Ultra-fast setting, self-levelling mortar based on special hydraulic binders for abrasion-resistant flooring, thickness from 5 to 40 mm

oterator

FN 1381?

### CLASSIFICATION ACCORDING TO EN 13813

Smoothing layers of **Ultratop** applied according to the specifications in this Technical Data Sheet are classified as  $CT - C40 - F10 - A9 - A2_{fl}-s1$  in compliance with EN 13813 Standards.

## WHERE TO USE

**Ultratop** is used internally in public and industrial buildings, for levelling and smoothing new or existing concrete and ceramic substrates in thickness from 5 to 40 mm, to make them suitable for heavy pedestrian use in shopping centres, offices, shops, showrooms and areas where rubber-wheeled vehicles are in use.

**Ultratop** may be left as a finished floor due to its high mechanical strength and resistance to abrasion and thanks to its versatility, is suitable for numerous applications in the decorating sector of buildings for civil use.

## Some application examples

- New floors in shopping centres, supermarkets, restaurants, shops and showrooms.
- Abrasion-resistant floors on concrete, old terrazzo, ceramic tiles and natural stones.
- Industrial floors that must be protected with epoxy

coatings and paints in chemical and food processing plants, textile mills and tanneries.

EN 13813

- New, polished floors inside shopping centres, showrooms, shops, restaurants and flats.
- New floors, such as "*terrazzo alla veneziana*", inside homes, offices, shops, museums, theatres and exhibition halls when used in combination with **Dynastone Color** artificial aggregates.

#### **TECHNICAL CHARACTERISTICS**

**Ultratop** is a self-levelling product in powder available in light grey, white, beige, rust red, anthracite and standard (beige going on light brown) made up of special quick-drying and quick-setting binders, specially graded silica sand, synthetic resins and special additives developed in MAPEI's own R&D Laboratories.

When mixed with water, **Ultratop** becomes a self-levelling compound which is easy to apply either by hand or pump in thickness from 5 to 40 mm.

After setting, which takes place in only a few hours, **Ultratop** has a high level of compressive and flexural strength, bonds perfectly to the substrate and thanks to its special composition, dries quickly so that any further finishing coat may be applied after a very short time.

Ultratop is classified as CT-C40-F10-A9-A2fl-s1





Preparation of the substrate by shot-blasting



Preparation of the product with a drill



Preparation of Ultratop in a mixer

according to EN 13813:2002 Standards. CT refers to a cementitious-based product, C40 and F10 refer to the compressive strength and flexural strength, respectively, after 28 days, A9 is the Böhme abrasion-resistance coefficient and A2<sub>fl</sub> s1 is the fire-reaction class.

**Ultratop** complies with the principles defined in EN 13813 "Screeds and materials for screeds – Materials for screeds – Properties and requirements", which defines the requirements applied to materials for screeds used in the construction of internal floors. Screeds and structural covering, such as those which help increase the load-bearing capacity of floors, are not included in this Standard.

Resin flooring and cementitious screeds are included in this specification. They must bear the CE symbol, as illustrated in attachment ZA.3 Tables ZA1.5 and 3.3.

Around 3 days after application, **Ultratop** may be dry-polished using diamond grinding disks to get a shiny, reflective or similar finish on natural stone.

In addition, thanks to **Ultratop**'s high chemical affinity with **Dynastone Color** artificial aggregates, it is also very quick and easy to create floors such as "*terrazzo alla veneziana*", where the dry-polishing process brings out the quality of the aggregates to give the floor its exclusive, original finish.

#### RECOMMENDATIONS

- Do not add more water to the mix once **Ultratop** starts to set.
- Do not add lime, cement, gypsum or other binders to the **Ultratop** mix.
- Do not use **Ultratop** on substrates which are subject to rising damp (consult the MAPEI Technical Assistance Department).
- Do not use **Ultratop** for floating screeds. **Ultratop** must always be fixed to a solid, compact substrate.
- Do not use Ultratop on wet surfaces.
- Do not use **Ultratop** on metallic surfaces.
- Do not use **Ultratop** at temperatures lower than +5°C or higher than +35°C.
- The colours of floors made using **Ultratop** are not always uniform, a typical feature of cementitious-based products. Apart from the inherent nature of this kind of product, differences in the various colours may also be caused by the way the product is applied. Also, it must be

cast continuously without long pauses, in order to guarantee perfect flatness.

