



The Chemical Company

PRODUCT DATA

3 03 53 16 Iron-Aggregated Concrete Topping

# MASTERTOP<sup>®</sup> ANVIL-TOP<sup>®</sup> 300

## Heavy-duty metallic-aggregate topping

### Description

Mastertop<sup>®</sup> Anvil-Top<sup>®</sup> 300 is a cement-based metallic-aggregate floor topping. It provides extra heavy-duty protection in key areas subject to extreme abrasion and impacts. Its energy-absorbing capacity is significantly greater than plain concrete, integral fiber concrete, and high-strength natural-aggregate toppings.

### Yield

One 55 lb (25 kg) bag mixed with 0.63 gallons (2.4 L) of potable water provides approximately 0.28 ft<sup>3</sup> (0.0079 m<sup>3</sup>) of screedable topping at a 6" (152 mm) slump.

This amount will cover 3.35 ft<sup>2</sup> (0.31 m<sup>2</sup>) at a 1" (25 mm) thickness, allowing no waste.

One 3,300 lb (1,498 kg) bulk bag mixed with approximately 38 gallons (144 L) of potable water provides approximately 16.8 ft<sup>3</sup> (0.456 m<sup>3</sup>) of screedable topping at a 6" slump.

This amount will cover approximately 201 ft<sup>2</sup> (18.7 m<sup>2</sup>) at a 1" (25 mm) thickness.

Use approximately 18.0 lbs/sq ft (87.8 kg/m<sup>2</sup>) to produce a 1" (25 mm) thick topping.

### Features

- Extended working time
- High-slump (5 – 7" [127 – 178 mm]), screedable consistency
- High compressive strengths
- Uniquely processed malleable metallic aggregate
- Rapid strength gain
- Eight times more wear resistance than concrete
- High density
- Protects against joint deterioration
- Reduces dusting and absorption
- Lower modulus of elasticity than concrete of equal strength
- Available in bulk bags

### Benefits

- Allows ample time to place, float, and finish
- Ideal for horizontal applications
- Sustains heavy loads
- Highest level of impact tolerance and abrasion resistance
- Floors can be returned to service fast
- Longer serviceable life than high-strength concrete and natural-aggregate toppings
- Resists oil, grease, and many industrial chemicals
- Minimizes damage to goods; increases the life of material-handling equipment
- Makes floors easier to clean and maintain
- Topping is less brittle and more resistant to toppings dynamic loads.
- Ideal for large projects

### Packaging

- 55 lb (25 kg) multi-wall bags
- 3,300 lb (1,497 kg) bulk bags

### Shelf Life

1 year when properly stored

### Storage

Store this product in the unopened packaging in a clean, dry area at 50 to 90° F (10 to 32° C) protected from sunlight.

### Where to Use

#### APPLICATION

- Floors subject to heavy traffic, impact, abrasion, and continuous wear
- Where excess wear has been deemed a safety hazard and increased wear is required
- Loading docks
- Aisles
- Waste-transfer facilities
- Truck or tractor repair areas
- Steel mills

#### LOCATION

- Interior
- Exterior

#### SUBSTRATE

- Over new and existing concrete

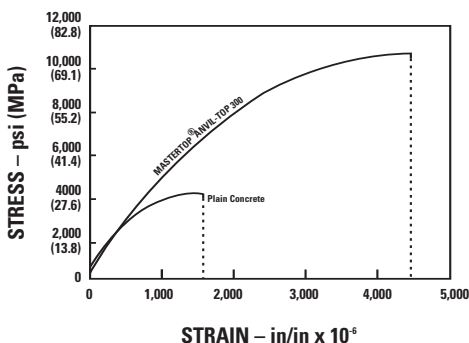


## Technical Data

### Composition

Mastertop® Anvil-Top® 300 is a blend of cements, metallic aggregate, silica fume, and additives.

### Stress-Strain Curves



Tests for basic material properties of Mastertop® Anvil-Top® 300 topping vs. 4,000 psi (27.6 MPa) concrete using 3 by 6" (76 by 152 mm) cylinders cured at 70° F (21° C). This data demonstrates the improved engineering properties of Mastertop® Anvil-Top® 300 over plain concrete.

