

# Cement Cartridges

## Non-shrink cementitious anchor grout



### USES

Thiessen cement cartridges were developed to anchor mine and tunnel rock bolts (rebar and threadbar) and to anchor steel dowels in concrete.

### ADVANTAGES

- Convenient easy to handle cartridge form
- Thixotropic and non-shrink
- Fast curing compared to ordinary cement grouts
- Controlled setting times
- No on-site mixing, just immerse in water
- No special grout pumping equipment required
- High strength
- Non-toxic, non-combustible and chloride free

### DESCRIPTION

The system consists of an easy to handle cartridge containing a cementitious compound encased in a perforated mylar film package which, when immersed in water, will allow controlled wetting of contents, forming a thixotropic grout. The cartridge is then inserted into the hole and the deformed bolt or dowel is pushed in.

### INSTRUCTIONS FOR USE

1. Remove required number of cartridges from package.
2. Immerse cartridges in water for approximately 5 minutes or longer if there are still signs of air release (bubbling) from the cartridge. Do not leave for longer than 15 minutes in water.
3. The cement grout will begin to set in 45 minutes after initial water emersion; therefore the bolt must be installed within this time period. However, it is recommended that the wetted cartridges be used within 15 minutes to obtain optimum results.

4. Insert cartridges into a clean hole. Tamp with a loading stick.

5. Insert the bolt. Bolt will rupture the cartridges allowing the grout to fill the annular space between the bolt and the hole.

After 12 hours the grout will typically withstand the full yield point load of the deformed bolts or dowels.

### PHYSICAL PROPERTIES

#### Characteristics

- Package type - perforated mylar
- Appearance (dry) - firm, dusty
- Appearance (wet) - rigid, easy to hold
- Soak time - 5 minutes
- Water uptake - 27%

#### Compressive strength

- 24 hours: 2500 psi (17 MPa)
- 3 days: 4000 psi (28 MPa)
- 7 days: 5400 psi (37 MPa)

#### Anchorage Values (typical)

- 4 hrs: 500 lbs/inch (90 kg/cm)
- 8 hrs: 1800 lbs/inch (320 kg/cm)
- 12 hrs: 2100 lbs/inch (375 kg/cm)
- 24 hrs: 3000 lbs/inch (540 kg/cm)

#### SHELF LIFE

12 months when stored in a dry location

#### PACKAGING

- Cement cartridges are available in two sizes:
- 1-1/8" x 12" (28mm x 305mm) 35 /case
- 1-1/4" x 12" (32mm x 305mm) 25 /case

### CARTRIDGE USAGE CHART:

	1-1/8" (28mm) cartridge	1-1/4" (32mm) cartridge		
Bolt Size	1-1/4" (32mm) hole	1-3/8" (35mm) hole	1-1/2" (38mm) hole	1-5/8" (41mm) hole
#6 (20mm)	15.2" (38.6 cm)			
#7 (22mm)		16.7" (42.4 cm)	12.6" (32.0 cm)	
#8 (25mm)			15.0" (38.1 cm)	
#9 (30mm)				13.7" (34.8 cm)

Chart indicates inches (cm) of encapsulation per standard 12" (305mm) cartridge