

PRODUCT OVERVIEW

CEMENT-BASED PRODUCTS

V-1[®] NON-SHRINK	A highly flowable product which develops extremely high compressive strengths in a very short time. The product will not shrink, and is perfect for grouting precision machinery as well as anchor bolt setting and other machinery grouting applications.
V-2[®] CONSTRUCTION	A flowable product intended for use in general purpose construction applications. It is chloride-free, and will not shrink below its original mixing volume.
UNISORB[®] CONCRETE REPAIR COMPOUND (UCRC)	A flowable, fast setting product designed for setting anchor bolts, and filling holes and large cracks in concrete floors, roads, sidewalks, etc.
STRUCTURAL REPAIR	A self-bonding, quick setting, trowelable wall and ceiling patching compound.

EPOXY PRODUCTS

STANDARD V-100[®]	A superior quality product with excellent flowability, high resistance to impact, and extremely rapid cure time. It is an excellent choice where very high strength and low grout quantities are preferred.
DEEP POUR V-100[®]	A highly flowable product intended for use where larger pours are required, providing excellent compressive strength and rapid cure time.
ADHESIVE V-100[®]	A product developed to be used as a trowelable adhesive to place under steel plates, bonding them to concrete floors. This can be used in either temporary or permanent installations. This product bonds to most surfaces.
ACID RESISTANT V-100[®]	A product designed for applications requiring high mechanical strength as well as resistance to sulfuric acid, making it ideal for mining and oil field use.
DCR V-100[®]	A product designed for rail installations which require extraordinarily high strengths combined with resistance to temperature and humidity, and which will allow pours with 3/4" to 5" cross-sections.
CR V-100[®]	A product designed for crane rail and other extraordinarily severe applications where ultra-high strength combined with resistance to temperature and humidity are important.
JOINT FILLER V-100[®]	A product developed for sealing the exposed edge of Inertia Block isolation material at the floor level. It cures to a flexible solid state, preventing transmission of vibrations while protecting the edge of the isolation pad.
HI-TEMP V-100[®]	A product designed for applications where high mechanical strength and high temperature resistance over regular epoxy grout is required. It has a maximum service temperature of 325° F.
XTRA-TEMP V-100[®]	A product developed for applications where high mechanical strength and very high temperature resistance are required. It has a maximum service temperature of 425° F.

V-1® NON-SHRINK GROUT



V-1® NON-SHRINK

A cement-based, non-shrink, pre-mixed, highly flowable grout that develops extremely high compressive strengths in a very short period of time.

This product is particularly superior for applications where ease of placement and suitability for use under high unit loads are important. Other materials such as concrete or weaker grouts may develop structural flaws when subjected to concentrated loads.

V-1® Non-Shrink grout is ideally suited for:

- Grouting of precision machinery
- Setting precision leveling wedges
- Setting high strength anchor bolts
- Grouting of large base plates
- Grouting in machine bases
- Setting turbine base plates

This product contains a special proprietary expansion mechanism which eliminates the natural volume loss present in other cement-based products. This expansion mechanism is totally unique in the grouting industry because it is active only during the initial mixing and plastic set stages of the cure, thereby yielding a very stable end product. Controlled expansion precludes the possibility of shrinkage related voids so that full bearing contact is ensured. Many grout manufacturers today use a metallic expansion mechanism that may not be completely consumed during the cure stage. This can

