

## FLOW CHART FOR FLOORING USING MASTER MATERIALS

### 1. APPLICATION AREA

- 1.1. This flow chart has been developed for flooring in industrial and civil construction.
- 1.2. This flow chart involves the use of different Master materials.
- 1.3. The area of application of each material and their characteristics are given in Table 1.
- 1.4. The flow chart has been developed for the floor operated under normal conditions.
- 1.5. All flooring operations must be performed at an ambient temperature not below + 5 °C and above + 35 °C.
- 1.6. The scope of operations under consideration includes:
- Determining the floor structure depending on its purpose, operating conditions, possible intensity of mechanical loads impact;
  - Preparing the surface of structures for flooring;
  - Applying waterproofing material (if necessary);
  - Applying thermal insulation material (if necessary);
  - Making a screed (if necessary);
  - Priming the surface (if necessary);
  - Preparing the self-leveling mortar mixes;
  - Applying self-leveling mortar mixes on the base surface;
  - Making deformation joints.
  - Making protective and decorative coatings, depending on the purpose of structures;
  - Quality control.
- 1.7. When using this flow chart for a specific facility in the process of projecting operations, the following must be clarified:
- Grades of materials to be used for installation and repair of the floor elements;
  - The list and scope of work to be done before the start of flooring.
  - The list and scope of flooring work.
- 1.8. Flooring quality control must be carried out according to the Ukrainian National Construction Regulation DBN V2.6-22-2002: Application of Coatings Using Dry Construction Mixtures.

### 2. Materials used for flooring.

- 2.1. Materials used for flooring and their properties are shown in Table 1.

**Table 1** Materials used for flooring and their properties

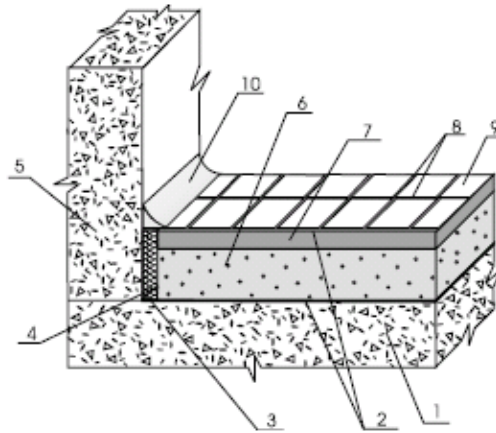
No.	Material grade	Application	Properties
1	Master Classic, cement-sand mix Master Classic	This is used as the screed on non-deformable solid bases; for the installation and repair of floors inside and outside buildings; for preparing the bases for self-leveling mixes and finishes. Layer thickness: 3 to 30 mm per one application.	Binding element: cement; Color: gray; Consumption: 1.8 kg / m <sup>2</sup> / mm; Water: 0.15 L / kg; Maximum aggregate: 0.8 mm; Mix use time: 60 min; Room and base minimum temperature: + 5 °C; Compression strength: 10 MPa; Adhesion strength to concrete base: 0.3 MPa Curing time at +20 °C: 24 hours.
2	Master Element, cement-sand mix Master Element	This is used as the screed (80 mm thickness layer per one application) on non-deformable solid bases; for the installation and repair of floor surfaces (with large potholes and cracks) inside and outside buildings; for preparing the bases for self-leveling mixes and finishes. Layer thickness: 5 to 30 mm per one application.	Binding element: cement; Color: gray; Consumption: 2 kg / m <sup>2</sup> / mm; Water: 0.13 L / kg; Maximum aggregate: 1.2 mm; Mix use time: 120 min; Room and base minimum temperature: + 5 °C; Compression strength: 10 MPa; Adhesion strength to concrete base: 0.5 MPa Curing time at +20 °C: 24 hours.
3	Screed Master Basis	This is used as the screed on non-deformable solid bases; for the installation and repair of floors inside and outside buildings; for preparing the bases for self-leveling mixes and finishes; as the base for under floor	Binding element: cement; Color: gray; Consumption: 2 kg / m <sup>2</sup> / mm; Water: 0.13 L / kg; Maximum aggregate: 3 mm; Mix use time: 90 min;

