture must not exceed 0.3% CM.

Electric moisture meters are not suitable and can only be used to detect damp patches.

In any case, base concrete must be grinded to remove incompact surface layer (thickness approximately 0.5 mm), with subsequent hardness test by surface scratch test. Due to the insufficient strength and surface quality of anhydrite CA-C20-F4 (AE20) we generally need to apply a levelling compound. If there are unstable and defective areas on the surface, they need to be repaired.

Surface scratch test



2.4 MAGNESITE SCREEDS

Magnesite screed is made from caustic magnesite (silica, wood or cork powder) and an aqueous solution of a salt, usually magnesium chloride.

Caustic magnesite is a finely milled stone powder that is fired from natural magnesite.

Magnesite screed with a density of the raw material of up to 1600 kg/m³ is called xylolite screed.

Considerable experience is required to determine the maturity of magnesite screed for laying floor covering.

A softer substrate is often found under a relatively hard surface layer. The situation of old double-layer xylolite screeds is even more problematic, as their surface layers are generally impregnated with wax or a similar agent. In both cases it is necessary to prepare substrates for levelling with a levelling compound by removing the surface layers and using suitable penetration coats.

2.5 CHIPBOARD AND CEMENT CHIPBOARD SUBSTRATES

OSB, DTD, cement chipboard and gypsum fibre boards must be installed in compliance with manufacturer recommendations so that the floor is adequately rigid and has required loading capacity. It is most suitable to use large-format components provided with a lock – tongue and groove. Installation of two layers mutually connected with screws with overlapped joints generally ensures sufficient rigidity and flatness. All joints must be bonded in order to adhere to the precise fit and flatness. Apply glass fibre smoothing materials on the entire surface to reduce dimensional changes caused by relative air humidity and avoid the joints being visible in the final floor surface.

2.6 SUBSTRATES OF CERAMIC AND CEMENT FLOOR TILES AND CAST TERRAZZO

All floor tiles must be smooth, firmly connected to the substrate. Loose jointing material must be removed from the joints. Surfaces need to be degreased using a water soluble degreasing agent. Rinse them with a solution of washing soda dissolved in hot water and neutralize with pure water. The surface needs to be scoured prior to applying the penetration coat and levelling compound to increase adhesion.

2.7 SUBSTRATES OF OLD FLOOR COVERINGS

Thermofix/Imperio floor coverings must not be installed on old PVC floor coverings. A claim can not be lodged against floor covering installed against the recommendations of the manufacturer.

All old floor coverings must be removed, if possible including the bonding agent. Apply a levelling compound with suitable penetration to the cleaned substrate. Floor covering that has been removed must be disposed of in an environmentally friendly manner.

3. TOOLS AND EQUIPMENT

A qualified floor layer should be equipped with a basic set of tools, which should be kept clean and in good condition.

The specific selection of tools depends on the individual floor layer, the size of the installation and scope of the required preparation.

3.1 SUBSTRATE PREPARATION

Basic set of tools and equipment:

- > Single disc grinder
- > Grinding stone
- > Industrial vacuum cleaner
- > Glue roller
- > Container for mixing smoothing material
- > Spirit level 2 m
- > Electric mixer
- > Steel trowel
- > De-aeration (padfoot) cylinder

3.2 AREA MEASURING

- > Yardstick, tape,
- > steel ruler,
- > rope liner,
- > pencil

3.3 MODIFICATION OF DIMENSIONS

- > Floor layer's knives
- > Bar drawing instrument
- > Steel planchet
- > Steel angle bar
- > Compass
- > Punching knife
- > Cutter for components
- vCircular cutter

3.4 INSTALLATION

- > Trowel
- > Hand roll
- > Sectional roller, min. 50 kg

4. BONDING COMPONENTS

Bonding the components is carried out as the last operation after all the craft and dusty building work has been completed.

The following information serves as a guide. All recommendations and instructions of the manufacturer of the bonding agent must be complied with. Under all circumstances, bonding agents must be handled accordingly.