### Test Data

PRODUCT (lb/ft [kg/m <sup>3</sup> ])	UNIT WEIGHT ELASTICITY	MODULUS OF STRAIN (x 10 <sup>6</sup> psi [MPa])	MAXIMUM (in lb/in <sup>2</sup> [MPa]) in/in x 10 <sup>-6</sup>	TOUGHNESS
<b>Mastertop® Anvil-Top® 300</b>	222 (3,556)	3.9 (0.027)	4,450	30.2 (0.21)
<b>Plain concrete</b>	145 (2,323)	4.5 (0.031)	1,620	4.5 (0.03)

<sup>1</sup>The data shown are based on controlled laboratory tests. Reasonable variations may result from atmospheric and jobsite conditions. Control field and laboratory tests on the basis of the desired placing consistency rather than strictly on water content. Mix an entire bag of Mastertop® Anvil-Top® 300 topping when preparing cubes for strength tests.

PROPERTY	RESULTS	TEST METHODS
<b>Typical Compressive Strengths,*</b>		ASTM C 109
psi (MPa)		
24 hours	5,040 (34.8)	
7 days	8,800 (60.7)	
28 days	12,050 (83.1)	
<b>Abrasion resistance,</b>	0.017	ASTM C 779, Procedure A
depth of wear, in, at 60 min		

\*2" (51 mm) cubes cured at 70° F (21° C) using 0.63 gal (2.4 L) of water per 55 lb (25 kg) bag of topping

## How to Apply

### Surface Preparation

Anvil-Top® 300 can be applied to fully cured or recently placed (less than 4 days) concrete.

#### SURFACE PREPARATION METHOD 1

Use this method on existing fully cured concrete.

1. To achieve a proper bond with Mastertop® Anvil-Top® 300, the surface of the concrete should have a 1/4" (6 mm) amplitude profile. Remove all laitance and contaminated areas, creating a coarse profile and exposing aggregates. Multiple passes with a shotblast machine using heavy shot work best. If a bush hammer or scarifier is used, follow with abrasive blasting. The surface must be completely clean and free of oil, grease, dirt, and dust.

2. Test the concrete surface for tensile-bond pulloff strengths according to BASF recommendations. The minimum tensile-bond pulloff strength must be at least 200 psi and substantial coarse-aggregate fracture must be revealed. Perform the test in several locations on each slab section scheduled for placement of Mastertop® Anvil-Top® 300.

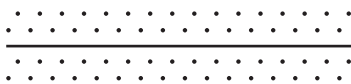
3. The base slab (substrate) surface must comply with Section 4.2 of ACI 503.5R. This section is specific to the surface, accessibility, and temperature conditions during the application of the epoxy bonding agent.

4. Perform the treatment of all joint edges and the perimeter of the pour in one of the following two fashions. Diagram 2 will provide the greatest degree of protection for joint edges.

No. 1: Stagger the fasteners 4 – 6" (101 – 152 mm) from the edge; 12 – 18" (305 – 457 mm) on center, as shown in Diagram 1.

#### DIAGRAM 1

HILITE TYPE "SHORT" NAIL AT 12" – 18" CENTERS

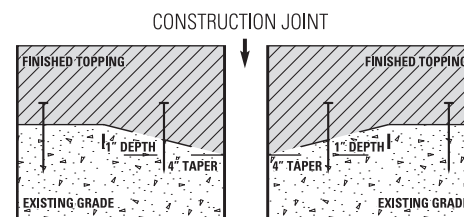


HILITE TYPE "SHORT" NAIL AT 12" – 18" CENTERS

NOTE: The anchors must be tested for solid embedment.

No. 2: Mechanically remove the substrate concrete 1" (25 mm) deeper than the specified topping thickness, tapered over a 4" (102 mm) width as shown in Diagram 2. Produce a rough texture on the substrate.

#### DIAGRAM 2



5. Before placing Mastertop® Anvil-Top® 300, test the concrete in accordance with ASTM D 4263, Indicating Moisture in Concrete by the Plastic Sheet Method. Excessive moisture must be force-dried to produce a condition suitable for the bonding material to achieve proper bond strength. Internally moist concrete may cause vapor pressure upon curing and delaminate the topping.

