



METALCRETE PLUS

High-Build Metallic Aggregate Floor Topping

1. Product Description

a. **Basic Use:** Metalcrete Plus is a screedable, high strength metallic topping intended for use where heavy impact, gouging and abrasion are primary floor service conditions. It is applied monolithically over fresh concrete or as a delayed two course bonded topping at a 1 in. (25.4 mm) to 4 in. (102 mm) thickness.

b. **Features/Benefits:**

- Provides a thick high-build armoring for superior gouge, impact and wear resistance.
- High strength for extra toughness.
- Wears up to 8 times better than plain concrete.
- Densifies the floor surface for better resistance to water, fluid and oil penetration.
- Hard, non-dusting surface for faster and easier maintenance.
- Outwears all conventional dry shake hardeners.
- Superior resistance to dragging, scraping point loads.

c. **Typical Applications:** Loading docks, solid waste tipping floors, dumpster pads and bulldozer traffic.

d. **Limitations:** Metalcrete Plus should not be used in areas subjected to acids or other chemicals which attack portland cement or iron. De-icing salts will cause surface oxidation and direct application should be avoided.

e. **Composition:** Metalcrete Plus is a blend of specially designed iron aggregate, hard coarse aggregate, portland cement, and a proprietary chemical system.

f. **Color/Appearance:** Metalcrete Plus is dark gray in color when hard troweled and properly cured.

2. Packaging

Metalcrete Plus is supplied in 50-lb. (22.7 Kg) units. On large placements, mixing in ready mix trucks is recommended by using special order bulk bags.

3. Estimating/Coverage

One 50-lb. (22.7 Kg) bag of Metalcrete Plus when mixed with 0.48 gals. (1.8 liter) of water will yield 0.23 cu. ft. (0.006 cu. m) of topping.

<i>Thickness</i>	<i>Material Needed</i>	<i>Coverage/50-lb. (22.7 Kg) bag</i>
1 in. (25.4 mm)	15.8 psf (77 Kg/sq. m)	3.2 sq. ft. (0.29 sq. m)
2 in. (51 mm)	31.6 psf (154 Kg/sq. m)	1.6 sq. ft. (0.15 sq. m)
3 in. (76 mm)	47.5 psf (232 Kg/sq. m)	1.1 sq. ft. (0.09 sq. m)
4 in. (102 mm)	63.3 psf (309 Kg/sq. m)	.8 sq. ft. (0.07 sq. m)

4. Technical Data

a. **Applicable Standards:**

- ACI 302, Guide for Concrete Floor and Slab Construction.
- ASTM C 779, Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

b. **Compressive Strength:** ASTM C 109, 2 in. (50 mm) cubes.

<i>Age</i>	<i>Strength</i>
1 day	5,000 psi (35 MPa)
3 days	7,000 psi (48 MPa)
7 days	9,000 psi (62 MPa)
28 days	10,000 psi (69 MPa)

c. **Flexural Strength:** ASTM C 78; 28 Days, 1,400 psi (9.6 MPa).

d. **Wear Resistance:** ASTM C 779, Procedure A; 0.013 in. (0.33 mm) at 60 minutes.

5. Directions for Use

(Follow basic ACI 302 Guidelines)

a. **Preparation:** Subgrade should be well compacted and graded to proper elevation. If a vapor barrier is used, it should not be placed over the subgrade but rather a minimum of 3 in. (76mm) under the compacted fill. Vapor barriers will aggravate finishing problems and can contribute to slab curling. Forms should be set strong and true. Strip placements are preferred over checkerboarding. Place under roof whenever possible.

b. **Monolithic Application - Base Concrete:**

1. Concrete mix must be non-air entrained and not contain any calcium chloride based admixtures. Place at a low slump to prevent bleeding. The use of a superplasticizer is recommended, but keep slump as low as possible.

2. Bull-float surface after screeding concrete to an elevation that allows for topping thickness. As concrete stiffens, groove the surface with a rake or tining fork.

3. Just before topping placement, when the concrete has stiffened sufficiently to support foot traffic, broom the surface parallel to groove marks to expose fresh cement matrix. If the surface appears too hard or dry, broom in a layer of Metcobond latex adhesive. (Proceed to Item e.)

c. Two Course Bonded - New Base Concrete:

1. Place base concrete at an elevation that accounts for the subsequent topping thickness. Place at a slump and water content that prevents bleeding.