4.1 PREPARATION OF THE SUBSTRATE BEFORE LEVELLING

The base substrate layers must be fully cured and must demonstrate the specified strength, be free of cracks, holes and risers, and be dry, clean and free of dust, grease, asphalt, paints, varnishes, polishes, oils, hardening agents, sealants, cements and any other material that could adversely effect the adhesion ability.

All cracks and joints must be closed by force – e.g. stapled together. Expansion joints must be maintained and fitted with a suitable expansion profile. The maintenance or closing of expansion profiles of separate circuits of underfloor heating needs to be consulted with the supplier of the respective system. Joints and cracks are filled with levelling resin, holes are filled with repair screeds. The use of gypsum-based materials (e.g. modeller, stucco plaster) is unacceptable! The surface of the substrate must not be damp. Avoid bringing moisture onto the surface that is prepared for installation (e.g. wet footwear, spilling a bucket of water). The evenness and moisture content of the floor must be in compliance with ČSN 74 4505 (limit deviation max. 2 mm/2 m).

4.2 APPLICATION OF SCREED

Check base surface condition and remedy all defects (see chapter 2). Check base surface humidity and record the values and the method used.

The prerequisite of a quality screed is to implement a catwalk – penetration. We distinguish between two types of penetration – for absorbent and non-absorbent substrates. For extremely absorbent substrates, it is a good idea to penetrate them twice (first coat diluted). The objective of penetration, among other things, is to restrict and unify the absorbency of the substrate so as to prevent the removal of moisture required for curing screed. If the substrate meets the requirements for flatness, the optimum thickness of the screed is approx. 3 mm. Screed is normally spread with a steel trowel. A padfoot roller is essential for ideal levelling. After drying and grinding the screed, the substrate is ready for bonding. Under normal conditions, a 3-mm thick patch layer needs approx 24 hours to mature. Flatness and perfect execution of the screed are the main criteria affecting the overall impression of the finished floor. Therefore, adequate attention must be paid to this stage of preparation and acceptance of the surface in the room where flooring will be laid. Any defects and deficiencies of the screed have a negative effect on the appearance of the finished floor.



Indexing cutter



steel circular spring band



plane for edge chamfering



cutter for components



hand roller



circular knife for holes



bar drawing instrument



vertical marking gauge



floor layer's knife



floor layer's knife-hook



trowel

4.3 APPLICATION OF BONDING AGENT

As a rule, we recommend all bonding agents be conditioned for a period of 24 hours at a temperature higher than 18 °C before installation. The bonding agent is generally applied using a toothed knife. The type of trowel and amount of bonding agent are specified by the manufacturer (most commonly type A1, A2).

Classification of trowels

TKB označení	šifka zubu a (mm)	šifka mezery b (mm)	hloubka mezery c (mm)	úhel zubu (°)	Schéma
A1	0,6	1,4	1,1	55,0	
A2	1,2	1,8	1,5	55,0	

After applying the bonding agent to the substrate, let it cure. This period serves to eliminate excess humidity and ensure optimum adhesion. The approximate time is specified by the manufacturer and depends on the conditions of the given environment. The right moment to begin the bonding process is once the bonding agent becomes sticky to the touch, it does not pull a hair – so-called dry stick (it does not stick to fingers when touched). This is the moment when “open” or “working” time begins. This open time, which is also defined by the manufacturer, is the interval for actual bonding. Consider the open time given by the manufacturer of the bonding agent as informative only. This period is affected by the ambient temperature and relative humidity. In certain cases, high relative humidity needs to be ensured in order to achieve the required open time.

Flooring dirtied by bonding agent can be cleaned easily with a moistened cloth. If you allow the bonding agent to dry, then use a small amount of solvent cleaning agent, as recommended by the manufacturer of the bonding agent. Warning! A larger amount of cleaning agent can create a change in the colour or shine of the surface of the components or even cause the surface to soften.

