WATERPLUG®
HYDRAULIC CEMENT
To instantly stop running water or leaks through concrete or masonry

Features and Benefits:
• Portland-cement-based repair mortar to repair holes or cracks flowing with water.
• Use above or under water or where water is flowing under constant pressure.
• Quick-setting, non-shrinking, permanent.
• Expands as it hardens to lock in place and form a perfect seal.
• Dries in 3 to 5 minutes.
• Compressive strength after 24 hours is 4,000 p.s.i.
• Use interior or exterior; above or below grade; vertical or overhead on non-moving cracks or joints.
• Completely waterproof, suitable for immersion service.
• NSF approved, suitable for drinking water systems.
• Contains no metallic aggregates, lead or corrosive agents.
• Can be topcoated with appropriate materials.
• Easy to use. One-component powder mixes easily with water.
• Cleans up with soap and water immediately after use.

Warranty:
• Against defective product. Full warranty details at ThoroProducts.com.

Recommended for:
• Masonry
• Concrete
• Basements
• Foundations
• Retaining walls
• Sewers
• Sea Walls
• Water Storage Facilities
• Tunnels
• Fountains
• Water Channels and Drains
• Ponds
• Piers

Use in surface preparation prior to application of THOROSEAL®, SUPER THOROSEAL® or THOROSEAL® Foundation Coating.

Yield:
• 2.5 pounds fills a crack 3/4 inches wide x 3/4 inches deep x 70 inches long or approximately 39 cubic inches.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Color</th>
<th>Single Unit $\text{Net Wt.}$</th>
<th>Single Unit UPC Code</th>
<th>Unit Ship Weight</th>
<th>Units per Pallet</th>
<th>Units per Case</th>
<th>Case Number Code</th>
<th>Case Ship Weight</th>
<th>Cases per Pallet</th>
<th>Pallet Ship Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5001</td>
<td>Gray</td>
<td>2.5 lb. Can</td>
<td>0 80492 05001 1</td>
<td>2.5</td>
<td>576</td>
<td>12</td>
<td>100 80492 05001 8</td>
<td>34</td>
<td>48</td>
<td>1,632</td>
</tr>
<tr>
<td>T5002</td>
<td>Gray</td>
<td>10 lb. Can</td>
<td>0 80492 05002 8</td>
<td>10</td>
<td>180</td>
<td>4</td>
<td>100 80492 05002 5</td>
<td>43</td>
<td>45</td>
<td>1,935</td>
</tr>
<tr>
<td>T1663</td>
<td>Gray</td>
<td>50 lb. Pail</td>
<td>0 80492 01663 5</td>
<td>53</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,908</td>
</tr>
</tbody>
</table>

Ship weight is gross U.S. pounds.

Satisfactory results depend on selection of suitable product for intended use and compliance with instructions for surface preparation and application.

Thoro Consumer Products • BASF Construction Chemicals, LLC • 23700 Chagrin Blvd. • Cleveland, Ohio 44122
phone 216-839-7171 or 866-518-7171 • fx 216-839-8833 or 866-494-8833 • ThoroProducts.com
WATERPLUG®
HYDRAULIC CEMENT

Waterplug® Hydraulic cement is a cement-based, quick-set, hydraulic cement for concrete and masonry. A dry powder mixed with water, it sets in 3-5 minutes, expanding as it sets to lock in place even under constant water pressure, and can be applied under water. Waterplug® instantly stops running water or seepage through holes or cracks in concrete or masonry walls, swimming pools, sea walls, water storage facilities, tunnels, fountains, water channels and drains, ponds and piers.

Clean & Prepare Surface
Surface must be clean and structurally sound. Remove all dirt, loose material, oil, grease and unsound concrete from leak area. Undercut or square cut cracks to at least 3/4" X 3/4", if possible.

Mix Thoroughly
Mix Waterplug® powder with minimal clean water (for no longer than 30 seconds) to make a stiff putty to fill active leak. For larger area preventative work, mix to a heavy batter. Mix only enough that can be used in 3 minutes.

Application Suggestions
Apply as shown. Waterplug® Cement can be applied by hand or trowel. Wear protective gloves and goggles.

Press or Trowel it On
Press Waterplug® cement by hand into the crack or hole and hold in place without twisting (wearing gloves). Product will start to expand and seal leak. For larger job, trowel cement crack areas. Coverage: 2-1/2 pounds fills a crack 3/4" deep by 3/4" wide by 75" long (42 cubic inches). For specific application guidelines, call 1 (216) 839-7171 or go to www.thoroproducts.com.

Weather & Drying Guidelines
Waterplug® sets in 3-5 minutes. Actual setting time depends on ambient temperatures as well as the temperatures of the powder, mixing water and affected surface. It contains no metallic aggregates or corrosive agents, will not shrink or oxidize and is suitable for water immersion service when cured.

Clean-Up, Storage, and Disposal
Clean tools with warm soapy water immediately after use. Store unused product in its original can, tightly sealed. Protect from freezing. Dispose of this product in accordance with local, state and federal requirements.

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phone 216-839-7171 or 866-518-7171 • fx 216-839-8833 or 866-494-8833 • ThoroProducts.com
**SikaSwell®-A profiles**

Swellable joint sealing profiles

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Acrylic sealing profiles which swell in contact with water.</th>
</tr>
</thead>
</table>

**Uses**
- To seal:
  - Construction joints
  - Pipe and steel work penetrations through walls and floor slabs
  - Construction joints in precast concrete
  - Construction joints in cable ducts, etc.
  - Around all types of penetrations through concrete

**Characteristics / Advantages**
- Easy to apply
- Can be applied on different substrates
- Highly economical
- Swells in contact with water
- Can swell into cracks and gaps
- Long-term reliability tested
- Resistant against water and various chemical substances
- No hardening time required
- No welding required
- Adaptable to fit many different detailing tasks
- Different types and dimensions available

**Tests**

<table>
<thead>
<tr>
<th>Approval / Standards</th>
<th>MPA NRW: P-22-MPANRW-3918 - German approval for construction joints (18.11.04)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WISSBAU: 2002-094 – Function test for the application in construction joints (20.06.04)</td>
</tr>
<tr>
<td></td>
<td>MPA NRW: Testing of material and swelling properties (31.07.03)</td>
</tr>
<tr>
<td></td>
<td>FH Aachen: Mechanical long time stability (11.09.93)</td>
</tr>
</tbody>
</table>
Product Data

Form

Appearance / Colours  red, water swellable, acrylic profiles

Packaging  Rolls packed in cardboard boxes, quantity depending on type of profile, consult the following table.

Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Width (mm)</th>
<th>Thickness (mm)</th>
<th>Cross section (schematically view)</th>
<th>Description</th>
<th>m / box</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>20</td>
<td>5</td>
<td></td>
<td></td>
<td>6x20 = 120 m 1x20 = 20 m</td>
</tr>
<tr>
<td>2010</td>
<td>20</td>
<td>10</td>
<td></td>
<td></td>
<td>6x10 = 80 m 1x10 = 10 m</td>
</tr>
<tr>
<td>2015</td>
<td>20</td>
<td>15</td>
<td></td>
<td>Water swellable profile</td>
<td>6x7 = 42 m 1x7 = 7 m</td>
</tr>
<tr>
<td>2520</td>
<td>25</td>
<td>20</td>
<td></td>
<td></td>
<td>6x5 = 30 m</td>
</tr>
</tbody>
</table>

Storage

Storage Conditions / Shelf Life  12 months from date of production if stored in unopened, undamaged and sealed original packaging in dry conditions at temperatures between +5°C and +35°C. Protect from UV light.

