

**APPENDIX C Training Course FOR INSTALLERS USING THE CINTEC
REINFORCEMENT & ANCHORING SYSTEM**



**Reinforcement Systems
&
Masonry Anchoring
Training Course
FOR INSTALLERS USING
THE CINTEC REINFORCEMENT &
ANCHORING SYSTEM**

IMPORTANT NOTICE

ALL TRAINING IS CARRIED OUT ON SITE

**CINTEC ARE NOT BUILDING CONTRACTORS NOR ARE THEY A
DRILLING CONTRACTOR.**

THIS COURSE DOES **NOT TEACH DRILLING.**

**THE COURSE IS INTENDED TO TRAIN ON HOW TO INSTALL CINTEC'S
MASONRY ANCHORING & REINFORCEMENT SYSTEMS ONLY**

CINTEC ACKNOWLEDGES THE ASSISTANCE RECEIVED FROM THE SEALANT,
WATERPROOFING & RESTORATION INSTITUTE & THE  **alliance**
An OSIA Cooperative Program

WWW.CINTEC.COM



A Brief History of the CINTEC REINFORCEMENT & ANCHORING SYSTEM

WE DESIGN AND MANUFACTURE THE WORLD'S MOST INNOVATIVE
STRUCTURAL ANCHORING AND REINFORCEMENT SYSTEM

As the designer and manufacturer of the pre-eminent reinforcement and anchoring solution for masonry structures, Cintec™ has cemented its reputation internationally.

For over a quarter of a century, Cintec™ has secured and reinforced historic and historical buildings, masonry bridges, monuments, railway structures, retaining walls and harbour walls.

The patented Cintec™ reinforcement and anchoring system is straightforward: injecting a proprietary cementitious fluid grout into an anchor surrounded by a fabric sock, which has already been placed in an oversized drilled hole. The reinforcement system's ingenuity lies in its versatility. Drawing on decades of experience and testing, our designers can customize it to any specification.

Our engineered solution reinforces an array of materials—stone, concrete, clay, terra cotta, adobe, and even timber. It can be used under water and in weak substrates.

Even as it restores, stabilizes, strengthens, and repairs, the system does not compromise the parent material. And because the reinforcement and anchoring system becomes part of the structure, it does not visibly alter a structure's appearance.

From intricate wall ties to solid bar anchors over 30 metres (100 feet) long, Cintec™ will develop the reinforcement and anchoring solution that will fit your project.



ADVANTAGES

The Cintec™ reinforcement and anchoring system is simple and easy to use, with fast installation and minimal cleanup. But its advantages go far beyond ease of use.

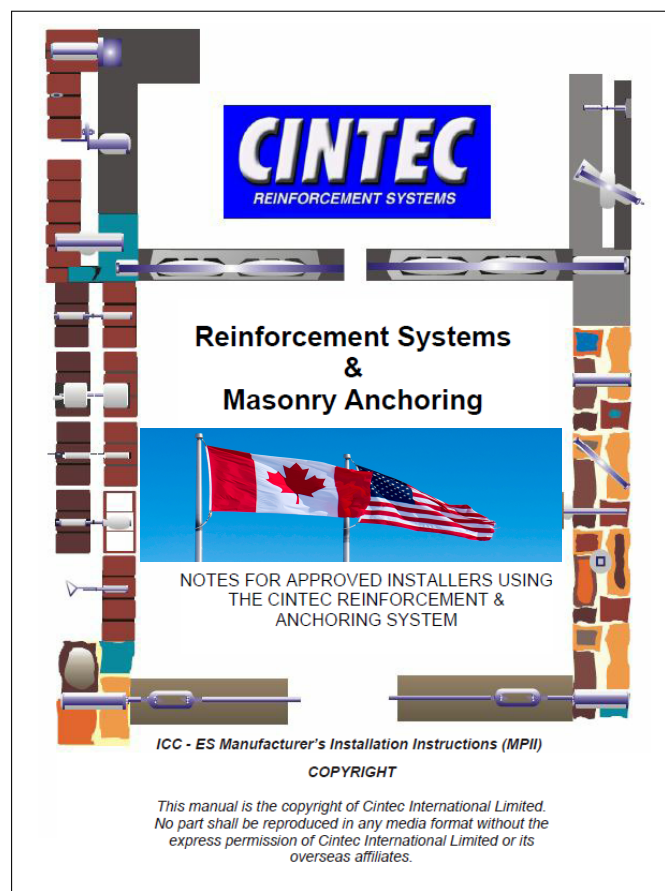
Tested and Approved Worldwide	Unfailing Quality	Remarkable Versatility
• Approved by engineers, government agencies and building codes worldwide • Laboratory-tested over a 40-year accelerated life cycle • Withstands freeze-thaw cycle without shrinkage or loss of strength • Recognized for use in world heritage, landmark and heritage structures • Fire Resistant Anchor Functions normally after two-hour destructive fire testing • Discrete and finite element analysis available where appropriate	• Presstec™ grout is cementitious, not an epoxy resin • Presstec™ is inorganic, non-absorptive and sympathetic to the substrate • Every batch quality-tested • Reinforcement and Anchoring system creates both a mechanical and cementitious bond • All installers are certified with hands-on training • Can be concealed within the fabric of the original structure • Minimal disruption during installation • Anchors can be post-tensioned	• Reinforcement and anchoring systems are custom-designed for each application • Can be used in weak substrates • Can be used under water • Alternative to the dismantle-and-rebuild approach • Solution of last resort to save buildings from demolition • Flexibility in positioning entry points for drill holes, facilitating installation • Optimal system for seismic upgrading of most unreinforced masonry structures and hardening of existing buildings to resist the effects of a blast

Cintec's training program has been in existence for over 30 years. Cintec's products are not available over the counter and are only sold to existing Approved contractors or Contractors agree to be approved.

Training only takes place at the location where the project is being carried out.



Course Outline & Contractor Training Manual



OVERVIEW – CINTEC CERTIFICATION

We recommend a minimum of 5 Anchors of each type [as indicated on CINTEC identity card] per person must be fully installed including grout mixing to complete the course

THE TRAINING COURSE

The object of the training course is to give the installer a complete knowledge of the Cintec Anchoring System. During the course, the Cintec Anchoring System is demonstrated and the installers given hands on experience as to the techniques of installation.

Upon completion of the course, successful trainees are certified and issued with an identity card. The Company is then entered onto the Cintec Approved Installers list and referred to clients as needed.