## APPLICATION PROCEDURE Preparing the substrate

Substrates must be dry, solid and free of dust, loose and detached parts, paint, wax, oil, rust and all other pollutants.

Apply special compressible band around the perimeter of the rooms to be laid and around any vertical elements which pass through the floor (such as pillars and columns).

Concrete and/or ceramic or natural stone surfaces must be prepared by shot-blasting or milling and primed with **Primer SN** and, where required, reinforced with **Mesh 320** (glass fibre mesh) followed by a fully broadcast of **Quartz 1.2**.

After application, leave the **Primer SN** to dry for 12-24 hours, according to the surrounding temperature.

Before casting the **Ultratop**, remove excess sand with a vacuum cleaner.

Instead of **Primer SN**, absorbent concrete substrates may be primed with 2-3 coats of **Primer G**: the first coat diluted with water at a ratio of 1:1 and the second and third coats (according to the absorbency of the substrate) at a ratio from 1:1 to 1:2.

Surfaces which are not absorbent such as ceramic or natural stone, on the other hand, may be treated with a coat of **Mapeprim SP** after cleaning the surface with a suitable detergent and abrading it mechanically, such as by grinding.

Spread on the **Ultratop** before **Mapeprim SP** has completely hardened (from 1 to 3 hours at +23°C and 50% R.H. - while it is still sticky).

Cracks in the substrate must be repaired beforehand using **Eporip**.

#### **Preparing the mix**

Pour the content of a 25 kg bag of **Ultratop** into a container with 5.0 to 5.5 I of clean water and continue mixing with a low-speed electric mixer until a smooth, flowable, lump-free mix is formed.

Let it stand for 2-3 minutes and before applying, remix the blend for a few minutes.

Only prepare the amount of **Ultratop** which will be applied within 15 minutes at a temperature of +23°C. The pot life of the mix varies according to the temperature and reduces as the temperature increases. If **Ultratop** is to be applied on medium to TECHNICAL DATA (typical values) In compliance with:

- EN 13813 : 2002, CT - C40 - F10 - A9 - A2<sub>fl</sub>-s1

Consistency:	fine powder					
Colour:	light grey, standard, white, beige, rust red and anthracite					
Bulk density (kg/m³):	1,300					
Dry solids content (%):	100					
Storage:	12 months in original packaging in a cool dry place					
Hazard classification according to CE 1999/45:	none. Before using refer to the "Safety instructions for preparation and application" paragraph and the information on the packaging and Safety Data Sheet					
Customs class:	3824 50 90					
APPLICATION DATA (at +23°C and 50% R.H.)						
Mixing ratio:	approx. 20-22 parts water per 100 parts by weight of <b>Ultratop</b>					
Thickness (mm):	from 5 to 40					
Self-levelling:	yes					
Density of mix (kg/m³):	2,000 to 2,100					
pH of mix:	approx. 12					
Application temperature range:	from +5°C to +35°C					
Pot life:	15 minutes					
Setting time:	60 minutes					
Set to light foot traffic:	3-4 hours					

