



The Chemical Company

# MASTERTOP<sup>®</sup> 230

Heavy duty metallic aggregate topping

## DESCRIPTION

**Mastertop 230** is an iron aggregate topping designed to provide industrial floors with extra heavy duty protection against abrasion and impact. It can be applied over existing, correctly prepared, hardened concrete or fresh concrete to give an appreciably longer service life than either normal high strength concrete or natural aggregate toppings.

**Mastertop 230** has a lower modulus of elasticity than other toppings of equivalent compressive strength. Thus it is less brittle and more resistant to dynamic loads. Impact resistance and total energy absorbing capacity (toughness) are also improved.

## FIELDS OF APPLICATION

**Mastertop 230** is recommended for key areas subject to heavy abrasive traffic, impact and continuous wear such as:

- loading docks, aisles, waste transfer facilities, truck or tractor repair areas, and mill scale sluiceways.
- areas where safety authorities have deemed other floor surfaces hazardous because of excessive wear, dangerously buckled steel plates, etc.
- mining workshops with tracked vehicles
- floors with scraper blades in constant contact

**Note :** **Mastertop 230** is not recommended for areas where steel plates have worn through in less than one year, or where the floor surface is exposed to acids, their salts or other materials which seriously and rapidly attack cement and/or iron.

For applications under these service conditions, consult BASF Construction Chemicals about their range of chemical resistant flooring systems such as the **Mastertop 1200** series.

## FEATURES AND BENEFITS

|                                    |  |
|------------------------------------|--|
| <b>Ease of application</b>         | Extended working life at screedable consistency (130 to 180mm slump) allows ample time to place, float and finish. Rotary compactors are not required. |
| <b>Heavy duty, durable</b>         | Provides compressive strengths equivalent or superior to no-slump and other toppings.  |
| <b>Outstanding toughness</b>       | Energy absorbing capacity is significantly greater than normal high strength concrete or natural aggregate toppings.                                   |
| <b>Increased impact resistance</b> | Eight times more wear resistance than plain concrete.  |

|   |  |
|---|--|
| <b>High density surface</b>                 | Resists oil and grease penetration, reduces dusting.   |
| <b>Easier to clean</b>                      | Lower maintenance costs.   |
| <b>Protects against joint deterioration</b> | Iron armoring eliminates the risk of dangerous protruding or buckled joints from steel tiles and increases the life of materials handling equipment. |

## TYPICAL PERFORMANCE DATA

|  |                      |                |
|--|----------------------|----------------|
| Compressive strengths. <sup>*1</sup>       | 24 hours             | 47 MPa         |
|  | 3 days               | 60 MPa         |
|  | 7 days               | 68 MPa         |
|  | 28 days              | 88 MPa         |
| Stress-strain. <sup>*2</sup>               | <b>Mastertop 230</b> | Plain Concrete |
|  |                      |                |
| Unit weight, kg/m <sup>3</sup>             | 3,555                | 2,325          |
| Modulus of elasticity, 10 <sup>6</sup> MPa | 2.7                  | 3.1            |
| Maximum Strain, mm/mmx 10 <sup>-6</sup>    | 4,450                | 1,620          |
| Toughness, MPa x 10 <sup>-2</sup>          | 21                   | 3              |

<sup>\*1</sup> The data shown here is based on controlled laboratory tests for 50 cubes cured at 21°C, mixed to the recommended consistency using 2.4 litres of water per 25 kg bag. Reasonable variations from the results shown here may be experienced as a result of jobsite conditions. Field and laboratory tests should be controlled on the basis of desired placing consistency rather than strictly on the water content. Mix an entire bag of **Mastertop 230** when preparing cubes for strength tests.

<sup>\*2</sup> Test data comparing the basic material properties of **Mastertop 230** to 28 MPa plain concrete, using 76mmx152mm cylinders cured at 21°C. This data is included as a reference to demonstrate the improved engineering properties of **Mastertop 230** topping as opposed to a plain concrete floor.

## PROPERTIES

|                            |                                  |
|----------------------------|----------------------------------|
| Supply form                | : Powder                         |
| Colours                    | : Grey                           |
| Water added per bag (25kg) | : 2.4 litres                     |
| Storage temperature        | : Moderate                       |
| Application temperature    | : Not below 5°C                  |
| Effect of humidity         | : Same as cement                 |
| Physiological effects      | : Same as cement                 |
| Toxicity                   | : Non toxic                      |
| Thickness                  | : Minimum 13 mm<br>Maximum 40 mm |

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# MASTERTOP<sup>®</sup> 230

## APPLICATION

**Mastertop 230** should be applied at thickness between 13mm and 40mm depending on project requirements.

**Mastertop 230** can be applied on new concrete floors as a monolithic topping on freshly placed concrete or as a granolithic top layer over at least 28 day old concrete. It can also be applied as a granolithic topping over existing, old concrete floors. It gives optimum performance on a reinforced concrete base, with a compressive strength of at least 30 N/mm<sup>2</sup> and with a thickness designed for the service conditions of the floor.