2. Bull float surface and groove surface with a rake, serrated bullfloat, or tining fork. Cure with polyethylene. (Note: If an epoxy bonding agent is to be used later for bonding the topping, a heavy broom finish is recommended.) (Proceed to item e.)

d. Two-Course Bonded - Old Base Concrete:

1. Mill, water blast, shotblast, or chip concrete down to proper elevation to accommodate topping thickness. Remove all loose material and debris.

2. Clean floor surface of all dust with water and compressed air. Make sure all concrete dust is removed from pore structure of concrete surface. Failure to properly clean the surface will prevent proper bond. Use a wet vacuum for hard to clean areas. Allow concrete surface to dry.

e. General Guidelines on Bond Coats:

1. On monolithic placements, bond coats are not normally needed. Metcobond latex may be used if the surface becomes too hard or dry, or the topping has been delayed too long.

2. When bonding to new, but hardened concrete less than 1 month old with proper roughness, use Metcobond mixed with a cement slurry as a bond coat. Concrete over one month old should use epoxy as a bonding agent. (See item 3.)

3. When bonding to new concrete over 30 days old or to old, properly prepared concrete, use Metco Hi-Mod MV or Metco Low-Mod MV Epoxy as the bonding agent.

f. Mixing: Mix Metalcrete Plus in a mortar mixer using 0.48 gals. (1.8 liters) of water per 50-lb. bag. Several bags can be mixed at one time depending on the size of mixer. Add the water first and follow with dry powder. Hold back 10% of water and mix material stiff if lumping starts to occur. Add remaining water and mix for 2 to 3 minutes. A 5 in. (127 mm) to 6 in. (152 mm) slump should be achieved and minor water adjustments are permissible to achieve this slump. (Note: Mixing of bulk, 3,300-lb. (1497 Kg) bags requires special procedures. Contact Metalcrete Industries for more information.)

g. Placement: Place Metalcrete Plus over fresh concrete or newly applied bond coat. Strike off or power screed into place. Power screeding is preferred to achieve maximum consolidation and density. Bull float surface of topping. Use Waterhold evaporation retardant to prevent moisture loss while waiting for topping to set.

h. Finishing: When the topping will support a man and finishing machine, float surface (with float shoes on trowel blades) to consolidate surface and fill any imperfections. Trowel surface to produce a hard smooth surface with subsequent finishing operations. Time troweling to prevent blisters.

i. Curing: Apply two coats of Seal N Kure 30 (roller preferred) as soon as finishing operations are complete. Curing is very important to fully develop topping strength.

j. Joints: Control or construction joints in the base slab should be brought up through the topping. Sawcut above base slab joints the full depth of the topping. Fill with Jointfill 302 epoxy after a minimum 3 month wait (according to ACI 302, Section 4.10). Use Vulcanox urethane at isolation and expansion joints.

k. User Precautions: Metalcrete Plus contains portland cement. Use dust masks and/or wear protective gloves during mixing, transporting, and placing of Metalcrete Plus.

l. Maintenance: Metalcrete Plus is intended to be free of maintenance once properly installed (except tipping floors). Metalcrete Plus floors should be cleaned with standard high alkaline floor cleaners and power scrubbers. Additional applications of Seal N Kure 30 at project turnover or at other intervals once the floor is in use are optional, but not mandatory. Tipping floors should be inspected for any needed maintenance at intervals not exceeding six months.

6. Availability

Metalcrete Plus is normally available immediately from your local distributor or it will be shipped within 5 working days upon receipt of order. Please contact your local Metalcrete representative or call Metalcrete directly for more information.

7. Warranty

Metalcrete Plus is manufactured in strict accordance with the quality control standards of Metalcrete Industries. It is guaranteed to perform as indicated on this data sheet when applied by competent applicators.

8. Technical Service

Metalcrete technical service representatives are available for on-site assistance with a minimum 3 day notice.



Metalcrete Industries

4133 Payne Avenue • Cleveland, Ohio 44103
440-526-5600 • 800-526-5602 • FAX 440-526-5601