### FINAL PERFORMANCES

Performance characteristic	Test method	Requirements according to EN 13813 for cementitious screeds	Performance of product			
		5 < N/mm² < 80 (28 days)		+ 5°C	+ 23°C	Ultratop+Dynastone Color - 1:1 at +23°C
			24 h	≥12	≥ 20	≥ 30
Compressive strength:	EN 13892-2		72 h	≥18	≥ 25	≥ 40
			7 d	≥ 23	≥ 30	≥ 50
			28 d	≥ 30	≥ 40	≥ 55
	EN 13892-2	1 < N/mm² < 50 (28 days)		+ 5°C	+ 23°C	Ultratop+Dynastone Color - 1:1 at +23°C
			24 h	≥ 3	≥ 5	≥ 6
Flexural strength:			72 h	≥ 4	≥7	≥7
			7 d	≥ 5	≥ 9	≥ 9
			28 d	≥7	≥11	≥ 10
	EN 13892-8	> 1.5 N/mm²		+ 23°C		
Adhesion to concrete:			24 h	2.5 (substrate failure)		
			28 d	2.5 (substrate failure)		
Abrasion resistance	ASTM D4060			+ 5°C	+ 23°C	
Taber abrasion test (H22 disk - 500 g -			7 d	1.7	0.7	
200 rpm):			28 d	1	0.6	
Abrasion resistance Böhme abrasion test:	EN 13892-3	1,5 < cm³/50 cm² < 22		+ 2	+ 23°C Ultratop+Dyn Color - 1:1 at	
			28 d	(	9	9
Reaction to fire:	EN 13501-1	Value declared by	A2fi-s1			



Mechanical application of Ultratop



Smoothing Ultratop immediately after spreading



The final result of a floor made using Ultratop large-sized surfaces, larger quantities may be prepared using a vertical-shaft mixer.

If it is mixed using mechanical means, the amount of water required is the same as when mixing by hand. Mix the product until the blend is completely homogenous before laying.

A mechanical mixer is indispensable when **Ultratop** is applied using a rendering machine. This is the only method which guarantees that there is a continuous flow of material while casting.

### Laying the mix to obtain a "natural" effect and a "polished" effect

Spread **Ultratop** by hand or with a mechanical means (rendering machine with a worm-screw feeder) in a single layer of 5 to 40 mm and a smoother for a natural finish, or at a thickness between 10 and 40 mm if the floor is to be polished.

Make sure that the material is cast in a regular, continuous flow without interruptions, to avoid defects in flatness and particularly visible differences in colour. Thanks to its selflevelling properties, **Ultratop** eliminates all imperfections left by the smoother.

When applying the product, respect the expansion joints in the substrate and form distribution joints at least every 50 m<sup>2</sup>. With heated floors, the bay size must be no more than 25-30 m<sup>2</sup>.

If **Ultratop** is applied in civil buildings (appartaments, shops, etc.) where the rooms are smaller than 50 m<sup>2</sup>, include distribution joints in correspondence with door-sills or where there is a significant variation in volume in the rooms to be dressed.

Seal joints with **Mapeflex PU45** single component, quick-hardening thixotropic polyurethane sealant and adhesive with a low modulus of elasticity for sealing expansion and distribution joints. Insert **Mapefoam** closed-cell polyurethane foam cord in the joint beforehand to obtain the required depth and avoid the sealant sticking to the bottom of the joint.

Floors made using **Ultratop** may be left as they are or may be polished if a particular aesthetic effect is required.

In the first case, approximately 3 days after application, the surface of

**Ultratop** must be protected and then made non-absorbent using one of the following finishing systems:

- **Mapefloor Finish 50**, two-component, aliphatic, hygro-hardening, transparent polyurethane finishing product;
- Mapefloor Finish 52 W, twocomponent water dispersed polyurethane finishing product with low yellowing properties.

After treatment with **Mapefloor Finish 50**, the floor will have a "wet-look" finish, whereas **Mapefloor Finish 52 W** modifies just a little the colour of the treated surface.

In the second case, the protective layer must be laid after polishing.

Finally, apply a coat of **Mapelux Lucida** or **Mapelux Opaca** metallic wax to make successive cleaning and maintenance operations simpler.

#### Polishing process Procedure

Dry-polishing with a diamond-tipped grinder may be carried out 2-3 days after applying the mix. The surface obtained will be completely smooth and shiny, which reflects light, very similar to natural stone such as granite. After the first "roughing" treatment, which will lead to the formation of surface micro-porosities, the floor must be grouted with **Ultratop Stucco**, a special sealing product for this type of porosity which typically forms after the preliminary treatment. **Ultratop Stucco** is available in the same colours as **Ultratop**.

Complete the polishing cycle using the remaining tools, then carry out the finishing treatment applying, with a clean cloth, two coats of **Keraseal** transparent, protective impregnator which reduces the absorption of the floor.