6" From Edge  
 2" From Edge  
 Joint Edge  
 2" From Edge  
 6" From Edge

6. Fill all pre-existing cracks in the concrete with a suitable epoxy crack-repair material. Consult your BASF representative for recommendations.

7. Use liquid epoxy bonding agent to bond the topping to the existing concrete. Mix according to directions and brush or roll the agent onto the concrete surface. Place the topping while the epoxy is still tacky, like fly paper. If already set, brush more over the hardened surface. Do not attempt to retemper with solvents.

8. Do not try to cover so much surface with the topping that the epoxy loses its tack.

#### SURFACE PREPARATION METHOD 2

Use this slurry-bond-coat method on recently placed (less than 4 days) concrete.

1. The concrete must be designed to have a minimum of 4,000 psi at 28 days, in accordance with ACI 302 recommendations, and a maximum slump of 4" (102 mm).

2. After placing, screeding, and floating the base concrete, spray on Liquid Surface Etchant at 100 – 120 ft<sup>2</sup>/gallon (2.4 – 2.9 m<sup>2</sup>/L). Cover with polyethylene, burlap, or other impervious sheet covering to keep the surface from drying out. Remove the covering within 4 days. Use a garden-type nozzle or pressure washer with sufficient power to expose the aggregate and ensure a 1/4" amplitude. Rinse until water runs clean.

3. The concrete surface must be saturated before the placement of Mastertop® Anvil-Top® 300. Remove standing water immediately before the application of the bond coat.

4. Mix a neat cement slurry with a creamy, paint-like consistency for use during the application. Scrub the slurry into the damp surface with a clean, stiff-bristle broom just before the application of Mastertop® Anvil-Top® 300. Do not apply at an excessive thickness. Do not leave any puddles. Mix only a quantity of bonding slurry that can be covered with Mastertop® Anvil-Top® 300 before the slurry dries out. DO NOT RETEMPER the bond coat with water.

#### Mixing

1. Use an appropriate mixer for the job. Add 3/4 of the mixing water, followed by Mastertop® Anvil-

Top® 300 in a slow, steady stream. Mix for approximately 2 – 3 minutes. Add the remaining water and continue mixing for a total of 5 minutes. Mix thoroughly for a homogeneous mix at the recommended slump.

2. Using ice water will reduce water requirements for a given consistency and will result in increased working time and strength of the topping. Do not use water in an amount that will cause bleeding or segregation.

3. Discharge the topping from the mixer for immediate placing and screeding. If lumps are present, remove them.

NOTE: 0.63 U.S. gallons (2.4 L) per 55 lb (25 kg) bag is the recommended amount of water for a 6" (152 mm) slump mix.

#### Application

1. Place and screed the Mastertop® Anvil-Top® 300 in sections to maintain the finished elevation.

Periodically measure the topping thickness, especially in the center of the slab. Because of the relatively high slump of Mastertop® Anvil-Top® 300, a roller or pipe screed works best for obtaining a uniformly flat, dense surface without excessive segregation from vibration.

2. As soon as Mastertop® Anvil-Top® 300 will support an operator and machine without leaving impressions on the slab or creating excessive fines at the surface, float with a mechanical troweling machine equipped with float shoes. For small areas, floating with hand tools is acceptable.

3. Following 1 machine floating, proceed with 1 or 2 normal troweling operations to obtain a hard steel-trowel or burnished-trowel finish. Time the troweling operations and adjust the blade angles to avoid blistering.

4. Mastertop® Anvil-Top® 300 can be applied in a monolithic two-course application over fresh concrete. This type of application requires extreme skill. Please contact your BASF representative before attempting this kind of application.

#### Curing

1. Mastertop® Anvil-Top® 300 must be moist cured to attain its proper design strength, surface

impermeability, and wear resistance. After finishing has been completed and the surface will not be marred by foot traffic, mist spray the surface of the topping with water and cover it with weighted polyethylene sheeting for a minimum of 7 days. When mist spraying is not possible, use soaker hoses with burlap or 2 layers of saturated burlap (or similar moisture-retaining sheet material) and cover the surface with polyethylene for a minimum of 7 days.