Technical Data

Chemical Base  Acrylic polymer

Change of Volume

Swelling Pressure  ≤ 16 bar after 3 days stored in tap water

System Information

Application Details

Substrate Quality  The substrate must be sound, clean, dry, 'mat damp', free from all surface contaminants.

Substrate Preparation  All loose particles, release agents, laitance, paint, rust and other poorly adhering materials must be removed by suitable hand or mechanical preparation.

Surfaces which are excessively rough tend to leak later on. We recommend smoothing of freshly placed concrete with a batten where the sealing profile is to be placed.
Application Method / Tools

Clean the surface. All loose particles can negatively affect the bonding to the surface.

Cut the SikaSwell A-Profile to the required length.

Apply the Sikabond AT-Universal to the clean surface.

Press the SikaSwell A-Profile into the applied Sikabond AT-Universal.
It is important to get a full bonding to the surface.

The SikaSwell A-Profiles need a concrete cover of at least 8 cm.

Protect the SikaSwell A-Profiles against water (e.g. rain) until the concrete is placed.

General:
It is important that a full and continuous contact between the SikaSwell®-A Profiles and the substrate is achieved.

During concreting, compact well around SikaSwell®-A Profiles to provide a dense concrete without and honeycombs or voids.

Fixing details:
Notes on Application / Limitations

SikaSwell®-A Profiles expand in contact with water. This does not happen immediately, but slowly after several hours. Nevertheless it is advisable not to leave SikaSwell®-A Profiles any length of time in the open air or exposed to rain water (max. 24 hours as long as water can drain away).

Do not use SikaSwell®-A Profiles for movement joints!

If the water level suddenly increases the watertightness of joints will only be achieved when SikaSwell®-A Profiles have swollen.

In a totally dry state SikaSwell®-A Profiles shrink to their original dimensions, but expand again in contact with water.

Do not use SikaSwell®-A Profiles for sealing against water pressures higher than 2 bar because of the limited sealing distance.

If SikaSwell®-A Profiles are to be fixed around small diameter pipes use additional mechanical fixing with tie wire or a sleeve.

| Value Base | All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control. |
| Local Restrictions | Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields. |
| Health and Safety Information | For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data. |
| Legal Notes | The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika’s recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product’s suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request. |
**SIKA® SWELL TYPE E PASTE** is a one-component swelling paste comprised of polyurethane, suitable for the permanent sealing of construction joints in concrete structures.

On contact with water, cured **SIKA® SWELL TYPE E PASTE** swells and seals construction joints against water penetration. An increase in volume of up to 250% is produced by storage of water in the paste's molecular structure.

**SIKA® SWELL TYPE E PASTE** Applications Include:
- Construction joints
- Junctions between concrete and steel
- Connecting joints in sheet piling or diaphragm walls
- Wall or slab penetrations for metal, plastic and concrete pipes
- Bonding of **SIKA® SWELL A** waterstops on very uneven or rough surfaces

**SIKA® SWELL TYPE E PASTE** is supplied in ready to use cartridges.

### PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th></th>
<th>Uncured Material</th>
<th>Cured Material (3 days at 20°C / 68°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Specific gravity (20°C / 68°F)</strong></td>
<td>ASTM D1638</td>
<td>1.57</td>
</tr>
<tr>
<td><strong>Vertical slump (20°C / 68°F)</strong></td>
<td></td>
<td>3mm</td>
</tr>
<tr>
<td><strong>Tack-free (20°C / 68°F, 60% R.H.)</strong></td>
<td></td>
<td>12 hours</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>ASTM D93</td>
<td>129°C / 265°F</td>
</tr>
<tr>
<td><strong>Cure time (minimum)</strong></td>
<td></td>
<td>12 hours</td>
</tr>
</tbody>
</table>

| **Shore A hardness**           | ASTM D2240       | 39                                    |
| **Tensile strength**           | ASTM D3574-86    | 265 psi                               |
| **Elongation**                 | ASTM D3574-86    | 625%                                  |
| **Tear strength**              | ASTM D790        | 176 psi                               |
| **Swelling expansion in water**|                  | ≥250%                                 |
| **Swelling expansion from pH** | pH of 7          | 380% (9 days)                        |
|                                | pH of 13         | 580% (3 days)                        |
| **Toxicity**                   |                  | Non-toxic                             |
| **Solubility in water**        |                  | Non-soluble                           |
| **Shelf life**                 |                  | 9 months                              |
| **Storage temperature**        |                  | 5°C to 25°C / 41°F to 77°F           |
| **Cartridge size**             |                  | 310ml (10.5 oz.)                     |

Phone: 800.325-3602  Fax: 866.624-2049  www.VinylexWaterstop.com
SIKA SWELL TYPE E PASTE

INSTALLATION:
1. SIKA SWELL TYPE E PASTE can be applied with a suitable hand-held caulk gun. For large jobs and ease of application, pneumatic guns or mechanical guns are suggested.
2. Puncture and lift the double layer bottom of the cartridge, remove the pellets.
3. Puncture the opening of the cartridge and free entire cross section.
4. Cut the nozzle diagonally to obtain an opening of 6-10mm and place the cartridge in caulk gun.
5. Direct caulk gun along the surface at an angle of 45° extruding paste evenly and firmly pressing the paste bead against the substrate.

LIMITATIONS, PRECAUTIONS AND CONSIDERATIONS
- The substrate must be free of grease, dirt and contaminants.
- A minimum of 24 hours is required for curing prior to concrete placement. During this time, the paste should be protected from exposure to water. When placing concrete, take care to ensure that the swelling paste is fully covered by concrete.
- Do not apply on frozen surfaces. Application temperature is 41°F to 104°F. Low temperatures will render more difficult to extrude and retard the curing process of the paste. During cold weather, store the paste in warm conditions prior to use.
- Yield, when applied as an 8mm bead, is approximately 5m per 310ml cartridge, depending on substrate.