		heating. Layer thickness: 5 to 100 mm per one application.	Room and base minimum temperature: + 5 °C; Compression strength: 25 MPa; Adhesion strength to concrete base: 0.5 MPa Curing time at +20 °C: 24 hours.
4	Floor Leveling and Repair Mix Master Remix	This is used for the repair and sealing of potholes, uneven surfaces, cracks in concrete floors and sand-cement screeds; for leveling floors inside and outside buildings. Layer thickness: 3 to 50 mm per one application.	Binding element: cement; Color: gray; Consumption: 2 kg / m <sup>2</sup> / mm; Water: 0.16 L / kg; Maximum aggregate: 1.2 mm; Mix use time: 120 min; Room and base minimum temperature: + 5 °C; Compression strength: 20 MPa; Adhesion strength to concrete base: 0.5 MPa Curing time at +20 °C: 24 hours.
5	Self-Leveling Mix Master Horizont	Designed for floor coverings indoors on screeds, floors from cement-sand mortars followed by the surface finishes such as linoleum, carpeting, laminate, parquet, ceramic tiles and other. Layer thickness: 3 to 15 mm.	Binding element: cement, polymeric binders; Color: gray; Consumption: 1.8 kg / m <sup>2</sup> / mm; Water: 0.17 L / kg; Maximum aggregate: 1 mm; Mix use time: 25 min; Room and base minimum temperature: + 5 °C; Compression strength: 15 MPa; Adhesion strength to concrete base: 0.5 MPa Curing time at +20 °C: 48 hours.
6	Self-Leveling Mix Master Nivelor	Designed to make floors outside (terraces, aprons, platforms) and indoors on concrete bases and screeds with strength of not less than 20 MPa; as a separate coating or the base for finishing materials. Layer thickness: 5 to 30 mm.	Binding element: cement, polymeric binders; Color: gray; Consumption: 1.8 kg / m <sup>2</sup> / mm; Water: 0.16 L / kg; Maximum aggregate: 1.2 mm; Mix use time: 25 min; Room and base minimum temperature: + 5 °C; Compression strength: 20 MPa; Adhesion strength to concrete base: 1 MPa Curing time at +20 °C: 24 hours.
7	Self-Leveling Mix / Screed Master Continent	Designed for leveling concrete floors or screeds based on mineral binders, for all types of coatings, including underfloor heating (water and electric) inside buildings. Suitable for use on low-strength screeds. It can be used as the leveling screed with unlimited coating thicknesses. Layer thickness: 3 mm and above.	Binding element: gypsum and cement, polymeric binders; Color: gray; Consumption: 1.75 kg / m <sup>2</sup> / mm; Water: 0.23 L / kg; Maximum aggregate: 1 mm; Mix use time: 25 min; Room and base minimum temperature: + 5 °C; Compression strength: 15 MPa; Adhesion strength to concrete base: 0.8 MPa Curing time at +20 °C: 3 hours.
8	Self-Leveling Screed Master Beton-X	The versatile concrete mix for high wear-resistant screeds and concrete floors (including water and electrical underfloor heating), as well as for monolithic concrete structures and elements. Layer thickness: 10 to 300 mm per one application.	Binding element: cement, polymeric binders; Color: gray; Consumption: 2 kg / m <sup>2</sup> / mm; Water: 0.12 L / kg; Maximum aggregate: 3 mm; Mix use time: 120 min; Room and base minimum temperature: + 5 °C; Compression strength: 30 MPa;

			Adhesion strength to concrete base: 0.8 MPa Curing time at +20 °C: 24 hours.
9	Waterproofing Mix Master Barrier	The waterproofing mix for making waterproof coatings	Binding element: cement, polymeric binders; Color: gray; Consumption: 3 to 8 kg / m <sup>2</sup> / mm; Water: 0.21 L / kg; Maximum aggregate: 0.63 mm; Mix use time: 120 min; Room and base minimum temperature: + 5 °C; Compression strength: 12 MPa; Adhesion strength to concrete base: 1.2 MPa Curing time at +20 °C: 72 hours.
10	Mix for Thermal Insulation Systems Master Super	For thermal insulation systems using mineral wools, cellular polystyrene and XPS tiles.	Binding element: cement, polymeric binders; Color: gray; Consumption: 1.5 kg / m <sup>2</sup> / mm; Water: 0.18 L / kg; Maximum aggregate: 0.8 mm; Mix use time: 120 min; Room and base minimum temperature: + 5 °C; Compression strength: 12 MPa; Adhesion strength to concrete base: 1 MPa Curing time at +20 °C: 72 hours.
11	Deep Penetration Primer Master Universal	For interior and exterior use; increases the concrete, cement-lime, cement-sand and other porous materials adhesion to the base.	Active ingredient - hydrocarbon resin copolymer; Application temperature: +5 to +35 °C; Consumption: 0.1 to 0.4 L / m <sup>2</sup> ;
12	Deep Penetration Primer Master Inner	For interior use; increases the concrete, cement-lime, cement-sand and other porous materials adhesion to the base. For interior and exterior use.	Active ingredient - hydrocarbon resin copolymer; Application temperature: +5 to +35 °C; Consumption: 0.1 to 0.4 L / m <sup>2</sup> ;
13	Priming Paint Master Contact	For pre-treatment and strengthening of concrete, cement-sand and cement-lime plaster surfaces; for increasing the adhesion of surfaces with low water absorption.	Binder - acrylic polymer dispersion; Color: white; Consumption: 0.3 L / m <sup>2</sup> ; Maximum aggregate: 0.2 mm; Application temperature: +5 to +35 °C;

### 3. Structural and technological solutions

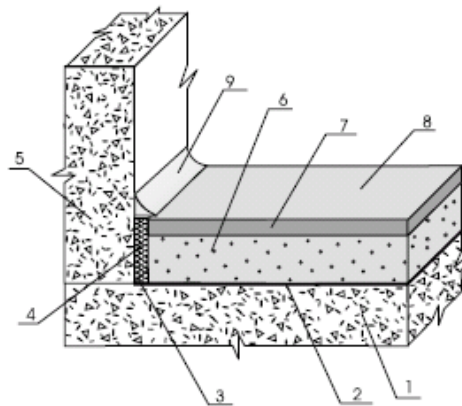
3.1 The monolithic concrete floor without the heat and sound insulation is characterized by the direct connection of all floor elements with the base. This floor can not be laid in the room where the water can penetrate (Figure 1.)