THE CERTIFICATION/INSTALLERS MANUAL

The certification procedure and its accompanying training manual provide a basic guide to the installation of the Cintec Anchoring System. While it provides a firm basis for its use, it cannot comprehensively cover all possible applications. Additional information and training is available from Cintec Reinforcement Systems subject to prior arrangements.

Grout and grout mixing are presented. This stage is the most important in the application of the Cintec Anchoring System. The grout has been carefully designed and if mixed in clean equipment and according to specified procedures, successful grouting can be routine. Site and equipments cleanliness are fundamental to safety and successful installation.

Successful grout injection relies on good treatment of both anchors and grout from the moment of their arrival on site. Emphasis is placed on their careful storage and handling.

The operation of the grout pressure pot is detailed in the manual along with graphical illustrations. Emphasis is placed on the requirement for cleanliness for all aspects of the mixing and grouting. Graphical illustrations are given of the steps in the grouting procedure, together with details of the customary range of injection pressures.

The two stages of mixing the grout are detailed carefully. The specified procedure leads to a grout which is easily and successfully injected. Details are given to enable the installer to monitor the mixing procedure and subsequent injection to ensure the grout injection is successful. Details for hot and cold weather grouting are also given.

Anchor injection is specifically illustrated, since this provides visual and tactile evidence of successful anchor installation. Attention is drawn to the visible excess milk grout which should be present at the front of the sock and front of the anchor should be firm to the touch and not move in any direction. The excess grout milk is washed off immediately.

IDENTITY CARDS

An installer is required to carry his/her identification card on site while undertaking all work requiring the use of the Cintec Anchoring System. The card must be available upon request to all authorized site and Cintec personnel. Cintec carries the responsibility for the product while the installer has the responsibility to carry out the work in a professional manner. You will be required to supply the following:

All holes must be drilled prior to the instructor arriving on site. We Recommend that a Minimum Of 5 HOLES PER PERSON BEING TRAINED MUST BE DRILLED. Anchors to be installed must also be on site

Injection kit (should you require one)

High powered drill for mixing

Access to clean water

Safe working access must be provided to all areas where anchors are to be installed.

Each person is to supply 2 (two) passport type photos. You may certify up to 5 people.

Reasonable Accommodations/Lodging should the instructor be required to travel to your area.

The cost of Training will differ based on the type and length of anchors to be installed. Training costs vary from \$1,500 per day plus reasonable travel and hotel costs if necessary



Reinforcement Systems & Masonry Anchoring



NOTES FOR APPROVED INSTALLERS USING
THE CINTEC REINFORCEMENT &
ANCHORING SYSTEM

ICC - ES Manufacturer's Installation Instructions (MPII)

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THE CINTEC TRAINING COURSE

References to "Cintec" in this document are to the companies Cintec International Ltd (UK), Cintec America Inc., Cintec Reinforcement Systems Ltd or Cintec Australasia Pty Ltd, or to the product manufactured and marketed by those companies, unless contrary to the context.

The object of this training course is to give the installer a complete knowledge of the Cintec Anchoring System.

During the course you will be shown and given hands on experience in the installation techniques used in the Cintec Anchoring System.

Upon completion of the course, successful trainees will be certificated and issue with an identity card. Your company will then be entered onto our list of approved installers.

IDENTITY CARDS



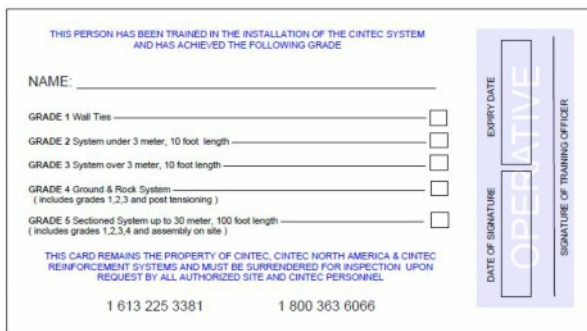
The image shows a template for a Cintec Certified Installer identity card. It features the Cintec Reinforcement Systems logo in a blue box on the left. To the right is a large red rectangular box for a photo. Below the logo, the text "CERTIFIED INSTALLER" is underlined. At the bottom, there are two lines: "SIGNATURE OF CARD HOLDER" and "EXPIRES 3 YEARS FROM DATE OF SIGNATURE SEE REVERSE".

You will be required to carry this identification card on site while undertaking all work requiring the use of the Cintec Anchoring System.

This card must be shown to all authorized site and Cintec personnel upon request. Failure to carry and produce your identity card may terminate your right to remain an approved installer.

As manufacturers, we carry the responsibility of the product thus giving you the responsibility to carry out the work in a workmanlike manner.

This identification card is valid for three years only, after this time period reassessment will be necessary.



The image shows a template for a Cintec training certificate. It includes a header stating "THIS PERSON HAS BEEN TRAINED IN THE INSTALLATION OF THE CINTEC SYSTEM AND HAS ACHIEVED THE FOLLOWING GRADE". Below this is a section for "NAME:" followed by a line. Then, there are five rows for different grades, each with a checkbox: "GRADE 1 Wall Ties", "GRADE 2 System under 3 meter, 10 foot length", "GRADE 3 System over 3 meter, 10 foot length", "GRADE 4 Ground & Rock System (includes grades 1,2,3 and post tensioning)", and "GRADE 5 Sectioned System up to 30 meter, 100 foot length (includes grades 1,2,3,4 and assembly on site)". To the right of these rows is a vertical box labeled "OPERATIVE" with "DATE OF SIGNATURE" and "SIGNATURE OF TRAINING OFFICER" labels. At the bottom, there is a disclaimer: "THIS CARD REMAINS THE PROPERTY OF CINTEC, CINTEC NORTH AMERICA & CINTEC REINFORCEMENT SYSTEMS AND MUST BE SURRENDERED FOR INSPECTION UPON REQUEST BY ALL AUTHORIZED SITE AND CINTEC PERSONNEL". Below the disclaimer are two phone numbers: "1 613 225 3381" and "1 800 363 6066".

Any new employees joining an approved company must receive training from a Cintec representative before they can install the Cintec Anchoring System.