REACTION TO CHEMICAL EXPOSURE

<table>
<thead>
<tr>
<th>Test Liquid</th>
<th>Stability</th>
<th>Swelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unleaded Fuel</td>
<td>Resistant / discoloring</td>
<td>~46%</td>
</tr>
<tr>
<td>Gasoline</td>
<td>Resistant / discoloring</td>
<td>~2%</td>
</tr>
<tr>
<td>Toluene</td>
<td>Resistant</td>
<td>~143%</td>
</tr>
<tr>
<td>Xylene</td>
<td>Resistant</td>
<td>~85%</td>
</tr>
<tr>
<td>Methanol 50%</td>
<td>Resistant</td>
<td>~405%</td>
</tr>
<tr>
<td>Isopropanol 50%</td>
<td>Resistant</td>
<td>~500%</td>
</tr>
<tr>
<td>N-methylpyrrolidone</td>
<td>Resistant / discoloring</td>
<td>~618%</td>
</tr>
<tr>
<td>Ethylacetate</td>
<td>Resistant</td>
<td>~195%</td>
</tr>
<tr>
<td>Methylisobutylketon</td>
<td>Resistant</td>
<td>~87%</td>
</tr>
<tr>
<td>Acetic acid 10%</td>
<td>Limited resistance</td>
<td>~150%</td>
</tr>
<tr>
<td>Formol 36%</td>
<td>Resistant</td>
<td>~500%</td>
</tr>
<tr>
<td>Sulphuric acid 10%</td>
<td>Resistant</td>
<td>~193%</td>
</tr>
<tr>
<td>Sulphuric acid 20%</td>
<td>Resistant</td>
<td>~231%</td>
</tr>
<tr>
<td>Sodium chloride 26%</td>
<td>Resistant</td>
<td>~25%</td>
</tr>
</tbody>
</table>

WARRANTY: VINYLEX WATERSTOP & ACCESSORIES warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. VINYLEX WATERSTOP & ACCESSORIES SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.

September 2011

VINYLEX
Waterstop & Accessories
3400 Tree Court Industrial Boulevard St. Louis, MO 63122
Tel: 800.325-3602 Fax: 866.624-2049 www.VinylexWaterstop.com
LA40 REPAIR MORTAR
Pourable and pumpable pre-extended micro concrete

Description
LA40 Repair Mortar is a one-component shrinkage-compensated micro concrete. It is designed for large volume repairs, including structural elements, typically in applications from 2" (51 mm) to full depth.

Yield
0.43 ft³ per 55 lb
(0.012 m³/25 kg) bag
0.62 ft³ per 80 lb
(0.018 m³/36 kg) bag

Packaging
55 lb (25 kg) bags
80 lb (36 kg) bags

Shelf Life
1 year when properly stored

Storage
Store in unopened containers at 60 to 80°F (16 to 27°C) in clean, dry conditions.

Features
- High bond strength
- Shrinkage compensated
- High early strength
- Low permeability
- Excellent freeze/thaw resistance
- Flowable
- One component
- Self-compacting

Benefits
Self-bonding to SSD concrete substrates
Dual expansion system compensates for shrinkage in plastic and hardened states
Reduces form cycle time
Protects against carbon dioxide and chloride intrusion
Durable in cold, wet environments
Placement by pumping or pouring into congested locations
Only the site addition of clean water is required
Minimizes honeycombing; displaces air without vibration

Where to Use
APPLICATION
- Large volume structural repairs
- Repair or replacement of spandrel beams, columns, balcony edges
- Partial or full-depth placements of structural concrete elements
- Parking garages
- Water and wastewater tanks
- Tunnels, dams, bridges
- Marine structures

LOCATION
- Interior or exterior

SUBSTRATE
- Concrete

How to Apply
Surface Preparation
CONCRETE
1. Area being repaired must be structurally sound and fully cured.
2. Perimeter cut the edges of the repair to a depth of at least 3/8" (9 mm) to avoid featheredging and to provide a square edge.
3. Break out the concrete to the sawn edge and across the entire repair.
4. Mechanically abrade and clean the surface to remove any dust, unsound or contaminated material, oil, paint, grease, or corrosion deposits. Do not use a method of surface preparation that could damage the concrete.
5. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or
### Technical Data

**Composition**

LA40 Repair Mortar is a proprietary blend of cement, graded aggregate, shrinkage-compensating agents, and additives.

<table>
<thead>
<tr>
<th>Test Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPERTY</td>
</tr>
<tr>
<td>RESULTS</td>
</tr>
<tr>
<td>TEST-METHODS</td>
</tr>
<tr>
<td>Fresh wet density, lb/ft³ (kg/m³)</td>
</tr>
<tr>
<td>Compressive strength, psi (MPa); 2&quot; (51 mm) cubes</td>
</tr>
<tr>
<td>1 day</td>
</tr>
<tr>
<td>7 days</td>
</tr>
<tr>
<td>28 days</td>
</tr>
<tr>
<td>Compressive strength, psi (MPa); 3 by 6&quot; (76 by 152 mm) cylinders, at 28 days</td>
</tr>
<tr>
<td>Flexural strength, psi (MPa), at 28 days</td>
</tr>
<tr>
<td>Slant shear bond strength, psi (MPa), at 28 days</td>
</tr>
<tr>
<td>Splitting tensile strength, psi (MPa), at 28 days</td>
</tr>
<tr>
<td>Drying shrinkage, µstrain, at 28 days</td>
</tr>
<tr>
<td>Drying shrinkage, µstrain, at 21 days</td>
</tr>
<tr>
<td>Freeze/thaw resistance, % ROM*</td>
</tr>
<tr>
<td>Coefficient of thermal expansion, in/in°F (cm/cm°C)</td>
</tr>
</tbody>
</table>

*No bonding agent

Results were obtained with a water / powder ratio of 4 qts/80 lb (3.8 L/36 kg) bag or 2.7 qts/55 lb (2.6 L/25 kg) bag.

All application and performance values are typical for the material, but may vary with test methods, conditions, and configurations.

---

### Mixing

1. Ensure that LA40 Repair Mortar is thoroughly mixed; a forced-action mixer is essential. Mixing in a suitably sized container using an appropriate paddle with a slow-speed (400 – 500 rpm) heavy-duty drill is acceptable. Do not use free-fall mixers. Never mix partial bags.

2. The machine mixing capacity and the crew size must be adequate to carry out the placing operation continuously.

**Mixing 80 lb (36 kg) Bags**

1. Measure 4 quarts (3.8 L) of potable water and pour 3 quarts into the mixer. With the machine in operation, add 1 full 80 lb (36 kg) bag of LA40 Repair Mortar and mix for 1 minute before adding the rest of the water. Always add powder into the water. The quantities mixed may be scaled up as required.

2. Mix for an additional 2 – 3 minutes to obtain a smooth consistency.

3. When using the drill-and-paddle mixing method, place the complete 4 quarts (3.8 L) of water in the mixing drum. With the paddle rotating, add 1 full 80 lb (36 kg) bag of LA40 Repair Mortar and mix 3 minutes until a smooth, even consistency is obtained.

4. Depending on the ambient temperatures and the desired consistency, additional water may be added. The total water content should not exceed 4.2 quarts (3.9 L) per 80 lb (36 kg) bag.

**Mixing 55 lb (25 kg) Bags**

1. Measure 2.7 quarts (2.6 L) of potable water and pour 2 quarts into the mixer. With the machine in operation, add 1 full 55 lb (25 kg) bag of LA40 Repair Mortar and mix for 1 minute before adding the rest of the water. Always add powder into the water. The quantities mixed may be scaled up as required.
2. Mix for a further 2 – 3 minutes to obtain a smooth consistency.