**Figure 1** Monolithic floor

- 1 - Concrete base;
- 2 - Deep penetration primer Master Universal;
- 3 - Adhesive mix Master Super;
- 4 - Expanded polystyrene strip (5mm thickness);
- 5 - Wall;
- 6 - Mix for leveling and repairing floors Master Basis;
- 7 - Adhesive mix for tiles Master (used in tile facing);
- 8 - Grout;
- 9 - Ceramic tiles;
- 10 - Skirting.

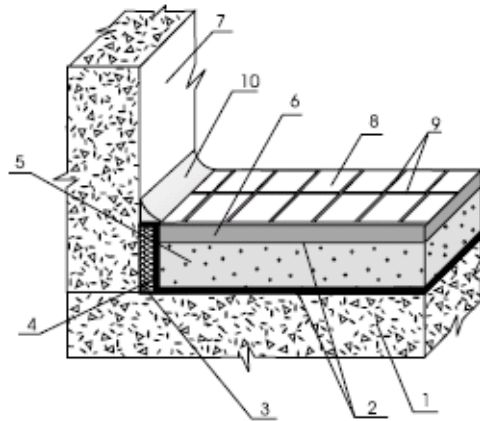
The monolithic concrete floor without thermal and acoustic insulation, using polymer compositions as coatings with or without subsequent painting (see Figure 2).



**Figure 2** Floor coatings using special paints.

- 1 - Concrete base;
- 2 - Deep penetration primer Master Universal;
- 3 - Insulation glue Master Super;
- 4 - Expanded polystyrene strip (5mm thickness);
- 5 - Wall;
- 6 - Mix for leveling and repairing floors Master Basis;
- 7 - Self-leveling mix (Horizont, Nivelor, Continent);
- 8 - Decorative and protective coating (special paint);
- 9 - Skirting.

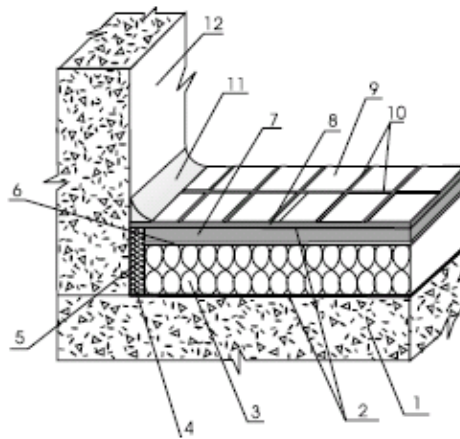
The monolithic floor on a separating layer is applied in cases where a moisture barrier must be installed in a gap between the monolithic floor and base (see Figure 3). This floor can be made in rooms where the water can penetrate and accumulate.



**Figure 3** The monolithic floor on a separating layer.

- 1 - The concrete base or a base from Master Basis mix;
- 2 - Waterproofing layer Master Barrier;
- 3 - Insulation glue Master Super;
- 4 - Expanded polystyrene strip (5mm thickness);
- 5 - Screed of mix Master Basis;
- 6 - Adhesive mix for tiles Master (used in tile facing);
- 7 - Wall;
- 8 - Ceramic tiles;
- 9 - Grout;
- 10 - Silicone sealant Master Silicone

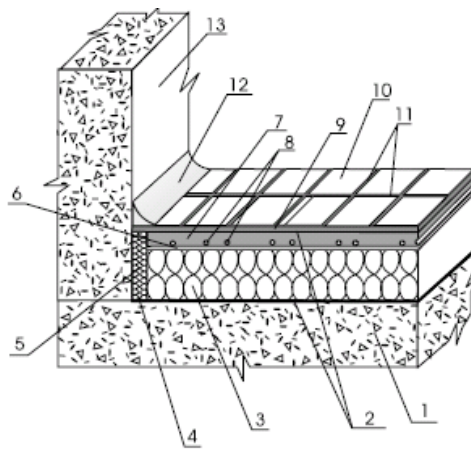
The monolithic floating floor is arranged on the thermal insulation layer in areas with high requirements for thermal and sound insulation.



**Figure 4** Monolithic floating floor

- 1 - The concrete base or a base from Master Basis mix;
- 2 - Deep penetration primer Master Universal;
- 3 - Expanded polystyrene tile;
- 4 - Insulation glue Master Super;
- 5 - Expanded polystyrene strip (5mm thickness);
- 6 - Polyethylene film (0.2 mm thickness);
- 7 - Master Remix mix min 35 mm thickness);
- 8 - Master adhesive composition for tiles;
- 9 - Ceramic tiles;
- 10 - Grout;
- 11 - Skirting or Master-Silicone sealant
- 12 - Wall;

The monolithic floor with heating elements are arranged in rooms with special requirements for floors.