4.4 FLOOR ROLLING

Prior to rolling the surface, make sure it is thoroughly cleaned. Immediately after applying the components or completed parts (see opening time, section 4.3) the material must be rolled using a 50 kg sectional roller. Rolling guarantees good contact of the components with the substrate and adhesion of the flooring. This operation must be repeated after 1-4 hours.

4.5 BONDING AGENTS

Various types of bonding agents exist on the market and their suitability depends on a whole number of factors. The composition of the bonding agent, type of flooring, building conditions and operational conditions of the floor all affect the choice of bonding agent.

For bonding components we recommend a dispersion adhesive with high initial tack. Use adhesives with high starting adhesion capacity (adhesive materials containing glass fibres) for laying floor in rooms with heated concrete floor or in rooms with changing temperatures (e.g. intensive sunshine).

Detailed data on the type of bonding agent, use, ventilation and open time, type of trowel, storage conditions and safety regulations are listed in the technical data sheets and labels of the bonding agent packaging.

5. INSTALLATION OF COMPONENTS

5.1 INSPECTION OF DELIVERY

Prior to start laying, check sample number, batch number, quantity and check also cardboard package for damage. Open one cardboard box to check whether supplied products are in compliance with the purchasing order.

5.2 CONDITIONING COMPONENTS

The components need to be conditioned for at least 24 hours prior to application. Conditioning is carried out in the room where the components should be installed, at an ambient temperature of 18 – 26 °C and with a relative air humidity of 50 ± 10 %. A maximum of 5 boxes can be stacked on top of each other. The temperature before installation, during installation and after must be stable until the bonding agent cures (normally 24 – 72 hours). The minimum temperature of the substrate during installation must be 15 °C.

5.3 RULES FOR USING FLOOR COVERING

- > Adjust floor heating system to obtain floor base temperature not exceeding + 28 °C.
- > The sun in glassed-in rooms with southern exposure may cause an increase in temperature of the floor components above + 35 °C. In such case, we recommend using a bonding agent containing fibreglass and to protect the floor with an appropriate shading device (window foils, outer blinds, marquises etc.).
- > Flooring must not be laid in rooms that do not have a cellar, if they are not sufficiently insulated against ground moisture.
- > Avoid exposure of laid flooring material to water (exposure lasting several hours) and long time exposure to relative humidity exceeding 75 %.
- > Prevent the movement of objects with sharp edges along the surface of the floor. Pebbles, sand, edges of furniture legs, claws of household pets can cause damages to the surface by scratching it.
- > Put soft plastic protective covers, felt pads etc. on the legs of furniture and domestic appliances.
- > For wheelchairs*, use “W” type wheels – soft plastic on a hard core, or protective PET pads intended for mobile furniture.

Use PET pads below office chairs with casters



* Office chairs with casters shall be tested in compliance with ČSN EN 649, minor visual floor surface changes after the test are acceptable.

- > Short-term resistance against point load pressure is about 50 kg/cm².
- > Flaming and smouldering objects leave a permanent change in colour and structure.
- > It can be cleaned using a steam mop. Short-term resistance against temperatures up to 120 °C.
- > Long-term contact of rubber products (mostly dark and coloured

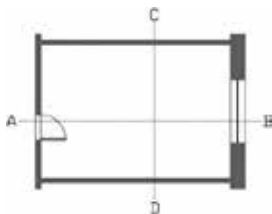
rubber – rubber wheels, protective equipment, shoe soles etc.) with floor material can cause permanent colour change of the floor finish, which manifests itself as yellowing, browning to blackening of the flooring surface at the contact point with the rubber product.

- > The direct contact of ultraviolet radiation in spectrum C (e.g. direct sunlight, germicidal lamps) causes gradual degradation of the surface and permanent changes in colour to the flooring.
- > Failure to observe direction marks (arrows) when laying floor can result in different shine of floor sections. The absence of arrows on the bottom side of the flooring is a reason for filing a complaint on the components.