3. When using the drill-and-paddle mixing method, place the complete 2.7 quarts (2.6 L) of water in the mixing drum. With the paddle rotating, add 1 full 55 lb (25 kg) bag of LA40 Repair Mortar and mix 3 minutes to reach a smooth, even consistency.

4. Depending on the ambient temperatures and the desired consistency, additional water may be added. The total water content should not exceed 2.9 quarts (2.7 L) per 55 lb (25 kg) bag.

**HOT- AND COLD-WEATHER CONDITIONS**

1. For cold-weather applications, refer to ACI 306R Cold Weather Concreting; for hot-weather applications, refer to ACI 305R, Hot Weather Concreting.

**Application**

1. Keep the unrestrained surface area of the repair to a minimum. The formwork should be rigid and light to prevent loss of material. Properly seal the faces of forms to ensure they absorb no water from the repair material.

2. The formwork should include drainage outlets for presoaking and, if beneath a roof, provision for air venting. Provide suitable access points to pour or pump the mixed concrete into place.

3. Form design should allow for a minimum of 1-1/2" (38 mm) cover around all steel.

4. Use a suitable form-release agent to facilitate the removal of forms from the cast material.

5. Refer to ACI 347R, Recommended Practice for Concrete Formwork.

6. Several hours before placing LA40 Repair Mortar, saturate the prepared concrete substrates by filling the prepared formwork with clean water.

7. Immediately before the placement of LA40 Repair Mortar, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.

8. In jobsite circumstances where the formwork cannot be filled with water, spray the substrate with clean water to achieve a saturated surface-dry (SSD) condition immediately before placing LA40 Repair Mortar.

9. When using a combination surface-applied bonding agent and corrosion-resistant retard primer, use Epoxy Adhesive 24LPL or Retard Primer and Bonding Agent 3. Refer to the appropriate product data sheets for further details (Form Nos. 1018967 and 1018966).

10. Immediately after mixing, pump or pour the LA40 Repair Mortar into the formed area. The material does not require vibrating.

**Curing**

1. Leave the formwork in place until the compressive strength of the LA40 Repair Mortar reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.

2. LA40 Repair Mortar must be cured immediately after the formwork is stripped in accordance with good concrete practices. Refer to ACI 308 Standard Practice for Curing Concrete.

3. If the repair area will receive a coating, wet curing is recommended.

4. In cold conditions, protect the finished repair from freezing.

**Clean Up**

Remove LA40 Repair Mortar from tools, equipment, and mixers with clean water immediately after use. Cured material can only be removed mechanically. Clean hands and skin immediately with soap and water or industrial hand cleaner; do not use solvents.

**For Best Performance**

- Minimum ambient, surface, and material temperatures should be 40° F (4° C) and rising at the time of application.
- Do not mix partial bags.
- Do not use to make overlay repairs where the surface of fresh, wet LA40 Repair Mortar will remain unstrained during cure.
- Do not expose to rain or moving water during application.
- Do not vibrate LA40 Repair Mortar while in the fluid consistency.
- Do not use additives with LA40 Repair Mortar.
- When the minimum placement depth is less than 2", use LA Repair Mortar (see Form No. 1018999).
- Make certain the most current versions of product data sheets and MSDS are being used; call Customer Service (1-800-433-9517) to verify the most current version.
- 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**

LA40 REPAIR MORTAR

**Caution**

LA40 Repair Mortar contains crystalline silica, Portland cement, and calcium sulfate.

**Risks**

Product is alkaline on contact with water and may cause injury to skin or eyes. Inhalation or ingestion of dust may cause irritation. Contains a 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**

KEEP OUT OF THE REACH OF CHILDREN. 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 TWA 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 irritation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION. Refer to Material Safety Data Sheet (MSDS) for further information.

**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 lbs/gal or 0 g/L, 'less water and exempt solvents

For medical emergencies only, call ChemTec (1-800-424-9300).
LA REPAIR MORTAR
Flowable micro concrete

Description
LA Repair Mortar is a one-component, shrinkage-compensated micro concrete. It is designed for large-volume structural repairs from 3/4" (19 mm) to full depth.

Features
- High bond strength
- Shrinkage compensated
- High early strength
- Low permeability
- Excellent freeze/thaw resistance
- Flowable
- Self-compacting
- One component

Benefits
- Self-bonding to SSD concrete substrates
- Dual expansion system compensates for shrinkage in plastic and hardened states
- Reduces form cycle time
- Protects against carbon dioxide and chloride intrusion
- Durable in cold, wet environments
- Placement by pumping or pouring into congested locations
- Minimizes honeycombing; displaces air without vibration
- Only the site addition of clean water is required

Where to Use
APPLICATION
- Large volume structural repairs
- Where reinforcement is congested
- Partial or full-depth placements of structural concrete elements
- Repair or replacement of spandrel beams, columns, balcony edges
- Parking garages
- Water and wastewater tanks
- Tunnels, dams, bridges
- Marine structures

LOCATION
- Interior or exterior

SUBSTRATE
- Concrete

How to Apply
Surface Preparation
CONCRETE
1. Area being repaired must be structurally sound and fully cured.
2. Perimeter cut the edges of the repair to a depth of at least 3/8" (9 mm) to avoid featheredging and to provide a square edge.
3. Break out the concrete to the sawn edge and across the entire repair area.
4. Mechanically abrade and clean the surface to remove any dust, unsound or contaminated material, oil, paint, grease, or corrosion deposits. Do not use a method of surface preparation that could damage the concrete.
5. Where breaking out is not required, roughen the surface and remove any laitance by light scabbling or abrasive blasting. Remove oil and grease deposits by steam cleaning, detergent scrubbing, or degreasing.
6. Verify the effectiveness of decontamination by a pull-off test.
### Technical Data

**Composition**

LA Repair Mortar is a proprietary blend of cement, graded aggregate, shrinkage-compensating agents and additives.