**Figure 5** Floor with heating elements

- 1 - The concrete base or a base from Master Basis mix;
- 2 - Deep penetration primer Master Universal;
- 3 - Expanded polystyrene tile;
- 4 - Insulation glue Master Super;
- 5 - Expanded polystyrene strip (10 mm thickness);
- 6 - Polyethylene film (0.2 mm thickness);
- 7 - Master Remix mix min 35 mm thickness);
- 8 - Heating elements;
- 9 - Adhesive mix Master Flex;
- 10 - Ceramic tiles;
- 11 - Grout;
- 12 - Master-Silicone sealant
- 13 - Wall;

#### **4. Work arrangement and method**

##### **4.1. Work arrangement.**

###### **4.1.1. Before any facing work do the following:**

- Inspect the construction object and determine its readiness to flooring;
- Develop the operations project;
- Deliver materials, products, tools and accessories to the site;
- Prepare the construction site to work.

###### **4.2.1. Inspecting construction object.**

When inspecting the construction object determine his readiness to flooring.

Before facing perform the following on construction object :

- General construction and installation work;
- Route all utilities and seal all ducts;
- Seal joints between the blocks or panels on the building facade;

For repaired or reconstructed objects, start flooring after:

- Repair or replace of damaged or destroyed elements of buildings, water supply networks, sewerage, heating, electricity and utilities;
- Test the repaired water supply networks, sewerage, heating, electricity and utilities.

When inspecting, determine the state of structures to be faced, namely:

- The presence and size of flooring base deviations from the horizontal;
- Check the dirt presence, nature and area on the surface of structures;
- The strength of the flooring base;
- The wetness of the flooring base;

Inspection and certification must be shaped with the certificate of preparing the construction object for flooring. The results must be used to develop the work project (WP).

4.1.3. The WP must be developed (as appropriate) for each object where the flooring to be performed with regard to:

- The object inspection and examination results;
- Recommended application area for MASTER flooring materials given in Tables 26 and 6 of this flow chart, Technical Specifications of Ukraine V.2.7-2627701052.001-2003, Construction Standards and Regulations 3.04.01 Insulation and Finishes and Construction Standards of Ukraine V.2.6-22-2001 Coatings with Dry Building Mixes.

4.1.4. When planning and arranging the construction site determine the following:

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- The location and size of areas for preparing mortars from dry mixes;
- Points of rest for workers;
- Areas for waste storage and collection.

These activities must be carried out taking into account all possibilities to use temporary and permanent structures present on the site.

This must be carried out together with the general safety measures.

4.1.5. Water must be supplied to all areas for preparation of mortars.

4.1.6. Materials, tools and devices necessary to perform the work must be delivered to the site by road, stored in locations designated in the arrangement of the construction site and in conditions that ensure their safety during the work.

Materials and tools must be supplied to the facing site by means of trolleys according to GOST 13188, GOST 12874 and hand carry.

4.1.7. Preparing the surfaces of structures for flooring. The finishing layer that has lost adhesion to the structure surface in preparation for the flooring must be removed by shot blasting machines according to Technical Specification of Ukraine TU U 3.5393180.005. When scope of work is small, use picks, chisels, boosters and brushes for this purpose.

Sagging of concrete and mortar must be removed by electric hammers or manual drilling machines.

When scope of work is small, use bush hammering, chisels, steel brushes.

Large cracks that are not increasing and large potholes in the surface of the structure must be cleared from the destroyed material particles with compressed air.

The places with fungus, moss must be cleaned with brushes and treated with Master Antifungal primer and dried.

Where the structure was repaired or their surfaces were treated with special formulations, flooring must begin no earlier than three days after the completion of the surface preparation.

#### 4.2. Work method.

4.2.1 The flooring process using Master materials includes the following elements:

- arrangement of bases;
- arrangement of screeds;
- arrangement of coatings;
- applying coatings

4.2.2. Depending on the floor functional purpose, these elements can be supplemented by waterproofing and thermal insulation elements.

#### Floor base arrangement

4.2.3. The floor base can be made with Master Basis.

The layer thickness depends on the intensity of mechanical impact and is determined by the design. The minimum thickness must be at least 10 mm.

4.2.4 The screed can be arranged on the hard base (concrete, cement-sand mortar, etc.) or on the sound insulation layer. Screed technology is as follows:

- Preparing the surface (hard base) for a layer;
- Installing guiding rails to ensure the surface horizontal;
- Preparing the mortar mix;
- Applying the mortar mix;

4.2.5 The surface preparation involves cleaning of the base from dust, dirt, oil stains, etc. according to 4.1.7, which is then moistened with water (see Figure 6.7).



**Figure 6** Base dedusting



**Figure 7** Base wetting

4.2.6. To get the horizontal surface, it is necessary to make the guiding rails that will allow forming a certain thickness of the screed. These can be metal T-bars glued using anchoring mix, which will also remain inside the screed layer, additionally performing the function of expansion joints (see Figure 8).