PHYSICAL PROPERTIES			
Mix Ratio			
Water to 48# Bag	4.3 qts.	3.6 qts.	3.4 qts.
Flow (CRD C-611 & ASTM C-939) (CRD C-226 & ASTM C-230)	24-26	140	118
Compressive Strength (CRD C-277 & ASTM C-109)			
1 day	3,760 psi	6,080 psi	7,545 psi
3 days	6,620 psi	8,270 psi	8,545 psi
7 days	7,615 psi	9,200 psi	9,580 psi
28 days	8,850 psi	11,250 psi	11,690 psi
Expansion (CRD C-621 & ASTM C-1090)			
3 days	0.03%	0.19%	0.12%
14 days	0.03%	0.19%	0.12%
28 days	0.03%	0.19%	0.12%
Setting Time (CRD C-614 & ASTM C-953)			
Initial	6 hrs. 12 min.	5 hrs. 26 min.	3 hrs. 43 min.
Final	7 hrs. 17 min.	7 hrs. 19 min.	6 hrs. 17 min.
Flexural Strength		Youngs Modulus of Elasticity	
7 days	1,670 psi	6 x 10 ⁶ psi	
28 days	1,700 psi	Expansion and Bleeding of Freshly Mixed Grouts @ Max. Water (ASTM C-940)	
High Temperature Evaluation Compressive Strength		Volume Expansion	+1.00%
70° F	11,000 psi	Bleed	0.00%
800° F	11,000 psi	Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.	
900° F	9,700 psi		
1,000° F	8,400 psi		
Tensile Strength			
7 days	535 psi		
28 days	568 psi		

lead to reactivation of this material in a wet environment and create strong internal pressures that can promote premature failure. Since cured V-1® grout does not contain metallic expansion agents or allow excessive air entrapment, it does not require a post-cure coating to protect it from a wet environment.

V-1® grout is well suited for use in high ambient temperatures and is routinely used in areas where temperatures reach 1,000° F. It also exhibits superior resistance to attack by strong acids and bases.

V-1® grout is a very dense and stable material after proper cure. It provides long life expectancy and maintains the rigid machine-to-foundation connection required to meet the precise installation requirements of today's sophisticated machinery.

V-1® grout exceeds Corps of Engineers Specification for Non-Shrink Grout CRD C-621 (formerly CRD C-588). V-1® grout also exceeds all requirements of ASTM 1107.

PERFORMANCE ADVANTAGES

V-1® grout is composed of several carefully blended sizes of the best quality pure silica sand, "high early" portland cement and a proprietary controlled expansion mechanism. It is chloride-free and will not shrink below its original mixing volume after the recommended water ratio is added. This grout can be extended by adding up to 50% (by weight) pea gravel, substantially reducing material costs on larger pours. V-1® grout can be pumped or vibrated without risk of separation.

TEMPERATURE CONSIDERATIONS

Use standard high temperature concreting techniques for temperatures over 90° F and low temperature techniques below 45° F.

PACKAGING/YIELD

48# Bag = .40 cu. ft. (691 cu. in.)
100# Bag = .83 cu. ft. (1,434 cu. in.)

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.

V-1® NON-SHRINK TEST RESULTS

Following are summarized test results for V-1® Non-Shrink grout. A copy of the complete report is available upon request. As sampled and tested V-1® Grout complies with ASTM C-1107-91 specifications for Grade A. The American Society for Testing Materials (ASTM) has developed this standard specification for Non-Shrink Cement-Based Grout, such as UNISORB® V-1®. This specification includes testing and acceptance criteria for most physical properties of a cement-based grout.

Compressive strengths at 1, 3, 7 and 28 days were determined in accordance with the specifications outlined

in ASTM C942-88, "Test Method for Compressive Strength of Grouts for Preplaced Aggregate Concrete in the Laboratory" using the methods outlined in ASTM C109 (2" cubes). For one day tests, the cubes were both stripped and tested at 24 hours.

Change in height at early ages was determined in accordance with ASTM C827, "Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures".

Volume Change was determined in accordance with ASTM C1090-88, "Standard Test Method for Measuring Changes in Height of Cylindrical

Specimens from Hydraulic-Cement Grout". One test specimen of 3" diameter by 6" height was prepared for each test condition.

Consistency of the grout was determined in accordance with ASTM C939, "Standard Test Method for Flow of Grout for Preplaced Aggregate Concrete (Flow Cone Method)".

For the maximum and minimum test temperature conditions, the ASTM C1090-88 (volume change) and ASTM C942-88 (compressive strength) specimens were cured in plastic bags and maintained at the required temperatures in a refrigerator or oven.