### Test Data

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RESULTS</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh wet density, lb/ft³ (kg/m³)</td>
<td>142 (2,275)</td>
<td>ASTM C 138</td>
</tr>
<tr>
<td>Set time at 70° F (21° C), hrs, 50% relative humidity</td>
<td></td>
<td>ASTM C 191</td>
</tr>
<tr>
<td>Initial</td>
<td>6.5</td>
<td></td>
</tr>
<tr>
<td>Final</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Compressive strength, psi (MPa), 2&quot; (51 mm) cubes</td>
<td>ASTM C 109</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>2,500 (17.2)</td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>6,600 (41.4)</td>
<td></td>
</tr>
<tr>
<td>28 days</td>
<td>7,500 (51.7)</td>
<td></td>
</tr>
<tr>
<td>Compressive strength, psi (MPa), 3 by 6&quot; (76 by 152 mm) cylinders, at 28 days</td>
<td>ASTM C 39</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>6,700 (46.2)</td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>1,055 (7.3)</td>
<td></td>
</tr>
<tr>
<td>Flexural strength, psi (MPa)</td>
<td>ASTM C 78</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>665 (4.6)</td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>1,055 (7.3)</td>
<td></td>
</tr>
<tr>
<td>Slant shear bond strength, psi (MPa), at 28 days</td>
<td>ASTM C 882</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>750 (5.2)</td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>1,500 (10.3)</td>
<td></td>
</tr>
<tr>
<td>28 days</td>
<td>2,300 (15.9)</td>
<td></td>
</tr>
<tr>
<td>Tensile strength, psi (MPa), at 28 days</td>
<td>ASTM C 190</td>
<td></td>
</tr>
<tr>
<td>850 (5.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Splitting tensile strength, psi (MPa), at 28 days</td>
<td>ASTM C 496</td>
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</tr>
<tr>
<td>600 (4.1)</td>
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<td></td>
</tr>
<tr>
<td>Elastic modulus, psi (GPa)</td>
<td>ASTM C 469</td>
<td></td>
</tr>
<tr>
<td>4.2 x 10⁶ (29.0)</td>
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<td></td>
</tr>
<tr>
<td>Coefficient of thermal expansion', ln(θ)/θ F (cm/cm° C)</td>
<td>ASTM C 39</td>
<td></td>
</tr>
<tr>
<td>5.5 x 10⁻⁶ (9.9 x 10⁻⁶)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying shrinkage,</td>
<td>Coulinho-Ring</td>
<td></td>
</tr>
<tr>
<td>air cured at 73° F (23° C), 50% relative humidity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>No cracks</td>
<td></td>
</tr>
<tr>
<td>28 days</td>
<td>No cracks</td>
<td></td>
</tr>
<tr>
<td>Drying shrinkage,</td>
<td>ASTM C 157 (unmodified)</td>
<td></td>
</tr>
<tr>
<td>restrained; 1&quot; (25 mm) prisms, at 28 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drying shrinkage,</td>
<td>ASTM C 157 (modified)</td>
<td></td>
</tr>
<tr>
<td>restrained; 3&quot; (76 mm) prisms, air cured at 73° F (23° C), 50% relative humidity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 days</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>28 days</td>
<td>480</td>
<td></td>
</tr>
<tr>
<td>Freeze/thaw resistance, % RDM, at 300 cycles</td>
<td>ASTM C 666</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid chloride permeability, coulombs</td>
<td>ASTM C 1202</td>
<td></td>
</tr>
<tr>
<td>990 (very low)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*No bonding agent*

*Portland cement concrete; typical range is 5 - 10 x 10⁻⁶ ln(θ)/θ F (6 - 18 x 10⁻⁶ cm/cm° C) according to the American Concrete Institute*

*Relative Dynamic Modulus*

Results were obtained with a water/powder ratio of 3.5 qts/65 lb (0.3 L/25 kg) bag.

All application and performance values are typical for the material, but may vary with test methods, conditions, and configurations.
REINFORCING STEEL

1. Remove all oxidation and scale from the exposed reinforcing steel in accordance with ICRI Technical Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion."

2. For additional protection from future corrosion, coat the prepared reinforcing steel with Zircrich Rebar Primer.

Mixing

1. Ensure that LA Repair Mortar is thoroughly mixed; a forced-action mixer is essential. Mixing in a suitably sized container using an appropriate paddle with a slow-speed (400 – 500 rpm) heavy-duty drill is acceptable. Do not use free-fall mixers. Never mix partial bags.

2. The machine mixing capacity and the crew size must be adequate to carry out the placing operation continuously.

3. Measure 3-1/2 qts (3.3 L) of potable water and pour approximately 2-12 into the mixer. With the machine in operation, add 1 full 55 lb. (25 kg) bag of LA Repair Mortar and mix for 1 minute before adding the rest of the water. (The powder must always be added to water.)

4. Mix for an additional 2 – 3 minutes to obtain a smooth consistency.

5. The quantities mixed may be scaled up as required. In higher ambient temperatures, additional water may be used to obtain the proper flow consistency. The total water amount should not exceed 4 qts (3.8 L) per 55 lb (25 kg) bag.

6. When using the drill-and-paddle mixing method, place the complete 3-1/2 qts (3.3 L) of water in the mixing drum. With the paddle rotating, add 1 full 55 lb (25 kg) bag of LA Repair Mortar and mix for 2 – 3 minutes to achieve a smooth even consistency.

7. For cold-weather applications, refer to ACI 306R Cold Weather Concreting.

8. For hot-weather applications, refer to ACI 305R, Hot Weather Concreting.

Application

1. Keep the unrestrained surface area of the repair to a minimum. The formwork should be rigid and light to prevent loss of material. Properly seal the faces of forms to ensure they absorb no water from the repair material.

2. The formwork should include drainage outlets for pre-soaking and, if beneath a soffit, provision for air venting. Provide suitable access points to pour or pump the mixed micro concrete into place.

3. Form design should allow for a minimum of 3/4" (19 mm) cover around all steel.

4. Use a suitable form-release agent to facilitate the removal of forms from the cast material.

5. Refer to ACI 347R, Recommended Practice for Concrete Formwork.

6. Several hours before placing LA Repair Mortar, saturate the prepared concrete substrate by filling the prepared formwork with clean water.

7. Immediately before the placement of LA Repair Mortar, completely drain this water and seal the drainage outlets, leaving the substrate saturated surface-dry (SSD) with no ponded water remaining.

8. In jobsite circumstances where the formwork cannot be filled with water, the prepared concrete substrates must be thoroughly hosed down with clean water to achieve an equal level of saturation. Again, the substrate must be saturated surface-dry (SSD) immediately before placement of LA Repair Mortar.

9. Immediately after mixing, pump or pour the LA Repair Mortar into the formed area. The material does not require vibrating.

Curing

1. Leave the formwork in place until the compressive strength of the LA Repair Mortar reaches 2,500 psi (17.2 MPa) or a strength specified by the engineer.

2. LA Repair Mortar must be cured immediately after the formwork is stripped in accordance with good concrete practices. Refer to ACI 308 Standard Practice for Curing Concrete.

3. If the repair area will receive a coating, wet curing is recommended.

4. In cold conditions, protect the finished repair from freezing.

Clean Up

Remove LA Repair Mortar from tools, equipment, and mixers with clean water immediately after use. Cured material can only be removed mechanically. Clean hands and skin immediately with soap and water or industrial hand cleaner. Do not use solvents.

For Best Performance

- Do not use additives with LA Repair Mortar.
- Do not use LA Repair Mortar when the temperature is below 40°F (4°C) and falling.
- Do not mix partial bags.
- Do not use LA Repair Mortar to make overlay repairs where the surface will remain unrestrained during cure.
- Do not expose to moving water during application.
- Minimum placement depth is 3/4" (19 mm). When the minimum placement depth is greater than 2", use LA40 Repair Mortar.
- 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 version.
- 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
LA REPAIR MORTAR
WARNING!
LA Repair Mortar contains silica, crystalline quartz, portland cement; limestone; Magnesium oxide; Calcium oxide; Anticyclite.

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 exposure 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.

Refer to Material Safety Data Sheet (MSDS) for further information.