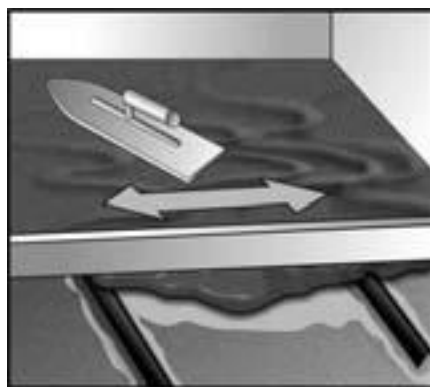
**Figure 8** Making guiding rails

4.2.7. The screed preparation involves stirring a cement, filler and aggregate with a certain amount of water in a clean container using a low-speed drill (max 600 rev/min), mortar or concrete mixers (see Figure 9).



**Figure 9** Mortar mix preparation

4.2.8. The prepared mortar mix is applied on the prepared base, and then compacted and formed by a metal rail until a smooth flat surface. In addition to the rail use metal spattle to get a smooth coating (see Figure 10). If you need a rough surface, float the layer with a wood or polystyrene foam floater after 24 hours of curing.



**Figure 10** Forming the smooth coating

### **Making the floor self-leveling layer**

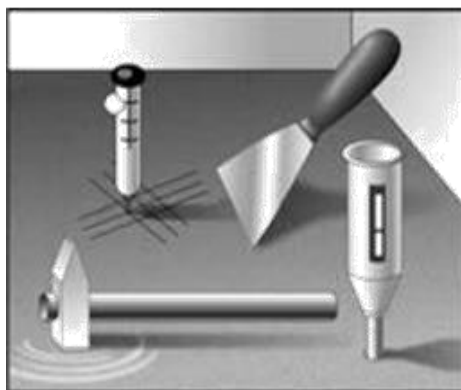
4.2.9. When applying self-leveling mixes Master TM, the layer technology is as follows:

1) Before making a decision to apply the self-leveling mix determine the condition of the existing screed.

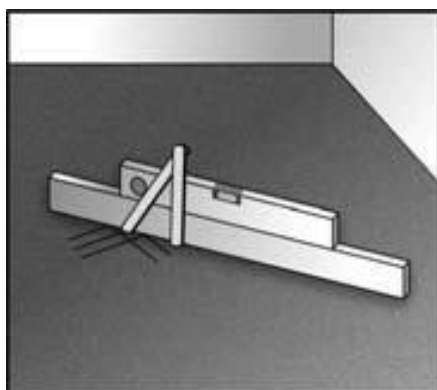
2) To determine the base strength use a non-destructive testing methods (Kashkarov hammer, Schmidt hammer or Ree Ree device (by scratching)) (see Figure 11). When using laboratory instrumentation cut sample cubes of the screed.

3) After assessing the base strength characteristics, determining the degree of surface deviation from the horizontal (see Figure 12), and knowing the material that will be used as the coating, select the layer material.





**Figure 11** Determining the screed strength



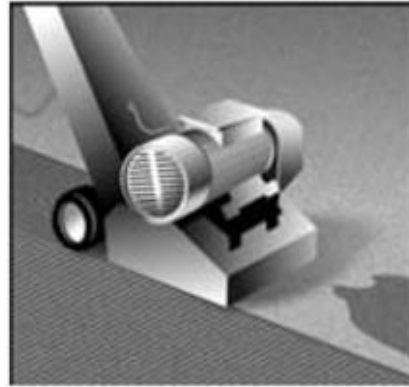
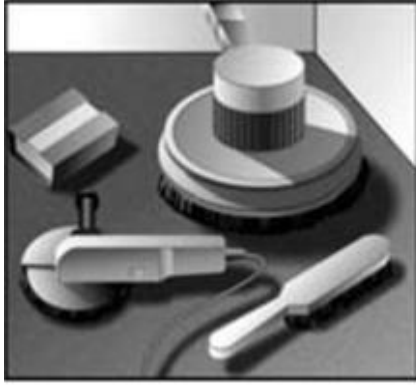
**Figure 12** Determining the screed horizontal

The amount of water and stirring time depending on their grades are given in Table 3.

**Table 3** Material grades and areas of their application

Mix grade	Amount of water per 1 kg of dry mix	Preparation time	Layer thickness, mm	Required base strength, MPa	Coatings, which can be used on this layer	Time after which the coating application is possible, days
Basis	0.13	Stirred with a low speed mixer (less than 600 rev/min) until a uniform paste without lumps for at least 2 min, then kept for 5 min, and then stirred again for 1 to 2 minutes.	5 to 100	25	Parquet, laminate, ceramic tile	3
Classic	0.15		3 to 30	10	Parquet, laminate, linoleum, carpet, ceramic tile	7
Element	0.13		3 to 30	10	Parquet, laminate, ceramic tile	3
Remix	0.16		3 to 50	20	Parquet, laminate, ceramic tile	3
Horizontal	0.17		3 to 15	15	Parquet, laminate, linoleum, carpet, ceramic tile	7
Niveler	0.16		5 to 30	20	Parquet, laminate, linoleum, carpet, ceramic tile	3
Continent	0.23		No limitations	10	Parquet, laminate, linoleum, carpet, ceramic tile	3
Beton-X	0.13		10 to 300	30	Parquet, laminate, linoleum, carpet, ceramic tile	3