2. After 7 days of wet curing and while the Mastertop® Anvil-Top® 300 is still moist, remove excess water with a squeegee. Immediately apply appropriate curing compound. Using a roller will ensure complete coverage with the curing compound. Do not spray-apply a membrane curing compound unless it will be backrolled. Do not allow the Mastertop® Anvil-Top® 300 to dry out before the application of the curing compound.

#### Joints

1. Joints and proper joint spacing are necessary to limit the cracking tendencies in the topping from shrinkage (contraction joints), to limit movement between the floor and other structural members (isolation joints), and to conclude pours from one day to the next (construction joints).

2. Procedures for determining the base-slab joint locations, spacing, depth, etc., should be conducted in accordance with ACI 302.1 R-6 section 2.3. The maximum joint spacing should not exceed 20 feet. Base-slab joints must be matched in the Mastertop® Anvil-Top® 300 topping by forming or other suitable means.

NOTE: Intermediary joints must use anchors when Mastertop® Anvil-Top® 300 is placed on hardened slabs (Method 1) where the joint spacing exceeds 20 feet. See your local BASF sales representative for further recommendations.

#### For Best Performance

- Do not use in areas where a steel plate has worn through in less than 1 year.
- Do not use in areas where the floor surface is exposed to acids, their salts, or other materials

- that seriously and rapidly attack cement or iron.
- Do not apply Mastertop® Anvil-Top® 300 topping over fresh concrete containing calcium chloride or aggregate contaminated with salt water.
- Use only potable water when mixing Mastertop® Anvil-Top® 300 topping.
- Contact a BASF representative for assistance on ordering products.
- If any blistering occurs during raised troweling, flatten trowel blades immediately. Reopen blistered areas with a hand float. Wait until raised troweling does not produce blisters.
- For information on applications that may require special considerations, contact your local BASF representative.
- Contact your local BASF representative for additional information on application procedures, suggested armoring thicknesses, and service.
- Do not use in areas subject to rapid thermal cycling.
- Do not subject Mastertop® Anvil-Top® 300 to prolonged exposure from contaminants.
- Do not add cement, aggregate, or admixtures to Mastertop® Anvil-Top® 300.
- Store in a dry place; do not use the material if bag is damaged.
- Arrange to have a pre-job conference with your local BASF representative to discuss all aspects of the Mastertop® Anvil-Top® 300 application.
- Under rapid drying or hot, ambient conditions, Confilm® evaporation reducer should be sprayed from a garden sprayer, according to label instructions, to prevent rapid moisture loss from the Mastertop® Anvil-Top® 300.
- Under no circumstances should less than a 1/2" (13 mm) thickness be used.

- Make certain the most current versions of product data sheet and MSDS are being used; call Customer Service (1-800-433-9517) to verify the most current versions.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

## Health and Safety

MASTERTOP® ANVIL-TOP® 300

### Caution

Mastertop® Anvil-Top® 300 contains portland cement; limestone; activated carbon; gypsum; magnesium oxide; silica, amorphous.

### Risks

Product is alkaline on contact with water and may cause injury to skin or eyes. Ingestion or inhalation of dust may cause irritation. Contains small amount of free respirable quartz which has been listed as a suspected human carcinogen by NTP and IARC. Repeated or prolonged overexposure to free respirable quartz may cause silicosis or other serious and delayed lung injury.

### Precautions

Avoid contact with skin, eyes and clothing. Prevent inhalation of dust. Wash thoroughly after handling. Keep container closed when not in use. DO NOT take internally. Use only with adequate ventilation. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations.

## First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION.

## Waste Disposal Method

This product when discarded or disposed of is not listed as a hazardous waste in federal regulations. Dispose of in a landfill in accordance with local regulations.

For additional information on personal protective equipment, first aid, and emergency procedures, refer to the product Material Safety Data Sheet (MSDS) on the job site or contact the company at the address or phone numbers given below.

## Proposition 65

This product contains material listed by the State of California as known to cause cancer, birth defects or other reproductive harm.

## VOC Content

0 g/L or 0 lbs/gal less water and exempt solvents.

**For medical emergencies only,  
call ChemTrec (1-800-424-9300).**

## BASF Construction Chemicals, LLC – Building Systems

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www.BuildingSystems.BASF.com

**Customer Service** 800-433-9517  
**Technical Service** 800-243-6739



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