EQUIPMENT REQUIRED FOR THE INSTALLATION OF THE CINTEC ANCHORING SYSTEM

Potable Water
Water Pipe
Electric Power
Extension
Toolbox (screwdriver, pliers, ASS'T wrench, etc.)
Sharp Knife (exacto)
Electrical tape
High Speed Drill (550 RPM minimum)
Air compressor (100 psi) tank capacity 10 gallon
Pressure pot*
Mortar mixing tool*
Injection control valve*
Plastic injection tip*
Sieve / Strainer*
20 liter buckets (2) (clean)*

* Supplied with the injection kit if purchased.



Cintec recommends a pressure pot of at least 10 liters (2.5 US gallons). This can be provided as part of an installation kit for the installation of the Cintec system by Cintec (see Appendix D).

An equivalent pressure pot may be used but it must be able to be pressurized from 200 kPa to 600 kPa. The outlet on the pressure pot needs to be altered to accept a ½" (1.27 cm) BSP hose adapter with 4 metres (12'0") of reinforced ½" (1.27 cm) tubing and a ½" (1.27 cm) quarter turn ball valve. A ½" (1.27 cm) hose adapter or threaded attachment needs to be screwed into the valve to enable plastic mastic nozzles to be pushed or threaded onto the front of the valve. This assembly will then serve as the grout delivery hose and control valve. For large anchors using grout delivery tubes, quick-connect hose fittings may be used. Contact Cintec for details.

All equipment must be kept in a clean condition. Do not use oil or releasing sprays inside the pressure pot as this may contaminate the grout.

Safety goggles and gloves must be worn at all times when mixing and injecting grout.

INSTALLATION

Drilling

Carefully set out the anchor position using a wax crayon or chalk, as per specifications, or as directed by the structural engineer or supervisor.

Select the drilling method specified:

-Wet diamond - dry diamond - rotary percussion - or other

Drill the hole to the required depth of the anchor and the embedment depth required.

Remove all debris and cores from the borehole and check the depth.

Flush out all bore holes with water or compressed air to remove all dust and debris.

Wash off all stains immediately.

Drilling blind into substrates requires special care. Substrates must be checked to ensure that they are as indicated. If not notify the engineer or supervisor. A particular problem is ending the drill hole in a void larger than the anchors expansion capabilities. Careful checks must be made if this is suspected and the engineer or supervisor informed.

Boreholes in loose material must be sleeved immediately after drilling to facilitate anchor insertion and prevent the need for re-drilling.

Grout mixing

The grout is packed in 25 kg (56 Lbs) bags and is mixed with clean cool water.

The normal mixing ratio is 5 litres (1.32 US Gal) of water to one 25 kg (56 Lbs) bag of grout. One 25 kg (56 Lbs) bag will yield 15.5 litres (4.09 US Gal) of fluid grout when mixed. **Please read and confirm mixing instructions on the grout bag.**

The 5 litres (1.32 US Gal) of water can be increased by 10% (500ml OR 0.132086 US Gal) in hot weather (20°C +/-68°F) and when the substrate is very dry and porous or the injection process is through very small injection tubes.

Do not increase the water content outside of these parameters, as this will considerably weaken the strength of the set grout.

The grout must be mixed as follows:

Place 4½ litres (1.18877 US Gal) of clean/cold water into a clean mixing bucket and slowly add approx. 3/4 of one bag of Presstec grout while mixing.

Add the final ½ litre (0.11351 US Gal) of water and the remaining 1/4 bag of grout.

Continually mix the grout for 4 minutes removing all the dry mixture from the sides of the bucket.

Allow the mixture to stand for 5 minutes, during which the mixture will start to thicken, the amount the mixture thickens will depend on the ambient temperature and the temperature of the dry grout and water.

At this stage some or all of the 10% extra water may be added to achieve a smooth creamy texture with no peaks forming on the surface.

HOW TO MIX

See also hot weather and cold weather procedures

4½ LITRES (1.135104 US Gal) OF WATER
=



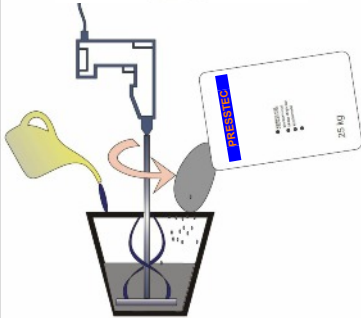
Very clean bucket or container

+ 1/2 LITRE (0.11351 US Gal) OF WATER



Graduated plastic pitcher

25 KG (56 Lbs) BAG



Electric mixer capable of 500 rpm



4 minutes of continuous mixing.



Allow to stand for 5 minutes



Re-mix and add up to 10% (550ml or 0.124861 US Gal) of water if required.

Installation then proceeds:

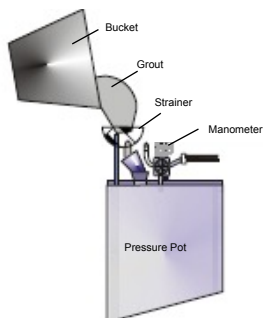
Pour the mixed grout into the pressure pot through the sieve.

Pressurize the pot from 300 kPa to 500 kPa (40-72 psi) dependent on the type and length of anchor being installed.

Cut the plastic mastic nozzle to fit the anchor's orifice. On anchors with injection tubes, prime the tube with water and cut the mastic nozzle to fit over the injection tube.

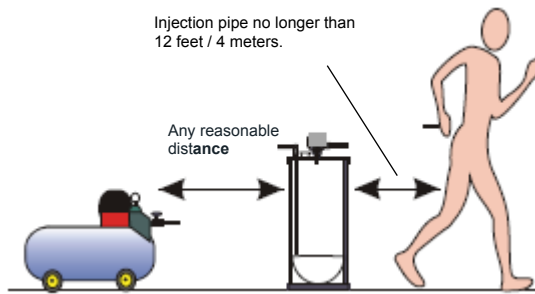
Test the grout flow into a suitable bucket. If the grout flow is continuous and of sufficient pressure the anchor can be injected.

Grout is introduced into pressure pot through a sieve

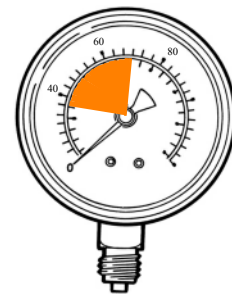


Injection pipe no longer than 12 feet / 4 meters.

Any reasonable distance



Compressor with a minimum of 2.6 cu. ft. and 90 PSI.



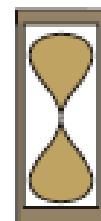
Injection limits between 300 & 500 kPa (40-72 psi)



Hand held grouting gun for small quantities



Center the anchor body in the hole.