ASTM C-1107-91 TEST RESULTS

Test Condition	1	2	3	4	5	6	
Working Temperature	Maximum		Minimum		Laboratory		
Date Specimen Molded	7-13-92		7-15-92		7-9-92		
Air Temperature	90°F		45°F		73°F		
Water Temperature	90°F		45°F		73°F		
Dry Grout Temperature	90°F		45°F		73°F		
Test Temperature	90°F		45°F		73°F		
Water Added (per 50 lb. bag)	4.5 qts.		4.5 qts.		4.5 qts.		
Working Time	Freshly Mixed Grout	30 Min. in Mixer	Freshly Mixed Grout	30 Min. in Mixer	Freshly Mixed Grout	30 Min. in Mixer	
Consistency ASTM C-939-87	25 sec.	24 sec.	25 sec.	24 sec.	24 sec.	26 sec.	
Volume Change ASTM C-1090-88 @ 100% Relative Humidity							Requirements
1 day (%)	+0.09	+0.10	+0.01	+0.15	+0.09	+0.12	Max. +0.3 Min. 0.0
3 day (%)	+0.13	+0.13	+0.02	+0.17	+0.09	+0.12	
14 day (%)	+0.14	+0.14	+0.02	+0.19	+0.09	+0.12	
28 day (%)	+0.14	+0.14	+0.06	+0.19	+0.09	+0.12	
Additional 28 days @ 50% Relative Humidity							
56 day (%)	+0.22	+0.23	+0.08	+0.26	+0.09	+0.12	—
Compressive Strength ASTM C-942-88							
1 day (psi)	5760	5080	1420	1480	5740	6120	Min. 1000
3 day (psi)	7910	7230	3170	4580	7770	7920	Min. 2500
7 day (psi)	9010	8600	6190	7190	8990	8410	Min. 3500
28 day (psi)	9520	9340	9360	9410	9920	10190	Min. 5000
Change in Height ASTM C-827-87							
Magnification (%)	91	91	91	91	100	100	—
Change in Height at Time of Set (%)	+1.03	+0.85	+0.43	+1.25	+1.10	+1.10	Max. 4.0% Min. 0.0%
Time of Final Set	7 hrs.	6 hrs. 40 min.	9 hrs. 55 min.	9 hrs. 45 min.	11 hrs. 25 min.	10 hrs. 55 min.	—

Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.

V-2[®] CONSTRUCTION GROUT



V-2[®] CONSTRUCTION GROUT

A cement-based, non-shrink, pre-mixed, flowable grout that develops high compressive strengths in a very short period of time.

V-2[®] Construction Grout is an ideal choice for:

- Grouting large and small building column bases and plates
- Setting to elevation leveling plates or wedges
- Setting anchor bolts and guy wire anchors
- Filling or supporting equipment bases

This product contains a special proprietary expansion mechanism which eliminates the natural volume loss present in other cement-based products. This expansion mechanism is totally unique in the grouting industry because it is active only during the initial mixing and plastic set stages of the cure, thereby yielding a very stable end product. Controlled expansion precludes the possibility of shrinkage related voids so that full bearing contact is ensured. Many grout manufacturers today use a metallic expansion mechanism that may not be completely consumed during the cure stage. This can lead to reactivation of this material in a wet environment and create strong

internal pressures that can promote premature failure. Since cured V-2[®] grout does not contain metallic expansion agents or allow excessive air entrapment it does not require a post cure coating to protect it from a wet environment.

V-2[®] grout is a very dense and stable material after proper cure, providing long life expectancy.

V-2[®] grout meets Corps of Engineers Specification CRD C-621 for Non-Shrink Grout. It also meets the compressive strength and expansion requirements of ASTM C-1107-91 for fresh grout at room temperature.