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 ChemTec (1-800-424-9300).
KURE 200W

High-solids, high-efficiency, VOC-free curing compound for concrete

Description
Kure 200W is a water-based polymer and wax-emulsion curing and sealing compound. It helps concrete surfaces obtain maximum strength and greater wear resistance. When applied at 300 – 400 ft²/gallon (7.4 – 9.8 m²/L), it meets the moisture retention requirements of ASTM C 309, Type 1, specification for liquid membrane-forming curing compounds.

Features
- Ensures high curing efficiency
- Provides increased wear resistance
- Nonyellowing
- 26% solids content
- Contains no VOCs
- Sprayable

Benefits
- Allows concrete to attain full strength potential
- Longer-lasting concrete floors and slabs
- Suitable for indoor or outdoor use
- Meets military specifications for high-solids
- Nontoxic; safer application
- Quick and easy to apply

Where to Use

Application
- Curing floor toppings and dry-shake hardeners (Masterplate® and Amvltop®)
- Where curing compounds must later be removed
- Where solvent vapors must be avoided
- Where government regulations limit VOC discharge
- Where moisture-retention requirements are necessary

How to Apply

Surface Preparation
1. Apply 1 coat of Kure 200W by constant pressure sprayer, airless industrial sprayer, garden sprayer, or short-nap roller at the recommended coverage rate. When applying by short-nap roller, do not overlap. If bubbles appear on surface, slow down the speed of rolling. Kure 200W must be applied in 1 application. Do not apply a second coat.

2. Use hot water and detergent to clean rollers and spray equipment before Kure 200W dries.

3. Drying time is approximately 1 hour at 70°F (21°C) with the relative humidity at 50%. Higher humidity or a lower temperature will increase the drying time. Note that the 1-hour time is for drying only; the full strength of the curing membrane will not develop for 2 – 4 days.

Yield
One gallon (3.8 L) will cover approximately 300 – 400 ft² (7.4 – 9.8 m²/L). Broomed or floated surfaces will reduce the coverage, depending on the texture.

Packaging
5 gallon (19 L) pails
55 gallon (208 L) drums

Shelf Life
1 year when properly stored

Storage
Store in unopened containers in clean, dry conditions. Keep from freezing. Do not store below 40°F (4°C).
Technical Data

Composition
Kure 200W is a water-based polymer and wax-emulsion curing and sealing compound.

Compliance
- When applied at a rate of 350 ft/gallon (8.6 m²/L), Kure 200W exceeds ASTM C 309 requirements with water loss of 0.35 kg/m² or less. ASTM C 309 sets a limit of 0.56 kg/m² in 72 hours at the coverage rate of 200 ft/gallon (4.9 m²/L).
- Atmospheric discharge of volatile organic compounds (VOC) and special solvents, Federal Air Quality Regulation 40 CFR 52.254 (Kure 200W is totally free of organic solvents or alcohols).

Typical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids content, % by weight</td>
<td>26</td>
</tr>
</tbody>
</table>

Removal
Ease of curing compound removal is directly related to the length of time the compound is left on a surface. If Kure 200W will be removed at some point, remove it as soon as curing period is complete (no longer than 28 days) for best results.

1. Sweep or vacuum area to be stripped.
2. A hot-water pressure washer works best to remove the membrane. Pressure-wash area with hot water, which will soften and remove much of the wax.
3. While the floor is wet and the wash water warm, apply biodegradable detergent, degreaser, or stripping compound diluted according to manufacturer’s recommendations. (The entire area, once wet, must stay wet during the cleaning process.) Use a mechanical scrubber equipped with vacuum pickup.
4. Let solution sit for 10 – 15 minutes, re-wet areas that begin to appear dry. Scrub area with a mechanical scrubber equipped with wax stripping pads. This will lift soil and most of the curing compound.
5. Reapply the stripper and repeat the scrubbing procedure.
6. Vacuum remaining water, detergent, and soil. If necessary, apply another lighter application of the solution, concentrating on heavily soiled areas and low spots.
7. Rinse floor with clean water.

For Best Performance
- Do not use as a non-skid surface while the curing membrane is intact.
- Do not use for any architectural concrete.
- Kure 200W curing compound should be stirred well before using. Re-stir occasionally.
- DO NOT allow this product to freeze. If it freezes, do not use the product; dispose of it properly.
- Ambient temperatures, concrete, product, and all associated equipment should be between 45 and 85° F (7 and 29° C) for best results.
- DO NOT use as a bondbreaker or apply over a bondbreaker.
- DO NOT apply while standing water remains on slab.
- DO NOT add water or solvents or otherwise dilute the product.
- Protect the surface from rain until the film has totally dried (when clear).
- DO NOT use acid to remove Kure 200W. Acids will NOT dissolve the wax coating but will dissolve the surface of the concrete floor.
- BASF is responsible only for the efficacy of the curing compound and not for its removal. Removal products and methods suggested in this product data sheet, however, are based on techniques proven successful.
- Ease of curing compound removal is directly related to the length of time the compound is left on a surface. If Kure 200W will be removed at some point, remove it as soon as curing period is complete (no longer than 28 days) for best results.
- 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 job site.
- CAUTION: When using this procedure on Masterplate® metallic floors, surfaces may oxidize. The owner should be aware that the oxidation is unavoidable; however, normal traffic will remove the light surface oxidation. A test area is recommended.
Health and Safety
KURE 200W

Caution
Kure 200W contains no hazardous ingredients as defined by 29 CFR 1910.1200 or WHMIS.

Risks
May cause skin, eye or respiratory irritation.
Ingestion may cause irritation.

Precautions
KEEP OUT OF THE REACH OF CHILDREN. Avoid contact with skin, eyes and clothing. 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.
Refer to Material Safety Data Sheet (MSDS) for further information.

Proposition 65
This product does not knowingly contain material listed by the state of California as known to cause cancer, birth defects, or other reproductive harm.

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

For medical emergencies only,
call ChemTec (1-800-424-9300).
Quick and easy to install, Bar Lock requires no special installation equipment. The high strength couplers are excellent for new concrete construction or rehab projects. The Bar Lock rebar coupler system provides a cost effective method for splicing smooth or deformed rebar in tension and/or compression applications.
ICC ESR 2495
The Dayton Superior Bar Lock Coupler System provides a simple, quick, cost effective method for splicing smooth or deformed rebar in tension and/or compression applications. Bar Lock couplers are effective when used as a "positional" coupler when the rebar is fixed in place or when the rebar is free to rotate. Bar Lock couplers utilize lock-shear bolts and serrated grip rails to mechanically splice the rebar. The serrated grip rails are embedded in the rebar as the lock-shear bolts are tightened. The heads of the lock-shear bolts are designed to shear off at a prescribed torque to ensure proper installation.

System Advantages
• Quick and easy to install to save time and money.
• Eliminates bar threading or special bar-end treatment.
• No special installation equipment required.
• High strength in tension, compression and seismic applications.
• Available in standard, transition, weldable, and end anchor versions in sizes #4 through #18.
• Ideal for new construction and rehab projects.