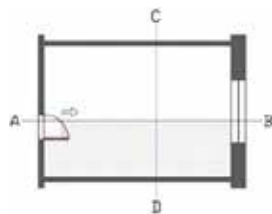
5.4 AREA MEASURING AND MARKING

5.4.1 Measuring for laying floor tiles and boards

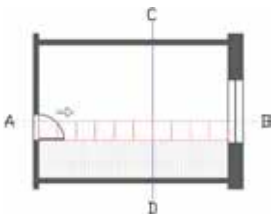
- > Measure the room in both directions.
- > Make perpendicular A-B and C-D lines with chalk marker. These basic lines provide guidance for direction and initial place of flooring installation.
- > Check whether overly small pieces remain along the edges of the room. In this case, shift the central line in one or both directions. Highlight the central line with a pencil and subsequent vacuuming normally removes the chalk lines.



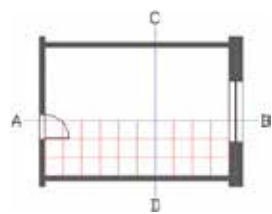
1 – Measuring the room



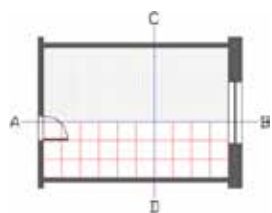
2 – Application of bonding agent to the marked area



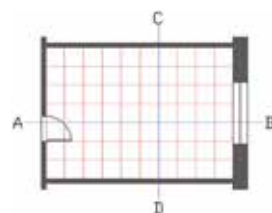
3 – Laying of the first row of floor tiles along the central line



4 – Laying of the first part and rolling



5 – Application of bonding agent to the second part



6 – Laying of the second part and rolling the entire surface of the room

The regular shape, especially if contrasting colours are being laid, may emphasize deviations with respect to the building axes, which underlines the need to carefully plan the appearance. Lay the components loosely with the objective of trying out the final impression, in order to achieve a satisfactory appearance of the floor from all viewing angles.

5.5 INSTALLATION OF COMPONENTS

5.5.1 Installation of the main field

5.5.1.1 Installation of floor tiles

The pattern on the floor tiles is formed randomly and the marbling of some components is more pronounced than others. To avoid “intensive” and “less intensive” marbles, it is necessary to unpack the components and, as the case may be, mix the glue during waiting till surface of applied glue dries a little; at the same time, make visual inspection of the components. Defect components, if any, can be returned or only their parts without defects can be used. When laying the floor tiles, follow the direction of the arrows on the bottom side. As soon as the bonding agent is in a suitable condition, lay the first tile on the initial point of the central line. Press the centre of the tile thoroughly and then force the air out towards the edges.

Lay the next tile with a potential alteration of colours and marbling and then continue laying other tiles. The tiles must be laid exactly along the central line. Failing to maintain straightness of laying along the central line leads to the formation of gaps between tiles.

After laying the room or a section of it, it is necessary to roll this area with a 50 kg sectional roller and repeat rolling after 1 – 4 hours.

5.5.1.2 Installation of boards

The pattern on boards is created randomly. To eliminate differences, the boards need to be unpacked and mixed. Once the bonding agent is in a suitable condition for laying, lay the first board on the initial point. Press the edges of the board thoroughly and force out air.

Lay other boards with potential alternation of colours and continue exactly along the central line. Then gradually complete the entire section from the central line with the application of bonding agent and make sure the boards are properly adhered. Ensure this by subsequently using a 50 kg sectional roller. Repeat rolling after 1 – 4 hours. Remove any excess bonding agent immediately.

5.5.2 Cutting peripheral components

Peripheral components are cut simultaneously with installation. After shortening a component, the cut edge needs to be rotated so that it faces the wall, in order to maintain an expansion gap of about 5 mm. Maintain this expansion in all permeating or adjacent structures (e.g. heating, other types of floor covering).

5.6 FINISHING OPERATIONS

No universal instructions exist for the best finish for floor covering. The design of the finish in most cases ultimately depends on the imagination of the architect and the skill of the floor layer. It is only possible to list a few options for finishing floors, as follows.

