

DURACAL® Brand Cement

- Specially formulated concrete patching material.
- Sets fast—in 20 to 35 minutes—and is strong enough to handle normal traffic one hour after set.
- Ideal for pavement repairs on expressways, roads, ramps, bridges, streets, parking lots, and commercial concrete floors.
- Performs in temperatures as low as 32 °F.
- Stands up to freeze-thaw cycles, salt application, and heavy traffic.

Technical Properties

Description	Unaggregated	Job-Aggregated ¹	Job-Aggregated ¹
Recommended mixes	50 lbs. DURACAL 1-1/2 gal. Water	50 lbs. DURACAL 1-1/2 gal. Water 50 lbs. Sand	50 lbs. DURACAL 1-3/4 gal. Water ² 50 lbs. Coarse Aggregate ³ 50 lb. sand
Setting time (minutes)	20-35	20-35	20-35
Yield; cu. ft./50 lb. bag	0.45	0.77	1.07
DURACAL Brand Cement Required/cu. ft. of mix	110.0	65.0	46.0
Setting expansion, %	0.20	0.09	0.05
Net expansion after drying, %	0.125	0.04	0.01
Compressive strength (psi) 2" Cube Molds, moist cured			
1 hr. after set	4,100	3,300	3,200
3 hrs. after set	4,100	3,300	3,200
6 hrs. after set	5,100	3,700	3,600
1 day	8,100	6,200	6,100
3 days	9,300	6,900	6,800
28 days	10,500	8,800	8,500
Resistance to freeze-thaw cycling	Excellent	Good	Fair

1. Maximum size of coarse aggregate not to exceed 1/2" in diameter.
2. Water usage is approximate and will be influenced by water content of aggregate.
3. Manufacturer recommends ASTM size No. 8 aggregate (not to exceed 3/8").

General Directions and Guidelines

Patch Preparation	Place barricades and warning lights. Mark off damaged areas and make a 2" vertical cut with a masonry saw or other suitable equipment around the perimeter of the damaged area. Break out all material within the cut area and clean hole of all debris. Lightly dampen the surrounding concrete, especially in hot weather. It is important to have most, if not all, damaged areas prepared before mixing the DURACAL Brand Cement, because the mixing, placement, and finishing can be accomplished in a very short time.
Equipment	For mixes containing only sand, a ribbon-type plaster mixer with rubber wipers is recommended. The batch size will be controlled by the size of the mixer. For mixes containing sand and coarse aggregate, a standard drum-type concrete mixer is recommended. The batch size will be controlled by the size of the mixer. However, due to the fast setting time of DURACAL Brand Cement, the total mix should be limited to a quantity that can be mixed and placed in 15 minutes. The Concrete-Mobile, manufactured by National Concrete Machinery Company, also has been used successfully in mixing and placing DURACAL Brand Cement.
Typical Mixing Proportions	DURACAL Brand Cement is a fine cement powder furnished in 50 lb. bags. It can be used neat or with aggregate and has a manufactured set time of 20 to 35 minutes. It can be mixed with equal parts by weight of both sand and coarse aggregate and a measured amount of water. The following proportions are typical: <ul style="list-style-type: none"> – 50 lbs. DURACAL Brand Cement – 50 lbs. Fine aggregated (sand) meeting ASTM C33 – 50 lbs. Coarse aggregate meeting ASTM C33, ASTM size No. 8 – 1-3/4 gallons water <p>The batch may be scaled up as long as the mixer capacity is not exceeded.</p>



Mixing Procedure

1. Introduce measured amount of water to mixer.
2. Add half of the aggregate (all of the coarse aggregate first if both aggregate and sand are being used in a 1:1:1 ratio).
3. Add DURACAL Brand Cement to water and aggregate with mixer operating.
4. Slowly add the remainder of the aggregates.
5. Mix one minute. Then, if necessary, add more water in small amounts during the second minute of mixing to obtain desired fluidity.
6. Mix until lump free, but not for more than five minutes.
7. Dump batch and immediately deliver DURACAL Brand Cement mix to prepared pavement area. Clean mixer by adding water and allowing mixer to run. Dump cleaning water before starting another batch.
Note: Prior to placing DURACAL Brand Cement, the area to be covered should be wetted with water to minimize water withdrawal from the cement. However, there should be no freestanding water in the cavity to be patched.
8. Level the DURACAL Brand Cement to the surrounding pavement with an appropriate screeding device, and before set, broom finish if necessary. If a smooth finish is desired, trowel lightly before set.
9. Allow DURACAL Brand Cement to develop strength for a minimum of one hour after set. After this time, traffic can resume over patched area.
10. Seal with approved concrete sealer or curing membrane if desired.

Precautions

1. Damaged pavement must be completely removed, and the cavity cleared free of debris. Provide at least a 2" vertical cut at the perimeter of the prepared area. Do not trowel DURACAL Brand Cement to a thin, feathered edge.
2. Do not permit DURACAL Brand Cement mix to freeze before set has taken place. *If DURACAL Brand Cement is to be used at near freezing temperatures, the following is recommended.*
 - (a) Keep materials and equipment as warm as possible.
 - (b) Keep mortar and adjacent pavement above 32 °F until DURACAL Brand Cement has set.
3. Under hot, windy conditions, use of an approved concrete curing membrane may be required to prevent surface dry out.
4. If DURACAL Brand Cement is being used to patch an area adjacent to non-concrete materials such as control or expansion joints, a bonding agent approved by appropriate government regulatory agencies and used in accordance with manufacturer's recommendations is suggested.
5. If area to be patched is less than 2" in thickness, a bonding agent may be required.
6. Determine that the patch has set for at least one hour before allowing traffic to resume over patched area.
7. Clean equipment with water according to manufacturer's recommendations after mixing each batch of material.

Limitations

1. Use above grade only.
2. Application, neat or aggregate, must be at temperatures above 32 °F.
3. Not for use in structural applications. Consult a United States Gypsum Company representative or call 312.606.5582 for applications not covered by this data sheet.

Storage

The yield of DURACAL Brand Cement is higher than most other road repair patching materials, keeping storage and handling to a minimum. However, it is important to keep DURACAL Brand Cement in a dry, stable environment indoors. Do not stack more than 2 pallets high. Keep from drafts. Rotate stock.

Warning

When mixed with water, this material hardens and then slowly becomes hot – sometimes quickly. DO NOT attempt to make a cast enclosing any part of the body using this material. Failure to follow these instructions can cause severe burns that may require surgical removal of affected tissue or amputation of limb. Dust may cause skin, eye, nose, throat, or respiratory irritation. Avoid dust inhalation and exposure

to dust. If dusty, wear a NIOSH/MSHA-approved dust respirator. Use proper ventilation to reduce dust exposure. Portland cement is strongly alkaline and can be corrosive to eyes, skin, and respiratory tract. Wear eye and skin protection. If eye contact occurs, immediately flush thoroughly with water for 15 minutes and get medical attention. Do not ingest. If ingested and any discomfort occurs,

call physician. Product safety information: (800) 507-8899.
KEEP OUT OF REACH OF CHILDREN.

Trademarks

The following trademark used herein is owned by United States Gypsum Company or a related company: DURACAL, USG.

Notice

We shall not be liable for incidental or consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instruction or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.