In order to make successive cleaning and maintenance operations easier, apply an even layer of **Mapelux Lucida** or **Mapelux Opaca**, metallic wax over the entire surface of the floor.

#### "Terrazzo alla veneziana" type floors Procedure

Mix **Ultratop** with **Dynastone Color** aggregates in a cement mixer at a ratio of 1:1 by weight, and add water at a rate of approximately 10% of the total mix weight.



Spreading the blend of Ultratop and Dynastone Color



Flattening and compacting Ultratop mixed with Dynastone Color aggregates



Final step of drypolishing process of a floor made using Ultratop/Dynastone Color



Various colours of Ultratop floor with a "polished" effect. Budapest - Faculty of Medicine

Mix for a few minutes to blend the various ingredients uniformly.

Spread out the mix on the substrate by hand with a straight edge and a trowel. The substrate must be primed beforehand using the same products as described in the "Preparation of the Substrate" section. To make the successive polishing operations easier and quicker and to guarantee a perfect result, we recommend that the mix is spread out on the surface evenly, without dips or other defects in the surface (holes, irregularities or roughness).

Dry-polishing with a diamond-tipped grinder may be carried out 2-3 days after applying the mix. The surface obtained will be completely smooth and shiny, which reflects light, very similar to "*terrazzo alla veneziana*" floors.

As described previously, the floor must be grouted using **Ultratop Stucco** after the "roughing" cycle.

Complete the polishing cycle, then carry out the finishing treatment applying, with a clean cloth, two coats of **Keraseal** transparent, protective impregnator which reduces the absorption of the floor.

After the finishing treatment, apply a coat of **Mapelux Lucida** or **Mapelux Opaca** metallic wax to make successive cleaning and maintenance operations simpler.

**Note:** For more information regarding tools required for the dry-polishing process, please contact MAPEI Technical Assistance Service.

## Cleaning

Whilst still fresh, **Ultratop** may be cleaned from hands and tools with water.

## CONSUMPTION

**Ultratop** used pure: 16.5-17.5 kg/m<sup>2</sup> per cm of thickness.

## Ultratop mixed with Dynastone

**Color** aggregates: 10 kg/m<sup>2</sup> per cm of thickness.

#### PACKAGING

Ultratop is available in 25 kg bags.

## STORAGE

**Ultratop** remains stable for 12 months if stored in a cool dry place. If stored for longer periods, the setting time of **Ultratop** may increase but without affecting its final characteristics. Manufactured in compliance with the regulations of the 2003/53/EC Directive.

#### SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

**Ultratop** contains cement that, when in contact with perspiration or other body fluids, may cause an irritating alkaline reaction. Use protective gloves and goggles.

For further and complete information about a safety use of our product please refer to our latest version of the Material Safety Data Sheet.

FOR PROFESSIONAL USERS.

## WARNING

While the indications and guidelines contained in this data sheet correspond to the company's knowledge and wide experience, they must be considered, under all circumstances, merely as an indication and subject to confirmation only after long-term, practical applications. Therefore, anybody who undertakes to use this product, must ensure beforehand that it is suitable for the intended application and, in all cases, the user is to be held responsible for any consequences deriving from its use.

#### Please refer to the current version of the Technical Data Sheet, available from our web site www.mapei.com



All relevant references for the product are available upon request and from www.mapei.com



White Ultratop with a "polished" effect



A light grey Ultratop floor with a "natural" effect



Floor made using red Ultratop in the Berlaymont Building, Brussels







Via Cafiero, 22 - 20158 Milan (Italy)

# EN 13813 CT- C40- F10- A9- A2<sub>ff</sub>-s1

Cementitious screed material for internal use

Reaction to fire: Release of corrosive substances: Water vapour permeability: Compressive strength: Flexural strength:	A2 <sub>fl</sub> -s1 CT NPD C40 F10	Abrasion: Sound insulation: Sound absorption: Thermal resistance: Chemical resistance:	A9 NPD NPD NPD NPD
Flexural strength:	F10	Chemical resistance:	NPD



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