Assembly units:

- > Plastic, wood and metal fillets,
- > Dilatation profiles
- > Joint profiles for changes of different surface types
- > Through elements
- > Staircase profiles etc.

The floor can be walked on and loaded when the glue has cured, i.e. after 24 – 72 hours, depending on type. This also applies to using cleaning agents with exposure time approx. 20 minutes, as recommended by relevant cleaning agent manufacturers.

5.7 INSTALLATION OF COMPONENTS

5.7.1 Subbase preparation

On principle, subbases for installation of PVC tiles must comply with similar requirements as for installation of floor coverings. The subbase must be flat, smooth, without cracks and dust, strong enough, clean and dry. Fat stains and other impurities must be removed. Walls treated with oil paints need to be rubbed down. Irregularities, cracks, structural joints and different levels must be repaired and levelled up.

The residual moisture of the subbase suitable for installation of wall coverings must not exceed 2.1 CM for cementitious subbase and 0.5 CM for gypsum subbase.

Wall tiles must not be bonded in rooms that are not sufficiently insulated against moisture.

5.7.2 Covering preparation

After delivery, we visually check the quality of the appearance and workmanship. Wall tiles showing visible defects must not be installed (bonded) and it is necessary to file a claim at the supplier. Before installation, the covering needs to be acclimatised in the room it is to be installed in. During this period and 48 hours after bonding (until the adhesive cures) the room temperature must be constant. The minimum required room temperature for bonding is +18 °C.

5.7.3 Installation

Wall coverings are bonded similarly to floor coverings using contact adhesives, and it is always necessary to follow the instructions of the adhesive manufacturer with regard to the quantity used, application method (roller, smooth stainless steel spatula, spraying) and ventilation time.

For installation in external and internal corners, it is recommended to use suitable, usually metal, corner profiles, and after finishing the installation in this area, to use finishing profiles for the walls (floor) before installation of the covering.

After installation of the covering, it is rolled by a hand pressure roller or a pressure cork plate so that excess air is expelled and perfect contact of the cladding with the adhesive is achieved.

6. QUALITY INSPECTION AND FLOOR ASSESSMENT

ČSN 74 4505 applies to the acceptance inspection of the floor. The appearance of the floor is assessed from a standing position (i.e. from a height of approximately 160 cm) under normal lighting. When conducting an assessment, views against the light should be excluded (the source of light must be placed behind the observer). The finished flooring must not show signs of rippling or other deformations.

6.1 RECLAMATION

Fatra, a.s. Napajedla, manufacturer of Thermofix /Imperio flooring materials, deals with the claims in connection with quality, quantity and workmanship of its products within the scope of its liability for damage, as specified in relevant purchasing orders. The warranty does not cover defects resulting from incorrect handling, storage, application and failure to observe the provision specified in company standard PN 5411/2003. Product failures must be immediately reported and adequately documented by the buyer.

Installers and final users are recommended to maintain records about acceptance/takeover of building structures prepared for floor installation, see sample transfer protocol for the substrate, preparatory work and the finished floor to www.fatrafloor.cz

Scratches on the PUR protective layer from the contact points of incorrectly protected moveable furniture are not covered by the guarantee.

7. MAINTENANCE AND TREATMENT

Regular cleaning and maintenance is highly important for all floor coverings in terms of hygiene and service life. **Thermofix/Imperio floor coverings are already equipped with a protective layer of PUR varnish from production, which protects the floor coverings against the penetration of dirt and gives them an even and precisely definable look. Maintenance is significantly simplified for such treated floor coverings.** Maintenance costs and frequency of cleaning intervals are based on the traffic load and extent of dirtying. Preventive measures must be ensured so that as little dirt as possible gets onto the floor. We maintain the flooring surface by sweeping, wiping with a mop moistened in a detergent solution, or using a vacuum cleaner with a nozzle for hard surfaces. We recommend effective measures be applied at entrances to eliminate dirt – cleaning zones already implemented in the designing phase. These cleaning zones (mats, carpets) must be included in common cleaning and replaced as soon as they no longer fulfil their function.