Pot life 60 minutes dependent on temperature

ANCHOR INSERTION

Carefully unpack the anchor and check there has been no damage to the fabric sock during transit.

All damages must be reported to Cintec.

Small tears or rips in the sock can be repaired using a needle and strong cotton and/or a hot-melt glue stick.

Do not shorten the length of the sock on the anchor.

At this stage the anchor must be handled with extreme care and should not be unwrapped until required.

Some long anchors require sleeves to protect the anchor during insertion, wherever possible use sleeves.

Immediately prior to insertion wet the anchor completely with clean water and position the sock evenly along the length of the anchor.

Long anchors should be wet after insertion into the borehole

N.B. Do not allow the sock to remain completely saturated with water for a long period as this may cause the fabric sock to shrink.

Place the anchor in the borehole and carefully push the anchor in, lifting it over any fissures or voids, do not force or twist the anchor into the hole.

Install the anchor to within 50 mm (2") of the face of the brickwork (do not push completely in yet.)

ANCHOR INSTALLATION

Carefully cut the nozzle to fit over the injection tube and position the anchor to the specified depth (minimum 25 mm or 1" beyond face of brickwork).

Prior to the mixing and injection of the grout, the equipment should be primed and checked with clean water to ensure that the injection equipment is working and that there are no blockages.

Turn on the control valve and the grout will flow to the rear of the anchor and inflate the sock along the length of the anchor to the front.

Rotate the anchor slowly and carefully if necessary, in a circular motion to facilitate the grout flow and to ensure the anchor is centred in the borehole upon completion.

At this stage the anchor will be felt to be locking in the borehole and grout milk will appear at the front of the anchor (note the colour change in the sock).

Maintain the pressure until the grout milk has stopped flowing and the sock at the front of the anchor cannot be easily compressed.

Use a sponge or cloth during this process to soak up the excess grout milk and avoid the milk running down the face of the brickwork/stonework.

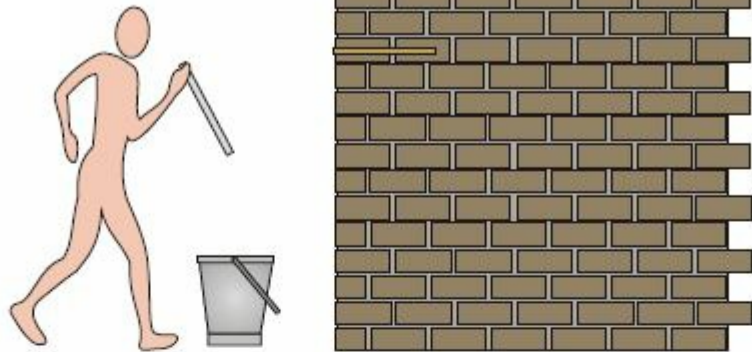
The grout, anchors and pressure pot must be stored in a container or room with a temperature of no less than 10°C (50°F).

The clean water used for mixing must be within the temperature range of 15°C - 20°C (59°F-68°F).

ANCHOR INSTALLATION

SHORT ANCHORS

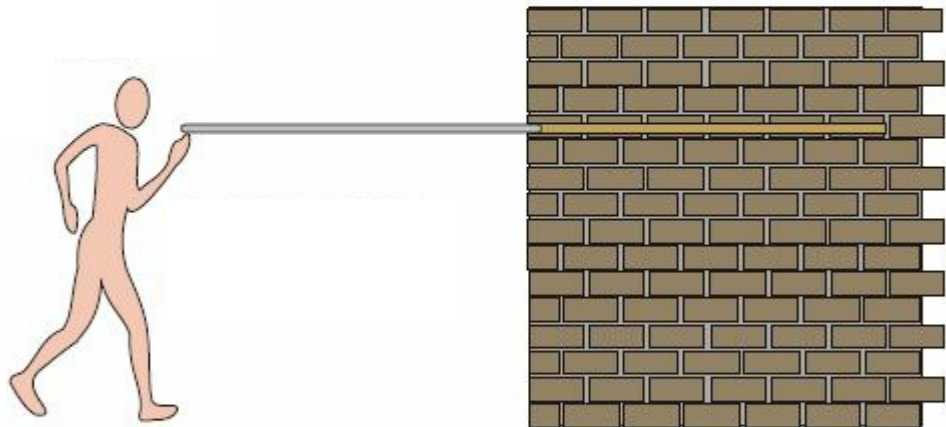
Pre wet short anchors
before installation



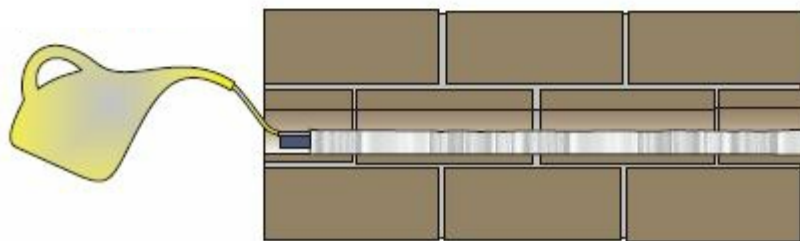
LONG ANCHORS

Pre wet long anchors
after insertion

Ensure sock is evenly distributed along the full length of the anchor as the anchor is installed. Do not twist or force the anchor as it is pushed into the drilled hole.



Prime any injection tubes with clean water prior to injection.



Any grout or milk on the wall must be washed off immediately. Please note that the anchor is not fully inflated until the grout milk has stopped flowing through the sock. Pressure must be maintained to allow this to be achieved.

With large injection orifices, a suitable plug must be placed in the injection port immediately after removing the nozzle.

STUDDING AND SOLID BAR (REBAR) ANCHORS, THE NORMAL INSTALLATION STILL APPLIES, BUT THE FOLLOWING METHOD NEEDS TO BE ADOPTED TO FACILITATE THE INSTALLATION.

When inserting the anchor, ensure that the injection tube is towards the top of the borehole – NEVER force or twist the anchor into the hole.

COLD WEATHER GROUTING

The installer shall ensure that the minimum temperature of the grout at the time of injection is 7°C (44.6°F) and the temperature of the injected grout does not fall below 5°C (41°F) for a period of twenty-four hours from the beginning of inflation.

Core holes must be at a minimum of 5°C (41°F) prior to anchor installation and maintained above 5°C (41°F) for at least 24 hours after installation. If this is impracticable, cold weather procedures must be adopted with the consent of Cintec.