PERFORMANCE ADVANTAGES

V-2[®] grout is composed of several carefully blended sizes of high quality pure silica sand, "high early" portland cement and a proprietary, controlled expansion mechanism. It is chloride-free and will not shrink below its original mixing volume after the recommended water ratio is added. This grout can be extended by adding up to 50% (by weight) pea gravel, substantially reducing material costs on larger pours. V-2[®] grout can be pumped or vibrated without risk of separation.

PHYSICAL PROPERTIES

Compressive Strength (CRD C-621)

Water to 100# Bag	10.0 qts.
1 day	1,400 psi
3 days	4,000 psi
7 days	5,500 psi
28 days	6,800 psi

Expansion (CRD C-621)

1 day	0.03%
3 days	0.03%
7 days	0.03%
28 days	0.04%

Flow (CRD C-227) 32 sec.

Mixing Ratio 7-10 qts. water/100#

TEMPERATURE CONSIDERATIONS

Use standard high temperature concreting techniques for temperatures over 90°F, and low temperature techniques below 45°F.

PACKAGING/YIELD

50# Bag = .45 cu. ft. (778 cu. in.)
100# Bag = .90 cu. ft. (1,556 cu. in.)

Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.

UNISORB® CONCRETE REPAIR COMPOUND (UCRC)

UCRC EXTENDED SET



UNISORB® CONCRETE REPAIR COMPOUND (UCRC)

A cement-based, flowable, fast setting product designed for use in setting anchor bolts and filling holes and large cracks in concrete floors, roads, sidewalks, foundations, etc. It is well suited to high traffic wear areas. Edges of repairs can be feathered to blend into the surrounding area.

PERFORMANCE ADVANTAGES

UCRC employs special poly reinforcing fibers to achieve exceptional strength and durability. Unlike most cement-based products, UCRC is self-sealing and requires no sealant when used outdoors. This product requires no pre-wetting and can be opened to traffic in 20 minutes to one hour after pouring (depending on weight of traffic). It is also ideal for setting anchor bolts, particularly when short installation times are important, because of its fast setting time.

BASE PREPARATION

All contact surfaces must be cleaned of oil, grease, scale, etc. Unsound concrete should be chipped out leaving the surface level, but rough. The area to be repaired should be chipped to a mini-

PHYSICAL PROPERTIES			
	UCRC	UCRC EXTENDED SET	
Compressive Strength (CRD C-227/ASTM C-109)			
Water To 100#	6.5 qts.	6.5 qts.	
1 hour	2,200 psi	1,000 psi	
3 hours	3,900 psi	3,000 psi	
1 day	5,200 psi	5,200 psi	
7 days	6,800 psi	6,800 psi	
28 days	8,000 psi	8,000 psi	
Compressive Strength With 50% Gravel Added (ASTM C-39)			
1 hour	3,200 psi	—	
3 hours	4,200 psi	—	
1 day	5,300 psi	—	
7 days	6,200 psi	—	
28 days	6,700 psi	—	
Coefficient of Thermal Expansion (ASTM C-531) 7.46 x 10 ⁻⁶ in./in./°F			
Tensile Strength (ASTM C-190)			
7 days	413 psi	—	
28 days	476 psi	—	
Flexural Strength (ASTM C-348)			
7 days	1,267 psi	—	
28 days	1,405 psi	—	
Flow	145 (25 drops, 5 min.)	—	
Compressive Strength Temperature Evaluation			
Hi & Low Temp Test (ASTM C-928)			
	40° F	95° F	
3 hours	2,700 psi	5,300 psi	—
1 day	6,100 psi	6,500 psi	—
7 days	6,800 psi	7,500 psi	—
28 days	7,800 psi	8,900 psi	—
Setting Time @ 75° F			
Initial	11 mins.	25 mins.	
Final	14 mins.	30 mins.	
Bond Strength (ASTM C-882)			
1 day	1,956 psi	—	
7 days	2,550 psi	—	

UCRC meets or exceeds the specifications for Scaling Resistance (ASTM C-928), and Freeze-Thaw (ASTM C-666).

mum depth of 1/2".