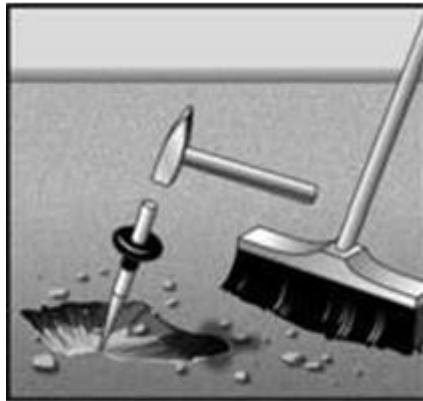
4) If the base is smooth, it is necessary to roughen it with sandpaper, and if there is the cement slurry on the surface, it must be removed (see Figure 13). Remove the loose upper layer of the base with a milling machine (see Figure 14).



**Figure 13** Roughening the surface **Figure 14** Removing the base upper layer with a milling machine

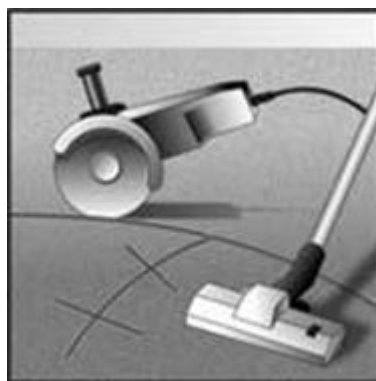
5) Screed (base) surface with a very low strength or deeply impregnated with oil must be cut down (see Figure 15):

**Figure 15** Removing loose areas of the base surface

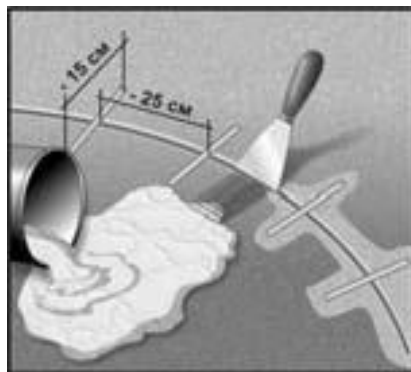


6) Cracks in screeds (bases) that break their integrity and rigidity, must be first grouted to 20mm depth and then make 150 mm long cuts every 250 mm in the direction perpendicular (see Figure 16), which must be thoroughly cleaned from dust.

**Figure 16** Covering cracks



7) Dry cleaned cracks and cuts must be filled with an injection material, and perpendicular cuts must be also filled with steel wire with a diameter of 3 mm. Before the injection material hardens, apply a layer of sand on its surface, which subsequently promotes adhesion of Master Horizont and Master Nivelor with injecting material surface (see Figure 17).

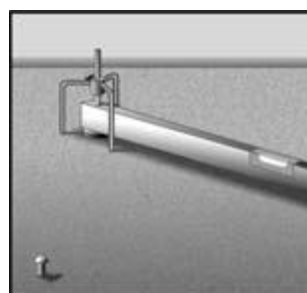


**Figure 17** Filling cracks

4.2.10 Apply Master Universal Primer on the prepared surface and level it with a roller over the entire surface (see Figure 18). After the primer has dried (4-6 hours), check the water resistance of primer. For this purpose, pour a small amount of water on the surface of the primed screed and visually determine the change of its quantity. If the water is absorbed into the base, apply a second coat of primer.



**Figure 18** Applying the primer layer



**Figure 19** Installing beads.

4.2.11. To obtain the horizontal surface install beads in the screed every 1.5 - 2.0 meters (see Figure. 19).

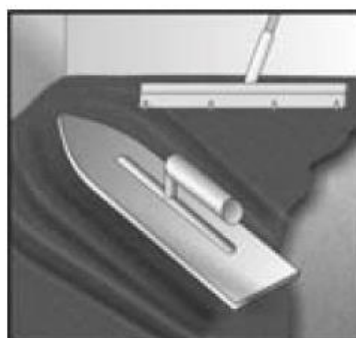
4.2.12. The mortar mix must be prepared according to the table 3.

4.2.13. The prepared mortar mix is poured from the capacity in the place farthest from the entrance, and then distributed over the surface with a long metal trowel or squeegee. It is recommended to use several capacities that will speed up the process and avoid visible boundaries between the layers. The time between two connected portions of the mortar must not exceed 15 to 20 minutes (see Figures 20 and 21).

4.2.14. When performing the work avoid drafts and direct sunlight. Apply expansion joints in areas larger than 20 m<sup>2</sup>.



**Figure 20** Mortar application



**Figure 21** Mortar mix distribution

4.2.15. The freshly applied layer of mortar must be rolled with a spiked roller; at the same time, the special attention must be paid to the junction of different portions (see Figure 22).