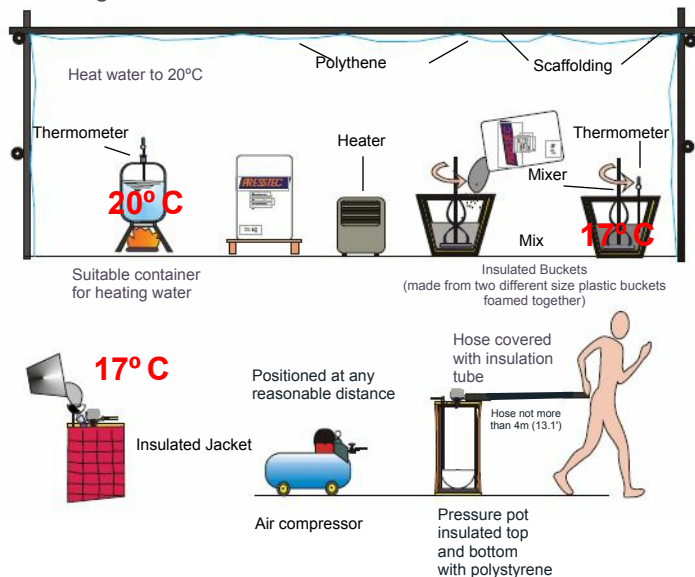
The cold weather procedures are as follows:

- The pressure pot and delivery hose should be lagged with a suitable insulating material.
- The grout, anchors and pressure pot must be stored in a container or room with a temperature of no less than 10°C (50°F).
- The clean water used for mixing must be within the temperature range of 15°C - 20°C (59°F-68°F).
- The borehole temperature must not be below 5°C (41°F) and no ice must be present on the surface of the borehole.
- A suitable shelter needs to be used for the mixing process.
- A screen needs to be erected around the installation area to avoid any wind chill.
- After drilling the borehole, install a suitable plug to maintain a constant core temperature.
- Insert the anchor in the borehole just prior to inflation (as per normal installation methods).
- Mix the grout as per instructions using the heated water and sieve into the insulated pot.
- Inflate the anchor as normal.
- Immediately after inflation, install insulation in the front of the borehole.

COLD WEATHER

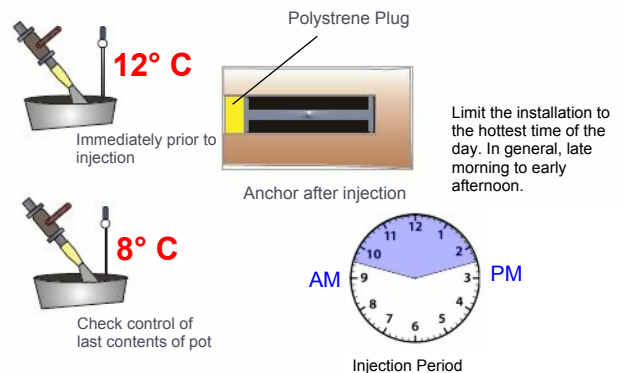
Allow the outside temperature to rise before injecting the grout, i.e. do not inflate first thing in the morning or last thing in the afternoon.
Please note that these procedures must be carried out with extreme care and should not be used unless a representative from Cintec is present.

Shelter prefabricated from scaffolding and polythene sheets to mixing area and anchor installation area to form a wind break.



The temperature of the grout during the injection must never be lower than 8 ° C.

Borehole temperature must be a minimum 5°C (41°F)



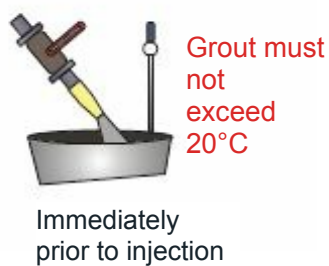
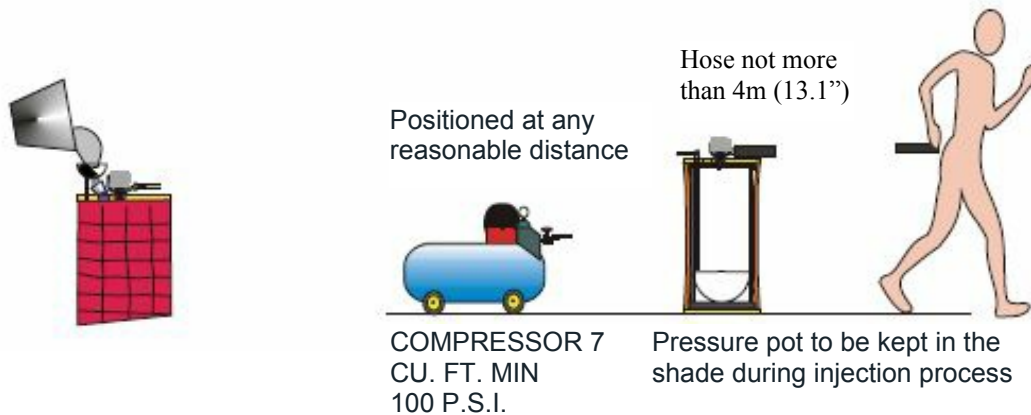
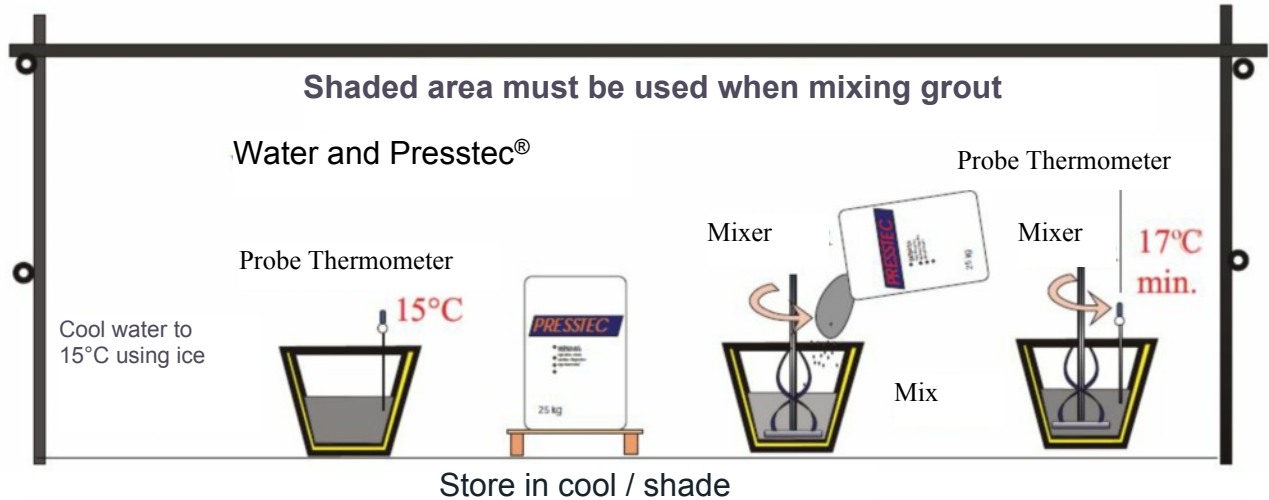
Grout Mix Report