System Compliance
Bar Lock couplers are test-certified to exceed the requirements of, and are pre-qualified, approved or recognized by the following building approval agencies:
• ACI 318-II Type 2
• ICC AC-133
• Caltrans Service Splice
• Ministries of Transportation, Canada
• Army Corps of Engineers CW 03210
• State Departments of Transportation
• AASHTO
• International Building Code (IBC)
• City of Los Angeles Department of Building and Safety

System Testing
Bar Lock couplers are tested by independent, certified testing laboratories in four modes of testing: tension, compression, fatigue and cyclic. All tests are done to the requirements of ICC and/or Caltrans. Bar Lock source materials are fabricated under ISO9001 quality standards.
How to Specify
A. By specific name: "Bar Lock® mechanical coupler system manufactured by Dayton Superior."
B. By generic description: "Mechanical butt splices utilizing lock-shear bolts and internal serrated grip rails within the coupling sleeve. They shall exceed the specification requirements for both tension and compression specified by ACI 318 and the Uniform Building Code and be recognized by the International Code Council (ICC)."

Specific:
Mechanical connections shall be Bar Lock® lockshear bolt couplers as manufactured by Dayton Superior Corporation.

Generic:
The mechanical connection shall meet building code requirements of developing in tension and compression as required by ________ (insert name here). The mechanical connection shall be the positive butt splices utilizing lockshear bolts and internal serrated grip rails within the coupling sleeve manufactured from high quality steel. All couplers shall be installed per the manufacturer’s approved procedures.

How to Order
Specify: (1) quantity, (2) name, (3) rebar size, (4) style, if other than standard.
Example: 200, D250L Bar Lock Couplers, #8 rebar size, epoxy coated.

Made in America
Bar Lock is 100% made in America. Raw materials used in its manufacturing are melted and rolled in America. This makes Bar Lock fully compliant with Department of Transportation, American Recovery and Reinvestment Act (2009), Buy America Act (1983), and Buy American Act (1933).
D250SCA Bar Lock® S/CA Series Couplers
The Bar Lock S/CA Series Couplers (D250SCA) are designed for use in most tension and compression applications. They are available in rebar sizes #4 through #18 and exceed 135% of specified yield of the rebar. S/CA couplers are an approved Caltrans “Service” splice and are recognized by ICC, ACI and most State Departments of Transportation. D250SCA couplers are available plain or epoxy coated.

D250L Bar Lock® L-Series Couplers
The Bar Lock L-Series Coupler (D250L) is similar to the D250SCA, but is designed for use when higher loads are required, such as extreme tension/compression applications and/or seismic loading conditions. D250L couplers are available in rebar sizes #4 through #18 and exceed 160% of specified yield of Grade 60 rebar. D250L couplers are approved for use by most state DOTs, are recognized as an ICC Type 2 seismic splice and meet ACI specifications. L-Series couplers are also available plain or epoxy coated.

D220 Bar Lock® Transition Couplers
Bar Lock Transition Couplers are used to splice two rebars of different diameters. Transition couplers are available in S/CA and L-Series, plain or epoxy coated. Note sizes and other information about the respective couplers versions above.

D260 Bar Lock® Structural Steel Connectors
Bar Lock Structural Steel Connectors (weldable) are designed to provide welded connections to structural steel members such as piles, weld plates, beams, columns, etc. Structural Steel Connectors are fabricated with a 45° chamfer to facilitate the welding operation. They are available in rebar sizes #4 through #18 in the S/CA Series and the #4 through #14 in the L-Series.

D251 Bar Lock® End Anchors
Bar Lock End Anchors are designed to provide anchorage of structural steel. End Anchors are fabricated with a structural steel connector, factory-welded to round plate steel. They are available in rebar sizes #4 through #18 in the L-Series.
## Specifications

### D250SCA Bar Lock S/CA-Series Couplers

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Coupler Designation</th>
<th>Bar Size Designation</th>
<th>Metric (mm)</th>
<th>CN (M)</th>
<th>Barrel Stamp Identification</th>
<th>Outside Diameter (in.)</th>
<th>Length (in.)</th>
<th>Weight (lbs.)</th>
<th>Bolt Qty.</th>
<th>Head Size (in.)</th>
<th>Nominal Shear Torque*</th>
<th>Min % Fy**</th>
<th>CAL TRANS Service</th>
<th>ICC Type 1</th>
<th>ICC Type 2</th>
</tr>
</thead>
<tbody>
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<td>400203</td>
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<td>#7 [22]</td>
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</tr>
</tbody>
</table>

Note in place of the "...", each Bar Lock Coupler is marked with a tracking code used for full manufacturing traceability.

* Foot pounds.
** When used in conjunction with epoxy-coated Grade 60 rebar, 125% Fy strength is developed.

### D250L Bar Lock L-Series Couplers

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Coupler Designation</th>
<th>Bar Size Designation</th>
<th>Metric (mm)</th>
<th>CN (M)</th>
<th>Barrel Stamp Identification</th>
<th>Outside Diameter (in.)</th>
<th>Length (in.)</th>
<th>Weight (lbs.)</th>
<th>Bolt Qty.</th>
<th>Head Size (in.)</th>
<th>Nominal Shear Torque*</th>
<th>Min % Fy**</th>
<th>CAL TRANS Service</th>
<th>ICC Type 1</th>
<th>ICC Type 2</th>
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<tbody>
<tr>
<td>400327</td>
<td>—</td>
<td>3 L</td>
<td>#3 [10]</td>
<td>—</td>
<td>3L...CA</td>
<td>1.3</td>
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<td>[10]</td>
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<td>1.67</td>
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<td>[15]</td>
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<td>6.3</td>
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<td>10</td>
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<td>[30]</td>
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<td>—</td>
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<td>18.50</td>
<td>10</td>
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<td>400242</td>
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<td>[35]</td>
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<td>16.5</td>
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<td>12</td>
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<td>400243</td>
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<td>[45]</td>
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<td>[55]</td>
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</tbody>
</table>

Note in place of the "...", each Bar Lock Coupler is marked with a tracking code used for full manufacturing traceability.

* Foot pounds.
** When used in conjunction with epoxy-coated Grade 60 rebar, 135% Fy strength is developed.
### D220 Bar Lock Transition Couplers

<table>
<thead>
<tr>
<th>SCA Transition Size</th>
<th>Side A (small side)</th>
<th></th>
<th>Side B (large side)</th>
<th></th>
<th>Total Length</th>
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<tbody>
<tr>
<td></td>
<td>Barrel Size</td>
<td>Length (in.)</td>
<td>Bolt Qty.</td>
<td>Head Size (in.)</td>
<td>Barrel Size</td>
</tr>
<tr>
<td>#4 - #5</td>
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<td>2</td>
<td>0.5</td>
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</tr>
<tr>
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<td>0.5</td>
<td>#6</td>
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<td>0.5</td>
<td>#8</td>
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<td>4</td>
<td>0.75</td>
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<td>#10 - #14</td>
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<td>0.75</td>
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<td>#11 - #14</td>
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<td>6</td>
<td>0.75</td>
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</table>

This table lists commonly ordered transition sizes. Other sizes available. Transition Couplers are available in S/CA Series (shown above) sizes #4 - #18 and in L-Series sizes #4 - #18.