**Figure 22** Mortar mix distribution with a spiked roller

### **Floor coating arrangement**

4.2.16. Master Horizont and Master Nivelor can be used for the floor coverings.

- Master Horizont is used for floor covering device, which will be operated under the influence of moderate mechanical loads.

- Master Nivelor is used for floor coverings that can be operated under the influence of considerable mechanical loads, in addition to the passage of track vehicles.

4.2.17. Preparation of the surface for the coating must be carried out according to 4.1.7.

4.2.18. Preparation of the mortar must be made according to 4.2.9 and Table 4.

4.2.19. Depending on the floor purpose and sanitary and hygienic requirements and aesthetic standards the surface coatings can be painted with paints for concrete.

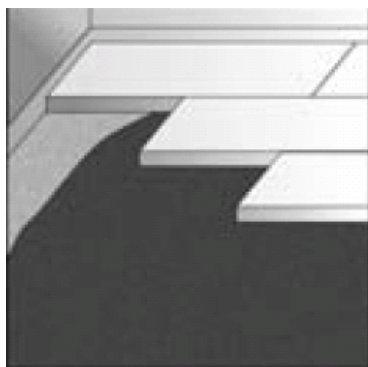
4.2.20. Covers from Master Nivelor can serve as a basis for the subsequent laying of epoxy and polyurethane compositions.

### **Arranging the under-floor heating**

4.2.21. Apply layer of insulation on the screed and make T-shaped joints between insulation tiles. You can use

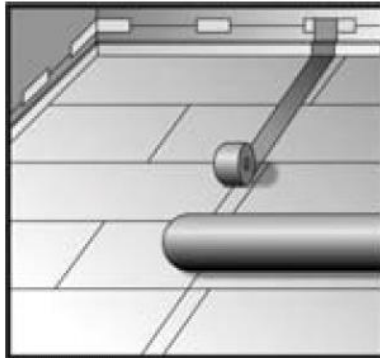
mineral wool and polystyrene foam tiles with density of not less than 20 kg/m<sup>3</sup>.

Place strips of expanded polystyrene with the 10 mm thick for creating expansion joints along the walls around the perimeter of the room (see Figure 23).



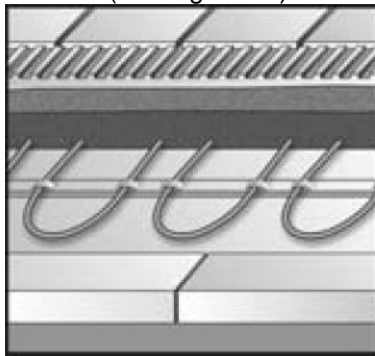
**Figure 23** Installation of expansion joints

4.2.22. Lay the polyethylene film with 0.2 mm thickness and overlapping at least 10 cm on the surface of the insulation. Then, connect the strips with each other and fasten them to the wall with adhesive tape (see Figure 24).



**Figure 24** Protecting insulation with polyethylene film.

4.2.23. Lay heating elements on the polyethylene film and pour Master Nivelor mortar on them; the layer thickness must be at least 45 mm (see Figure 25).



**Figure 25** Arranging thermal and sound insulation

4.2.24. Floor thermal and sound insulation is made according to 4.2.21 and 4.2.22. Apply a minimum 35 mm mix layer on the polyethylene film. Floor covering must be in accordance with the work plan.

## 5 ESTIMATING LABOR COSTS TO FACE 1M2

Estimation of labor costs to face 1m2 of buildings is shown in Table 9.

Table 4 Estimation of labor costs to make 100m2 of floors.

No.	Base	Work Description	UOM	Scope of Work	Standard time per unit of measure, man-hours	Time spent for the scope of work, man-hours
1	Unified Norms and Prices ENiR 8-1-1	Cleaning the base from concrete and mortar sags (manually)	m <sup>2</sup>	100	1.24	0.155
2	Unified Republican Catalog of Standard Unit Prices ERKURER 21-124	Cleaning the base from dust	m <sup>2</sup>	100	0.12	0.015
3	E 11-37	Waterproofing; Applying (manually) the mix layer twice (Master Aquablock)	m <sup>2</sup>	100	0.089	1.11
4	EPEP 11-52	Heat and sound insulation with wool or polystyrene tiles	m <sup>2</sup>	100	25	3.125
5	E 19-43 cl.1	Making screed (manually) on the concrete base	m <sup>2</sup>	100	23	2.875
6	Unified Regional Unit Rates ERER - 1091	Primer (Master Universal) application	m <sup>2</sup>	100	3.6	0.45
7	E 19-32	Applying a layer of self-	m <sup>2</sup>	100	12	1.5

		leveling coating with the thickness up to 20 mm					
						Overall:	9.23

Remarks: Norms and prices of work with dry building mixes specified in the estimation of labor costs comply to accepted standards for work using conventional materials