APPLICATION TECHNIQUES

UCRC can be mixed in a wheelbarrow or cement mixer. Only the exact amount needed for a particular project should be mixed, due to its fast setting time. Exact ratios should be followed for mixture of product and water. Mix dry powder with water at the job site to form a trowelable mixture. Place in area to be repaired and trowel to desired finish. Allow to cure.

TEMPERATURE CONSIDERATIONS

Use standard high temperature concreting techniques for conditions over 90° F, and low temperature techniques for conditions below 45° F.

PACKAGING/YIELD

50# Bag = .40 cu. ft. (691 cu. in.)
20# Pail = .16 cu. ft. (276 cu. in.)
50# Pail = .40 cu. ft. (691 cu. in.)

UCRC EXTENDED SET

UCRC is also available in an "Extended Set" formulation to allow longer work time. (See above chart.)

Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.

STRUCTURAL REPAIR



STRUCTURAL REPAIR

UNISORB® Structural Repair wall and ceiling patch is cement-based, self-bonding, quick setting and trowelable. When used for patching spalls or holes between 1/2" to 3" thick, it provides a non-shrink, high strength repair. It does not require concrete primers or bonding agents.

Use this product to repair gouged and spalled concrete surfaces damaged by freight trucks, forklifts, steel ladles, overhead cranes and general wear and tear. It is not recommended for use as a concrete "capping" material.

BASE PREPARATION

All contact surfaces must be cleaned of all oil, grease, scale, etc. Unsound concrete should be chipped out to a minimum depth of 1/2". Rough the concrete surfaces to provide the best bonding conditions.

APPLICATION TECHNIQUES

UNISORB® Structural Repair formula can be mixed in a wheelbarrow or cement mixer. Only the exact amount needed for a particular project should be mixed, due to its fast setting time. Exact ratios should be followed for mixture of product and water. Mix dry powder with clean water at the job site to form a trowelable mixture. Use exact ratio of 4 quarts of water to 50 lbs. of grout. Place in the area to be repaired

and trowel to the desired finish. Allow to cure but do not allow to dry out. Covering with wet burlap is the best way to prevent premature water loss. Thick sections of repair may need to be accomplished in separate lifts.

TEMPERATURE CONSIDERATIONS

Use standard high temperature concreting techniques for conditions over 90°F, and low temperature techniques for conditions below 45°F.

PHYSICAL PROPERTIES

Compressive Strength

Water to 100#	8.0 qts.
1 hour	300 psi
3 hours	2,400 psi
1 day	3,000 psi
7 days	4,100 psi
28 days	5,000 psi

Flexural Strength

1,100 psi

Flow 102 (25 drops, 5 mins.)

Set Time @ 72°F

(CRD C-614)

Initial	13 mins.
Final	15 mins.

Shear Bond To Concrete

1 day	800 psi
7 days	1,300 psi

Structural Repair Formula meets or exceeds the requirements of ASTM C-666 for Freeze and Thaw.

PACKAGING/YIELD

20# Pail =	.16 cu. ft. (276 cu. in.)
50# Bag =	.40 cu. ft. (691 cu. in.)
50# Pail =	.40 cu. ft. (691 cu. in.)

Physical properties shown are the result of independent laboratory testing performed per industry recognized test procedures. Laboratory properties aid in determining suitability of the product for the intended application. Field test results may vary due to procedures or ambient conditions such as temperature and humidity. Laboratory reports are available on request.

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.

V-1 GROUT - ADDING PEA GRAVEL

UNISORB V - 1 GROUT PLUS PEA GRAVEL BY THE TRUCKLOAD

Where grouting area and floor space are of sufficient size, up to 50% weight of pea gravel can be added. The gravel should be washed and be of a size per the following:

Under 2" thickness	use no gravel
2" to 5"	use 24 lbs. of gravel 0.12/0.28" diameter
5" to 8"	use 12 lbs. of gravel 0.12/0.28" diameter 12 lbs. of gravel 0.28/0.59" diameter
8" or over	use 8 lbs. of gravel 0.12/0.28" diameter 8 lbs. of gravel 0.28/0.59" diameter 8 lbs. of gravel 0.59/1.18" diameter

NOTE: Add one additional quart/100 lbs. above the water level used without the introduction of gravel.