### D260 Bar Lock Structural Steel Connectors (Weldable)

<table>
<thead>
<tr>
<th>Bar Size Designation</th>
<th>US</th>
<th>Metric (mm)</th>
<th>CN (M)</th>
<th>S/CA-Series</th>
<th></th>
<th>L-Series</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td>Structural Steel Connector Designation</td>
<td>Finished Length with Chamfer (in.)</td>
<td>Coupler Outside Diameter (in.)</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>[13]</td>
<td>[10]</td>
<td></td>
<td>#4-SCA</td>
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<td>1.3</td>
<td>#4-L</td>
</tr>
<tr>
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<td>[16]</td>
<td>[15]</td>
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<td>1.4</td>
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<td>1.6</td>
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<tr>
<td>#7</td>
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<td>#7-L</td>
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<td>#9-SCA</td>
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<td>2.6</td>
<td>#9-L</td>
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<tr>
<td>#10</td>
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<td>[35]</td>
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<td>[45]</td>
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Ultimate strength depends on the strength of the field weld and the material to which the coupler is welded.

### D251 Bar Lock End Anchor Connectors

<table>
<thead>
<tr>
<th>Bar Size Designation</th>
<th>US</th>
<th>Metric (mm)</th>
<th>CN (M)</th>
<th>Connector Designation</th>
<th>Plate Thickness</th>
<th>Plate Diameter</th>
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<tbody>
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<td>#4</td>
<td>[13]</td>
<td>[10]</td>
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<td>#5</td>
<td>[16]</td>
<td>[15]</td>
<td></td>
<td>5 L</td>
<td>0.50</td>
<td>2.00</td>
</tr>
<tr>
<td>#6</td>
<td>[19]</td>
<td>[20]</td>
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<td>6 L</td>
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</tr>
<tr>
<td>#7</td>
<td>[22]</td>
<td></td>
<td></td>
<td>7 L</td>
<td>0.63</td>
<td>2.88</td>
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<tr>
<td>#8</td>
<td>[25]</td>
<td>[25]</td>
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<td>3.25</td>
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<td>#9</td>
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<td>[30]</td>
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<td>3.63</td>
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<tr>
<td>#10</td>
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<td></td>
<td></td>
<td>10 L</td>
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<tr>
<td>#11</td>
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<td>[45]</td>
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<td>14 L</td>
<td>1.25</td>
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<td>#18</td>
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<td>[55]</td>
<td></td>
<td>18 L</td>
<td>1.63</td>
<td>7.25</td>
</tr>
</tbody>
</table>

End Anchors are available in L-Series.
Typical Coupler Installation
Bar Lock couplers are easy to install and normally do not require any special training or rebar preparation. A typical installation procedure is:

A. Procedure:
1. Insert end of the first bar halfway into the coupler to the center pin. Hold bar in place and hand-tighten all bolts.
2. Insert end of the second bar halfway into the coupler to the center pin. Hold bar in place and hand-tighten all bolts.
3. In a random alternating pattern, tighten all bolts to approximately 50% of the specified bolt torque value.
4. In a random alternating pattern, tighten all bolts to approximately 75% of the specified bolt torque value.
5. Tighten all bolts in a random alternating pattern until all bolt heads shear off.

IMPORTANT NOTES:
a. Prior to bolt tightening the serrated rails MUST remain aligned in the same position as they were manufactured. If damaged or knocked out of alignment while positioning, installation MUST cease and a new coupler used to replace damaged coupler.
b. Bolt tightening MUST be done in a random alternating pattern similar to tightening the lug nuts on an automobile wheel (i.e., 2-4, 1-3).

B. Installation Tools:
A high-quality 1"-drive pneumatic impact wrench is required for sizes #8 thru #18. The requirements for air flow is 100 psig of operating pressure and 185 cfm of delivered air to the impact wrench through a ¾" - 1" air hose. Sizes #4 thru #7 may be installed with smaller impact wrenches.

C. Answers to Frequently Asked Questions:
1. Approvals: Bar Lock couplers exceed the requirements of the Uniform Building Code and state DOTs and are recognized by ICC report #ESR-2495.
2. Center-pin: Bar Lock couplers are manufactured with a removable center-pin for easy reference to the center of the coupler. As each bar is inserted into the coupler it will butt against the center pin providing the confirmation the rebar is inserted the proper distance within the coupler. The bar ends might not actually butt against one another.
3. Serrated rails: The internal grip rails are held into place by a simple “positional weld” only. During bolt tightening it is common this position weld may break loose, but this will not affect performance.
4. Shear bolts: The shearing of the bolt-heads simply confirms adequate torque has been achieved.
5. Bar-ends: The rebar may be shear cut, flame cut or sawn and generally require no special bar-end preparation for use with Bar Lock couplers.
DAYTON SUPERIOR BRANDS

CONCRETE ACCESSORIES
Accubrace®, Aztec®, Bar Lock®, Corewall®, Fleet-Lift™, Swift Lift®, Taper-Lock®

CONSTRUCTION CHEMICALS
Unitex®

FORMING PRODUCTS
Symons®, Max-A-Form®, Steel-Ply®, Sym-Ply®

DAYTON SUPERIOR PRODUCTS

BRIDGE DECK FORMING
Adjustable Joist Hangers
Bridge Overhang Brackets
Haunch and Fillet Forming
Pres-Steel, Coll Rod and Con-Beam Hangers
Screw Supports

CHEMICALS
Bond Breakers
Cleaners / Strippers
Concrete Repair/Restoration Curing Compounds / Sealers Epoxy Floor Levelers
Form Release Agents Grout
Hardeners / Industrial Toppings
Liquid Densifiers Surface Retarders

FORMING AND SHORING
Aluminum Shoring
Ganged Formwork
Garage Beam System
Handset Formwork
Highway Forms
Jump Forms
Modular Deck Shoring
One Sided Frames
Self Spanning Forms
Steel Frame Shoring

FORMLINERS
ABS Plastic
Polystyrene Plastic
Precison Cut Foam
Solid Urethane
Urethane-Skinned Foam

PAVING
Dowel Bar Expansion Caps
Dowel Bar Retrofit System
Elastomeric and Hot Pour Joint Seal
Metal Keyway Form Systems
Tie Bar Assemblies
Transverse Bar Assemblies
Welded Dowel Assemblies
Wire Baskets without Dowels

PRECAST
Anchors and Lift Systems
Coil / Ferrule Inserts
Core Plugs
Magnets
Precast Forms
Rustication/Chamfers
Sandwich Panel Connectors
Shear Connectors
Slotted Inserts

REBAR SPLICING
Forged Dowel Bar Couplers
Lockshear Bolt Couplers
Shear Resistance Products
Straight Thread Couplers
Taper Thread Couplers

REBAR SUPPORTS
Concrete Dobbies
Continuous Plastic and Steel Bar Supports
Individual Plastic and Steel Bar Supports
Mesh Chairs
Paving Chairs
Side Form Spacers

TIES AND ACCESSORIES
Modular Form Ties
Single Waller System
Ties and Accessories

TILT-UP
Braces and Brace Anchors
Helical Ground Anchors
Setting Plugs
Strongback System
Tilt-Up Anchors and Lifting Systems

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