## 6. Material and technical resources

6.1. The consumption of materials and products to make 1m<sup>2</sup> of the floor is shown in Tables 5 and 6.

Table 5 Materials and products necessary to make 1m<sup>2</sup> of floor

Materials and elements	Grades Regulations governing the requirements for materials and products	Materials and elements purpose	UOM	Material consumption per 1m <sup>2</sup> facing
Deep penetrating primer	MASTER Universal Primer; Inner Primer Technical Specifications of Ukraine TUU V.2.7-2627701052.001-2003	Strengthening and treating bases, increasing adhesion between layers	dm <sup>3</sup>	0.2 (depends on the base absorbency)
Self-leveling mix	MASTER Horizont MASTER Niveler; Technical Specifications of Ukraine TUU V.2.7-2627701052.001-2003	Floor coatings and preparation of surface for coverings	kg	1.8 (per 1 mm of thickness)
Fast-hardening mix	MASTER Continent State Standard of Ukraine DSTU B V.2.7-126:2011	Screeds and preparation of surface for coverings	kg	1.75 (per 1 mm of thickness)
High-strength mix	MASTER Basis State Standard of Ukraine DSTU B V.2.7-126:2011	Screed arrangement	kg	2 (per 1 mm of thickness)
Repair mix	MASTER Remix State Standard of Ukraine DSTU B V.2.7-126:2011	Screed repair and arrangement	kg	2 (per 1 mm of thickness)
Self-leveling high-strength mix	MASTER Beton-X State Standard of Ukraine DSTU B V.2.7-126:2011	High strength floors and preparation of surface for coverings	kg	2 (per 1 mm of thickness)
Base leveling mix	MASTER Classic State Standard of Ukraine DSTU B V.2.7-126:2011	Screeds and preparation of surface for coverings in residential premises	kg	2 (per 1 mm of thickness)
Insulation bonding mix	MASTER Super State Standard of Ukraine DSTU B V.2.7-126:2011	Bonding of polystyrene foam plates and strips	kg	1.4 (per 1 mm of thickness)
Waterproofing mix	MASTER Barrier State Standard of Ukraine DSTU B V.2.7-126:2011	Waterproofing	kg	1.8 (per 1 mm of thickness)
Grout	MASTER GRAFIKA State Standard of Ukraine DSTU B V.2.7-126:2011	For grouting ceramic, natural or artificial stone tiles, mosaics, glass, as well as for exterior and interior applications, with antifungal effect	kg	0.2 to 2 (depending on the tile size)
Water	GOST 23732-72	Mortar mix	dm <sup>3</sup>	In accordance

		preparation		with the instructions for the preparation of mortars (Table 3)
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Table 6 Necessary auxiliary materials

Material name	Material purpose	Unit of measurement	Material consumption per 1 m <sup>2</sup>
Polystyrene foam plates	Insulation layer Expansion joints	m <sup>2</sup>	108
Mineral wool plates	Thermal and sound insulation	m <sup>2</sup>	108
Polyethylene film	Thermal and sound insulation	m <sup>2</sup>	110
Adhesive tape	Fixing the polyethylene film	rm	30

### 7. Safety requirements

All flooring operations must be performed on the basis of the work plan; and when the scope is small - on the basis of the flow chart.

Before starting the work:

- Determine the location for storing materials, equipment, and tools on the construction site;
- Provide supply of drinking and process water as well as means for first aid to the construction site; - Arrange the points of rest for workers;
- Provide all workers with personal protective equipment and instruct on how to use and service it.

To prevent injuries and diseases:

comply with the requirements of GOST 12.1.003-83: Occupational Safety Standards; Noise; General Safety Requirements; GOST 12.1.004-91: Occupational Safety Standards; Fire Safety; General Requirements; GOST 12.1.013-93: Occupational Safety Standards; Construction; Electrical Safety; General Requirements;

GOST 12.1.018-93: Occupational Safety Standards; Fire Safety; Electric and Intrinsic Safety; General Requirements; GOST 12.3.009-76: Occupational Safety Standards; Handling Operations; General Requirements; GOST 12.3.0103-93: Occupational Safety Standards; Manufacturing Equipment; General Safety Requirements; GOST 12.3.002-75: Occupational Safety Standards; Manufacturing Processes; General Safety Requirements; SNiP III-4-80: Safety in Construction; SNiP 3.04.01-87: Insulation and Finishes.

When working with dry construction mixes use personal protection equipment from getting the mixture into the respiratory tract and on skin. Use goggles as per GOST 12.4.013-85, suits and overalls from non-toxic substances and other industrial contaminants as per GOST 12.4.099 and GOST 12.4.100, respirators as per GOST 12.4.028, special gloves as per GOST 12.4.010, and footwear as per GOST 28507.

Waste materials used in flooring must be collected in containers and disposed of in accordance with the requirements of Public Health Standards and Regulations 2.2.7.029: Public Sanitary Rules and Standards, Hygienic Requirements for Industrial Waste and Determining Its Class of Danger to Public Health.

The responsibility for compliance with the rules and implementation of safety measures and occupational health when making floors must be assigned to the engineering and technical employees of the contractor.