The following is an example where crushed stone was used per the screen test below:

<u>Screen Opening</u>	<u>Gravel Passing Through</u>
0.75"	100%
0.50"	99%
0.38"	95%
0.25" (#4)	32%
0.13" (#8)	4%

In the above illustration, it was found that a 5-gallon bucket of gravel yielded approximately 75# of material.

A mixing ratio of approximately 49% pea gravel (by weight) was used to obtain one cubic yard of grout (27 cu. ft.). Following are the measurements that were used:

- (51) 48# bags V-1 Non-Shrink Grout (2248#)
- (16) 75# buckets stone (1200#)
- (42) gallons of water* (38 minimum to 46 maximum)

* Gravel must be pre-wetted (saturated) prior to mixing.

ELIMINATING SUPERFICIAL CRACKS IN CEMENT GROUT

SUPERFICIAL CRACKS IN CEMENT GROUTS

This cracking most frequently occurs at areas of stress concentration, anchor bolts and base plate corners, and is characterized by a "hairline" appearance radiating outward toward the edge of the pour.

Testing on cracked areas has shown the cracks are, in fact, surface cracks not extending through the pour. Also, in situations where base plates have been pulled, no cracking in load bearing areas has been found. The cracks have appeared exclusively in unconfined areas where the V-1 material has been exposed to air.

This cracking is the result of plastic shrinkage occurring on surfaces (only the surface is involved) exposed to the air. The resulting evaporation causes the material to dry prematurely rather than coming to full, hydrated cure. The problem is made worse by trowel finishing as the surface evaporation rate is accelerated by this process.

The presence of these cracks seems to be greatest in areas where the finished grout cross section is equal to or exceeds the recommended 4" maximum, making form and foundation design an important consideration as well. The appearance of these cracks in no way jeopardizes the integrity of the finished grout (where there is no air exposure, no surface cracking can occur).

These cracks can be eliminated if the following procedure is followed:

1. Do Not Trowel Finish V-1

V-1 surface areas should be left in an "as poured" condition. The top of the material may be struck after the form is filled to provide a level surface and the material may be "puddled" if desired (puddling is the process of working the material rapidly for a few strokes with a stick, shovel, or other instrument with a motion similar to that employed in the churning of butter to assist the material in seeking its own level).

2. Cover Poured Material IMMEDIATELY To Prevent Water-Loss Evaporation

The application of wet burlap to fresh grout is acceptable but may leave a textured surface. This can be avoided by following the alternative procedure of "tenting" the area with polyethylene film to prevent evaporation water loss. Provisions for tenting should be *made prior to the grout pour to permit it to be accomplished IMMEDIATELY* upon completion of the pour.

BASIC APPLICATION TECHNIQUES (CEMENT BASED)

The following are basic techniques to follow when using most UNISORB® cement-based grouting products. Refer to the specific product data or instructions printed on the container for information that will be relevant to the product being used.

CONCRETE PREPARATION

Old Foundations

- Bond to good, sound, clean concrete.
- Clean to remove dust, dirt, oil and grease.

- Acid etching, degreaser or mechanical abrasion may be necessary.
- Remove loose and crumbling concrete to sound concrete.
- Epoxy, urethane, and other floor sealers must be removed.
- Cleaning agents utilized must be completely neutralized before grouting.
- Bonding agent may be used if desired.