Date: _____
Batch number: _____
Water temperature: _____
Final mixing temperature: _____
Temperature prior to injection: _____
Final pot batch temperature: _____

HOT WEATHER GROUTING

In very hot climates the maximum temperature of the grout at time of injection must not exceed 20°C(68°F). If the temperature exceeds this, the clean water used for mixing must be cooled to 15°C (59°F).

The pressure pot and the borehole must be shielded from direct sunlight. In extreme conditions the pressure pot must be placed in a vat of cooled water or ice.



PROBLEMS ENCOUNTERED DURING INSTALLATION

Grout blockage can occur in the hose and control valve if left in direct sunlight or the mixed grout has not been sieved correctly.

The anchor will not inflate if the sock has been ripped during installation. Remove the anchor from the borehole and check the sock, small tears can be repaired and the anchor reinstalled; if the damage is more severe remove the grout and fabric sock and wash off the anchor completely. Notify Cintec who will arrange a repair procedure.

Anchor fails to fill, only partially fills, fails to reach surface of borehole.

There are a number of factors to consider here, check all the following possibilities:

- Grout mixture too thick either by incorrect mixing or outside the working time of the mixed grout (usually between 45 minutes and 1 hour, dependent on conditions.)
- Grout has passed its shelf life. Check date on side of bag.
- Anchor installed in a borehole of larger diameter than that for which it was designed. Check original order.
- Large voids are present tensioning the sock at the front of the anchor. A larger sock may be required.
- Insufficient pressure in the pot. Shut off the air from the compressor and check that the pressure pot is maintaining a constant pressure. If it is dropping, check for leaks. Remember, what is shown on the gauge is not necessarily what is in the pot because the air can be passing into the pot and straight out through any leaks.
- The sock has twisted during installation, preventing the grout passing the twist. Do not force or twist the anchor while inserting.
- Sock not distributed evenly before insertion, therefore there is too much sock at the front of the borehole preventing complete inflation.
- Failure to wet the sock. This is very important in porous substrates and in dry/hot weather conditions.

IMPORTANT POINTS TO CONSIDER BEFORE ORDERING ANCHORS

The anchor system is engineered for the specific installation, therefore as much information as possible about the type of substrate and possible voids etc. is required to enable us to manufacture the exact anchor to meet your requirements.

The minimum embedment depth of any anchor is 75 mm (3") unless test anchors have been installed to determine the load achievable with a reduced embedment.

The max length of an 8 mm (5/16") or 10 mm (3/8") CHS (circular hollow section) anchor in a 20 mm (3/4") hole is 500mm (20").

For lengths between 500 mm (20") and 1000 mm (39"), a 24 mm (1") hole is required for a 10 mm (3/8") CHS.

The general rule is that the borehole must be twice the diameter of the anchor body utilized. This is only applicable up to certain lengths and the hole size must be increased on longer anchors.

The guidelines are as follows:

8mm (5/16") CHS	20mm (3/4") borehole up to 500mm (20")
10mm (3/8") CHS	20mm (3/4") borehole up to 500mm (20")
10mm (3/8") CHS	25mm (1") borehole up to 1000mm (39")
10mm (3/8") CHS	32mm (1 1/4") borehole up to 2000mm (6'6")
15mm (5/8") x 15mm (5/8") SHS	32mm (1 1/4") borehole up to 3000mm (9'9")
20mm (3/4") x 20mm (3/4") SHS	40mm (1 1/2") borehole up to 3000mm (9'9")
30mm (1 3/16") x 30mm (1 3/16") SHS	60mm (2 1/2") borehole up to 4000mm (13'0")
M10 (3/8") studding	32mm (1 1/4") borehole up to 1000mm (39")
M12 (1/2") studding	32mm (1 1/4") borehole up to 1000mm (39")
M16 (5/8") studding	40mm (1 1/2") borehole up to 3000mm (9'9")
M20 (3/4") studding	50mm (2") borehole up to 4000mm (13'0")

CARE OF ANCHORS AND GROUT

The anchors and fixings are supplied with the correct amount of grout. Care must be taken not to waste grout. The anchors, fixings and grout should be stored safely away from all work areas until needed.

GROUT

Store grout in a dry place off the ground. NEVER allow the grout to become damp, or wet, or store in a place where the temperature can drop below 5°C (41°F).

NB – The marriage of steel and fabric is very delicate and the anchors must be treated accordingly to ensure that no damage to the fabric sock occurs. DO NOT leave anchors lying around on the ground or on scaffolding. NEVER use anchors to test the hole depth.

NOTES AND METHOD STATEMENT FOR GROUT FILLED CARTRIDGES

1. Use small clean container E.G. plastic paint bucket and measuring jug.
2. Remove back plug from container, pour grout contents into the mixing pot, gradually add small amount of clean water stirring until the consistency is a smooth medium thick cream.
3. Mix for at least four minutes with a whisk then allow to stand for a further four minutes and whisk again.
4. Pour the mixed grout back into the container and replace back plug securely.
5. Remove nozzle to remove inner plug and replace nozzle.
6. Place container into master gun, insert nozzle into back of anchor and proceed to pump.
7. Pump until trigger is stiff, hold for 10 seconds, release safety catch and withdraw slowly from the anchor.
8. Repeat the same process for each anchor.

NB – If you use a re-usable mastic/grout gun. These hold approximately ½ litre (0.11351 US Gal) of grout. Therefore 220 ml (0.058118 US Gal) of water to 1 kg (2.2 lbs) of grout is enough for one fill, which will pump 5 RAC standard anchors. The water ratio can be altered slightly dependent on weather conditions. Mix as above for at least four minutes, allow to stand for four minutes, mix for a further minute.