Selection of suitable floor material, its colour and design depth influence the costs of cleaning and maintenance in future.

When cleaning and maintaining Thermofix/Imperio floors, distinctions are made between the following:

- > cleaning after building work has been completed
- > regular cleaning.
- > basic cleaning (removing PUR lacquer).

Vinyl floor coverings are prepared for use once they have been cleaned. Instructions for cleaning and maintenance are stated in the technical documents and packaging of cleaning agents. Use cleaning agents that are intended for PVC flooring with a PUR protective layer. In case of doubt, the instructions of the respective manufacturer of the cleaning agents apply.

The floor covering is ready for handover once it has been cleaned after installation has been completed. By not handing over the floor covering immediately after it has been completed, the floor laying company is increasing the risk of additional costs as a result of potential dirtying caused by further use and other work (assembly of kitchen cabinets, doorframes etc.). In this event, the floor already laid should be protected using means that are appropriate for expected loading, as corrugated cardboard, foil etc. Nevertheless, in spite of these measures costs for cleaning may increase significantly and in extreme cases, the floor covering may even become damaged. The costs and method of regular cleaning need to be adapted to the respective local conditions with respect to the various possibilities of dirtying. Usually it is sufficient to use a solvent-free cleaning agent, which is added to water in the dosage as recommended by the manufacturer.

Apply the cleaning agent to the floor. After the exposure period, clean the floor manually or use a cleaning device as recommended by the manufacturer's instructions and remove the cleaning agent (by wiping). Then rinse the cleaned floor thoroughly with clean water. In case of extreme dirt and larger areas, it is always necessary to perform mechanical cleaning * (using a cleaning machine).

8 RESISTANCE TO CHEMICAL AGENTS

The floor covering is characterized by high resistance against weak and diluted acids, alkalis and soaps. Oil products and strong acids are not harmful, and if they are spilled onto the floor, then rinse immediately. Ketones, chlorinated solvents and other solvents must not come into contact with the floor. However, if they do then the damages can be minimized by immediately rinsing with water. The floor covering may be loaded only after the residue from chemical agents has evaporated completely. Some chemical agents contain very strong pigments, which even after just brief contact create stains on the floor. Rubber products (mostly dark and coloured rubber – rubber wheels, protective equipment, shoe soles etc.) that come in contact with the floor may cause permanent changes in colour to the surface, which manifests itself as yellowing, brownning to blackening of the flooring surface at the contact point with the rubber product. Where these types of materials are used, we recommend floor coverings that are dark in colour with the aim of minimizing the risk of stains. Flaming or smouldering objects leave permanent stains on the surface. The tables provided below provide an overview of general chemical resistance of floor coverings (for a description of the testing method see the note).

8.1 ORGANIC SUBSTANCES

TYPE OF CHEMICAL	EFFECT	MEASURE
Aldehydes	The floor covering is penetrated after several minutes.	Wipe away immediately.
Esters		
Halogenated hydrocarbons		
Ketones		
Alcohols	The plasticizers leak after several days, accompanied by shrinkage and embrittlement of the material.	Wipe away immediately.
Ethers		
Glycols		
Hydrocarbons (aromatic and aliphatic)		
Kerosene		
Edible oil		

8.2 AQUEOUS SOLUTIONS

TYPE OF CHEMICAL	EFFECT	MEASURE
Weak acids and alkalis	No effect.	
Strong alkalis	Damage gloss and can cause discoloration of certain shades.	Dilute and remove.
Strong acids	Long contact may cause discoloration.	Dilute and remove immediately.
Pigments (indicative)	Contact may cause discoloration.	Dilute and remove immediately.

NOTE:

Resistance to chemical agents is tested by contact with the given chemical agents for a period of 24 hours at a room temperature of 21 °C, then rinsed with cold water.



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