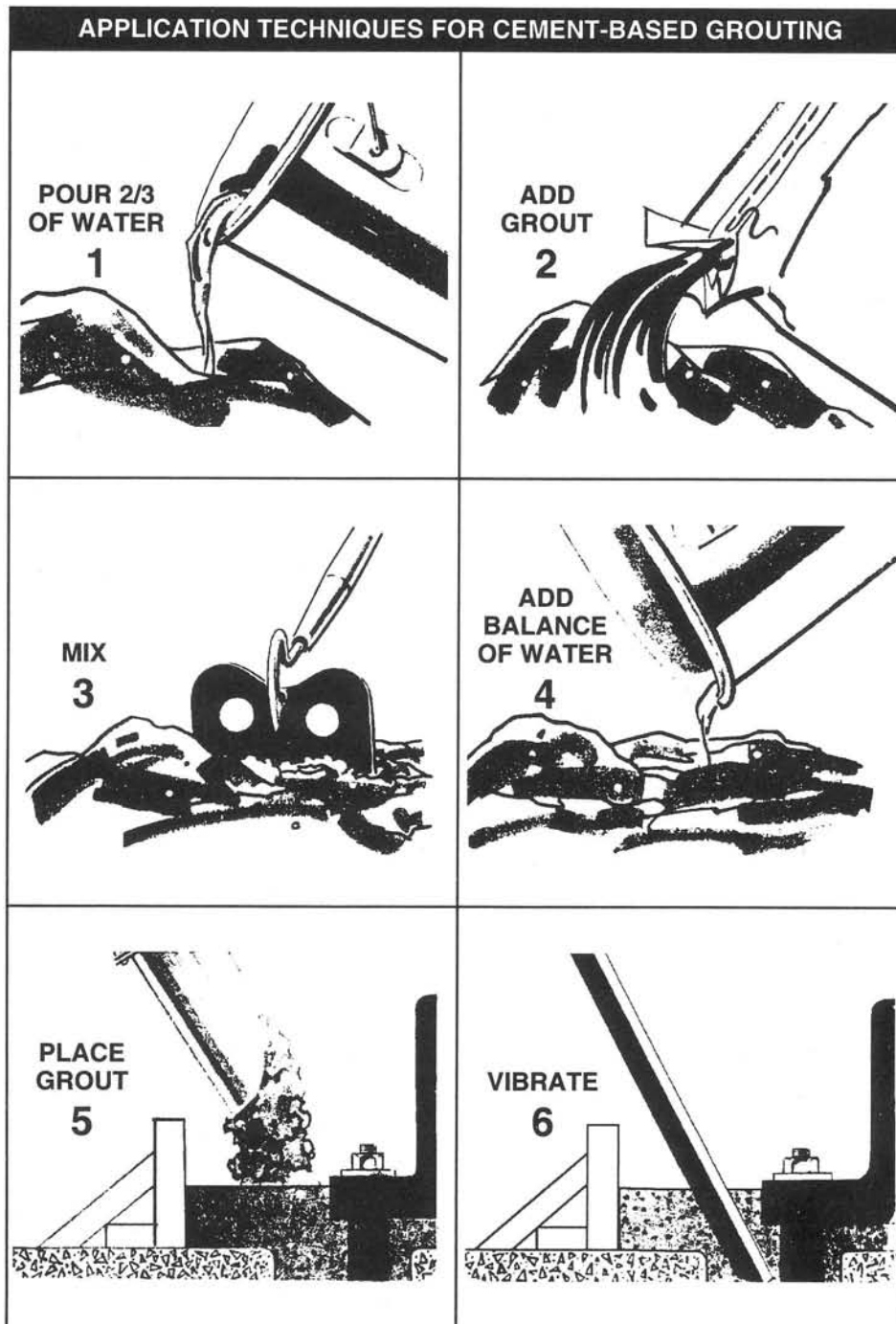
New Foundations

- Avoid over finishing. Highly finished surfaces often have a weak surface layer which must be mechanically removed to sound material.

FORMING

Anchor holes may be formed prior to concrete pour or may be core drilled. Corrugated steel tubing may be used and left in the concrete. Plastic and smooth side tubing should be removed. Do not wax forms and do not melt foam cores with turpentine or similar solvent. Avoid coating concrete with materials to which grout will not bond. Core drilled holes need to be cleaned with a wire brush to assure all concrete dust is removed.