Stages

- | | |
|--------|--|
| Step 1 | Measure 220 ml (0.06 US Gal) of water into a clean container and slowly add 1 kg (2.2 lbs) of grout, whisk thoroughly for four minutes and allow to stand for a further four minutes and whisk again. The mixture should be smooth and creamy with no lumps. |
| Step 2 | Pour mixed grout into front of gun and replace tap assembly. |
| Step 3 | Turn off tap and pressurize gun. |
| Step 4 | Push nozzle on anchor and open valve. When anchor is full, keep pressure on for 10 seconds, close valve and remove nozzle. |

If you use a metal grout gun, grout on occasions collects at the base. To overcome this problem fully empty the gun, and remove excess grout. Swill all parts in a clean bucket of water between each mix.

NB – Metal hand grout guns must be washed and fully cleaned and thoroughly dried, after use. DO NOT oil cylinder as this would contaminate the grout.

Failure to carry out above will result in rusty equipment.

CONSTRUCTION SITE SAFETY CHECK LIST

The information that follows is derived from Cintec experience worldwide. It is supplied in good faith, but is not intended to be used in place of any statutory requirements. Occupational Health and Safety regulations that apply in the area in which the installation is being carried out must be adhered to at all times.

Safe access

- Can everyone reach their place of work safely, i.e. are there good roads, gangways, passage ways passenger hoists, staircases, ladders and scaffolds?
- Are all walkways level and free from obstructions such as stored material and wastes?
- Are there adequate barriers or other edge protection to stop falls from open edges of buildings, gangways etc.?
- Are holes and openings securely fenced off or provided with covers?
- Is there adequate artificial lighting when work is carried out after dark or inside buildings?
- Is the site tidy and are materials stored safely?
- Are there proper arrangements for collecting and disposing of scrap?
- Have nails in timber been hammered down or removed?

Ladders

- Are ladders the right equipment to use for the job or should a scaffold be provided?
- Are all ladders in good condition?
- Are ladders secured near the top (even if they will be used for only a short time)?
- If ladders cannot be secured at the top, are they secured near the bottom, weighted or footed to prevent slipping?
- Do the ladders rise the required minimum distance above their landing places or the highest rungs used (refer to appropriate regulations)? If not, are there adequate handholds?
- Are the ladders properly positioned for access?

Tubular scaffolds

- Is there proper access to the scaffold platform?
- Are all uprights provided with base plates (and, where necessary, timber sole plates) or prevented in some way or other from slipping or sinking?
- Have any uprights, ledges, braces or struts been removed?
- Is the scaffold secured to the building in enough places to prevent collapse?
- If any ties have been removed since the scaffold was erected have additional ties been provided to replace them?
- Are the working platforms fully covered?
- Are boards free from obvious defects such as knots and are they arranged to avoid tipping or tripping?
- Are there effective barriers or warning notices to stop people using an incomplete scaffold e.g. one that isn't fully boarded?
- Where the scaffold has been designed and constructed for loading with materials, are these evenly distributed?
- Does a competent person inspect the scaffold regularly i.e. at least once a week and always after bad weather?
- Are the results of inspection recorded (including any defects that were put right during the inspections) and the records signed by the person who carried out the inspections?
- Is there safe access to the excavation e.g. a sufficiently long ladder? Are there barriers to stop people falling in? Is the excavation affecting the stability of neighbouring buildings? Are stacked materials, spoil or plant stored near the edge of the excavation likely to cause a collapse to the site? If vehicles tip into the excavation, are properly secured stop blocks provided?

Machinery

- Are there any dangerous parts e.g. exposed gears, chain drives, projecting engine shafts?
- Are the dangerous parts adequately guarded?
- Are guards secured and in good repair?

Electricity

- Are all portable electric tools and equipment run from a power supply with earth leakage circuit breaker protection?
- Can you see any signs of damage or interference with equipment, wires and cables? Where required, have power tools been checked and tagged by a licensed electrician?
- Are all connections to power points made by proper plugs?
- Are connections to plugs properly made so that the cable grip holds the cable firmly and prevents the earth wire from being pulled out?
- Are there any overhead power lines? Where anything might touch the lines or cause arcing (cranes, tipper lorries, scaffolding etc.), has the electricity supply been turned off or other precautions taken to prevent such contact with the lines?
- Have underground electricity cables been located (with a cable locator and cable plans), marked and precautions taken to avoid contact with them?

Noise

- Are breakers fitted with muffs?
- Is other plant or machinery fitted with silencers?
- Do workers wear ear protection if they have to work in very noisy surroundings?

Protective Clothing

- Is equipment provided to protect the head, nose, eyes, hands and feet?
- Does the equipment meet at least the minimum standard required by law?
- Do workers wear their protective equipment?

Welfare

- Has a suitable toilet been provided?
- Is there a clean washbasin, soap and towel?
- Is wet weather gear provided for those who have to work in wet conditions?
- Is there a site hut where workers can sit and make tea?
- Is there a first aid box?

Site Cleaning

Site tidiness is the foundation of safety and of a job well done.

Always keep your immediate surroundings clean and clear of debris and unwanted plant. This must sound obvious, but surprisingly few people adopt this procedure. Just taking a few minutes care by putting away unwanted tools and equipment will give more room, work space and a clean and level base to work from, saving you time in the long run. This means that it is safer for you and your workmates. They do not slip, trip or step on articles that have been dropped. A clean site is a well run site.

PRESSTEC® GROUT HEALTH & SAFETY

Presstec® grout has been assessed in accordance with the classification, packaging and labeling requirements of regulations pertaining to dangerous substances in various countries and Cintec takes the view that it is not a dangerous or hazardous substance. Precautions common to the handling of Portland cement, slaked lime and products containing them are applicable to the handling of Presstec® grout.

The only precaution that needs to be taken when handling Presstec® grout is the common sense one of elementary hygiene. Unnecessarily prolonged contact on the skin, particularly when damp, should be avoided. Gloves should be worn when handling Presstec® grout bags. If Presstec® grout is in contact with skin, it should be washed off as soon as possible. If Presstec® grout enters the eye it should be immediately washed out thoroughly with clean water and medical treatment sought immediately. Eye protection and respiratory protection should be worn when working in dusty conditions.

Presstec® grout powder mixed with water releases alkali. Concrete or mortar adhering to the skin should be removed as soon as possible by washing with soap and water. Delay may cause skin irritation. Waterproofing gloves, eye protection, (safety) gum boots, full length trousers, long sleeved shorts and other suitable protective clothing should be worn when working with mortar.