### Surface Preparation

#### New concrete

Do not use salt water or salt contaminated aggregates for casting the base concrete slab, over which **Mastertop 230** is to be applied. Do not use any curing compound on the base concrete.

Use hand floats for the first floating of the base concrete then a power trowelling machine equipped with float shoes. Commence floating as soon as concrete has stiffened sufficiently.

#### Existing concrete

Saw cut along the perimeter to the desired thickness of the topping at right angles to the surface. Hack off concrete layer to the saw cut depth. Clean the surface free of all contaminants.

**Note:** On a level and flat concrete base, grit / shot blasting or hydro-jetting is necessary to achieve a clean and rough surface, but saw cutting and removal of top layer are not essential.

### Priming

Monolithic application: no priming is required.

Granolithic application: prime with an epoxy bonding agent such as **Concresive 1001LPL** on dry substrates.

### Mixing

Use a powered mortar mixer. Mix 25kg of **Mastertop 230** with 2.5L of clean water.

Place approximately 75% of the required water into the mixer drum. Keeping the mixer running, add **Mastertop 230** slowly. After all the powder is added, mix for about 2 minutes. Then add the remaining 25% of water and continue mixing for a further minute. Keep the total mixing time within 5 minutes.

**Note:** Mix only quantities that can be placed and screeded well before the initial set of base concrete for monolithic topping and before the gel time of primer for granolithic topping.

### Placing

Do not place the topping under direct sunshine.

Place the mixed topping before the initial setting time of the fresh concrete base or when the primer is still tacky on hardened concrete.

Mark the floor area into bays of width 1 to 2m. Place and screed the topping within 15 to 20 minutes after mixing at 30°C. At higher temperatures, the working life will be shorter.

Tamp the topping with a rigid mesh tamper to consolidate

and ensure total contact of the screed with the prepared substrate, without voids.

Note : Under rapid drying conditions,

- shade the area from sun and use wind breakers
- immediately after screeding, spray the surface with a BASF Construction Chemicals approved curing compound to prevent rapid moisture loss and minimise plastic shrinkage cracks.

Float with a power trowel equipped with float shoes as soon as the topping can bear the weight of the machine and its operator without damaging the level. Ensure that the blades are set flat and the speed, low. For small areas, magnesium hand floats can be used.

If a coarse, non-slip surface is desired, start curing without any more finishing operations.

### Finishing

The extent of further floating or trowelling depends upon the finish desired on the surface.

Following machine floating, remove the float shoes and proceed with one or two normal trowelling operations to obtain a hard steel or burnish trowelled finish. Start with flat blades and slow speed, raising the blades gradually to obtain the desired finish. Do not over-trowel.

Late trowelling or too high a rotational speed may cause tearing of the surface. If trowel blades are raised too early, blistering could occur.

Pierce blisters with the corner of a hard trowel and refloat immediately with flattened trowel blades. Delay raised trowelling until no blisters occur.

### CURING

Proper curing is essential to achieve the designed performance and strength of the topping. Immediately after final finishing, mist spray the surface of the topping with water and cover with weighted polyethylene sheeting for 3 to 5 days. When mist spraying is not possible, use soaker hoses with burlap, or two layers of saturated burlap or similar type material and cover with polyethylene for 3 to 5 days. After wet curing, and while **Mastertop 230** is still moist, remove excess water with a squeegee. Immediately apply a BASF Construction Chemicals approved curing compound, such as **MASTERKURE 181**, with a short nap roller. The use of a roller will ensure complete coverage of the **MASTERTOP 230**. Do not spray on a membrane curing compound. Do not allow the **MASTERTOP 230** to dry out prior to the application of the curing compound.

## CLEANING

**MASTERTOP 230** is a cementitious product. Tools should be cleaned with water before the material hardens.

# MASTERTOP<sup>®</sup> 230

## ESTIMATING DATA

One 25kg bag of MASTERTOP 230 mixed with 9 to 10% clean water (2.4 litres) provides approximately 0.007m<sup>3</sup> of screedable topping at 150mm slump.

Approximate coverage:

| Desired thickness | 1x 25 kg bag covers (m <sup>2</sup> ) | Quantity required per m <sup>2</sup> |
|-------------------|---------------------------------------|--------------------------------------|
| 13 mm             | 0.59                                  | 45                                   |
| 25 mm             | 0.31                                  | 80                                   |
| 40 mm             | 0.19                                  | 130                                  |

Because the depth of surface preparation may vary from design, it is best to overestimate the quantity by 10 to 20% for the first stages, until actual usage established.

## PACKAGING

MASTERTOP 230 is available in 25kg bags.

## SHELF LIFE

MASTERTOP 230 can be stored for 12 months from date of manufacture if stored in tightly sealed original packaging, in a dry and enclosed place and at constant moderate temperature.

## PRECAUTIONS

Fire : MASTERTOP 230 is not flammable.

For detailed Health, Safety and Environmental recommendations, please consult and follow all instructions on the product Material Safety Data Sheet

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## STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **BASF Construction Chemicals** publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

## NOTE

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