Forms around bases should extend around the complete perimeter, allowing a 1-2" space for air to escape. Allowing a 3-4" space on the side to be poured will facilitate placement of grout. Forms on this side should be high enough to hold a quantity of grout while it is flowing under the base. Forms should be about 1" above the bottom of the base on all other sides. Amount of free grout not under the equipment should be held to a minimum. The use of a bonding agent is recommended where large areas of free grout are necessary.



BASIC APPLICATION TECHNIQUES (CEMENT BASED)

Forming should allow for rapid and continuous placement of grout. All bases in contact with grout should be clean and free of scale, rust, oil and paint.

PRE-WETTING

Keep area to be grouted wet for 24 hours prior to grouting. This may be accomplished by flooding the area and removing the water immediately prior to grouting or by covering with wet burlap and keeping it wet until grouting. In the event that pre-soaking may not be possible, suitable sealing agents may be utilized. Consult factory for recommendations.

MIXING AND PLACING

- Grout may be mixed by hand or in a paddle-type mortar mixer.
- Place about $\frac{2}{3}$ of the desired water in the mixer, add grout and mix to a uniform consistency.
- Add remaining water until the proper flow of mix is achieved. Usually the first mix will require additional water to "wet" the equipment.
- Do not mix more than can be placed. Grout should never be "re-tempered".
- When grouting bases, mix grout rapidly and continuously as fast as it can be placed so that it continues to flow under the base.
- Pour from one side only so that air is forced out ahead of the grout.
- When grout has flowed completely under the base, it should be brought up the side approximately $\frac{1}{4}$ " to $\frac{1}{2}$ ".
- Grout may be pumped, rodded or vibrated to facilitate placement.
- Finishing is not required, but may be cut back to give about a 15 degree slope if required for fluid run-off. This should be done prior to removal of grout forms.

CURING

- Grout must cure and not dry out. Wet burlap is the best way to prevent premature water loss.
- Keep grout moist for 24 hours.
- In most cases the grout can be considered "cured" in 24 hours, although it is still building strength.
- For best results anchor bolts are not tightened, nor machine alignments started until 3 days after grouting. If necessary, however, the alignment process can be started after 24 hours. (See Temperature Considerations below.)
- Auxilliary portions of machine installation or assembly, such as hydraulic or electric connections, can always be started after 24 hours.

TEMPERATURE CONSIDERATIONS

The higher the temperature, the faster the set. The lower the temperature, the slower the set. Normal winter and summer concreting procedures should be observed in temperatures below 45° F and above 90° F.

For additional information for cold and warm placement refer to ACI guidelines.

Special procedures for low temperature:

- Store bagged grout in a warm dry place (70° F) before use.
- Raise bed plate and foundation temperature with steam, infrared heaters, etc., before the grout is placed.
- Pre-heat the mixing water to 140° F.
- After grout is placed, cover the material to retain warmth. The warm water will hasten the initial setting time. Under extreme conditions, initial development of compressive strength will not occur as rapidly.
- Non-chloride type accelerators may be used according to manufacturer's instructions.

Special procedures for high temperature:

- Provide shade for area to be grouted.
- Use cool or cold mixing water to lower the temperature of the grout mix to 60° - 70°F.
- Poured grout should be protected from hot sun.

If there are any unusual conditions call the Unisorb office.

PRECAUTIONS

Cement products can dry, irritate and damage eyes, skin and mucous membranes. Hypertensive persons may develop an allergic dermatitis. When wetting with water, cement products can cause alkali burns without warning; no heat is sensed. Limit exposure by using barrier creams, gloves and protective clothing, including dust mask and goggles in dusty environments. Upon eye contact rinse eyes immediately for 15 minutes and get prompt medical attention. Wash exposed skin with soap and water and remove soiled clothing.

Consult the specific Material Safety Data Sheets (MSDS) for all safety data.