Material Safety Data Sheets

Appended is the European Community "C.O.S.H.H." sheet is provided as the M.S.D.S in accordance with the format provisions of Section 6 of the Code of Practice for the Preparation of Material Safety Data Sheets.

These notes are for guidance only. If you have any queries on the Cintec Anchoring System please contact us at the address below.

CINTEC International Limited
Cintec House, 11 Gold Tops,
Newport, South Wales, NP20 4PH,
Tel: 044 (0) 1633 246614
Fax: 044 (0) 1633 246110

Cintec America Inc
200 International Circle, Suite 5100
Hunt Valley, Maryland, 21030
Tel: 1 410-761-0765
Fax: 613-224-9042

Cintec Reinforcement Systems Ltd.
38 Auriga Drive, Suite 2
Nepean, ON K2E 8A5
Tel: 613-225-3381
Fax: 613-224-9042

Appendix B

CINTEC PRODUCT INFORMATION UPDATE

NO 1/99: ALTERATIONS OF ANCHORS

We have recently experienced a number of instances where the anchors have been physically altered on site without our knowledge or approval. This is an extremely dangerous practice and apart from breaching the conditions of warranty, there is a possibility that the anchors would not meet their performance specifications. We fully understand that, periodically, problems will occur on site, but we ask that you contact us on such occasions so that checks can be made to ensure the anchors perform to the required specifications and the new dimensions can be entered into our records.

NO 1/02: PRESSTEC® GROUT – HEALTH & SAFETY AT WORK

While working on site, an operative was injecting an anchor with Presstec® grout and some of the grout splashed into his eye. The eye was damaged and the operative UNDERWENT Surgery .He was NOT wearing protective goggles.

It is essential that personnel wear goggles while mixing or working with Presstec Grout®. This requirement is specified in the COSHH Statement, is emphasised during training carried out by Cintec staff and is clearly laid down in the Training Manual.



UNDER CONSTRUCTION

UNDER CONSTRUCTION

Appendix D GROUT INJECTION KIT



INCLUDES:

- One pressure pot 10 liters (2.5gal) with preassembled hose and injection valve.
- One Grout mesh screen.
- One mixing paddle with 6" cage.
- Measuring jug marked in liters (or less) increments.
- Three extra injection nozzles.
- One Grout mixing bucket.
- One water measuring pail.
- Glue gun for anchor repair.

PRICE AVAILABLE ON APPLICATION TO OFFICE

*

Tel: [410] 761-0765
Tel: [613] 225-3381
Email: solutions@cintec.com
URL: www.cintec.com

GROUT GUN OPTION FOR SMALL ANCHORS

COX™
A Sulzer Brand

MK™
A Sulzer Brand



<https://www.coxdispensers.com/view-products-grid>

- Check for individual models suited for cement up to 30 OZ. -Available in either Battery or Air operated.

Grout Gun option can only be considered for small anchors.

Tel: [410] 761-0765
Tel: [613] 225-3381
Email: solutions@cintec.com
URL: www.cintec.com



Training Power Point Presentation



INSTALLATION TRAINING 2020

WWW.CINTEC.COM

Website

SAFETY



THE BAR



THE SOCK



WOVEN POLYESTER

THE GROUT

NON SHRINK

GOOD STRENGTH

Wall temperature MUST be above 5° C

Grout MUST be strained



NON PERCUSSIVE DRILLING



Non percussive , dry diamond drilling
recommended but NOT MANDATORY



← PRESSURE GAUGE

← AIR SUPPLY

← PRESSURE REGULATOR

← 10 LITRE S/S PRESSURE POT

← GROUT HOSE

← INJECTION VALVE

ANCHOR INJECTION

THE GROUT (specially formulated)
ALLOWS LOW PRESSURE INJECTION

(Typically 40 PSI / 3 BAR)



HIGH VOLUME PUMP



Higher volume but NOT higher pressure



Holes should have any large drill residue removed but need not be dry or dust free

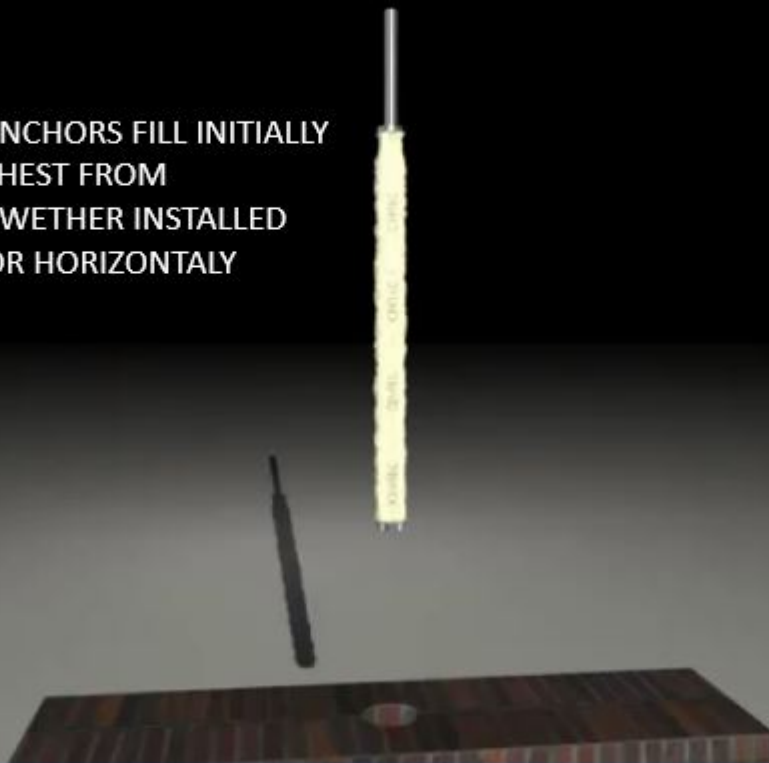


ANCHOR SOCK **MUST** BE
PROTECTED AT ALL TIMES



ANCHOR SOCK AND FILL TUBE
MUST BE WETTED BEFORE
ANCHOR INFLATION

ALL CINTEC ANCHORS FILL INITIALLY
AT END FURTHEST FROM
INSTALLER.... WETHER INSTALLED
VERTICALLY OR HORIZONTALY



drilled hole usually
double anchor body
size

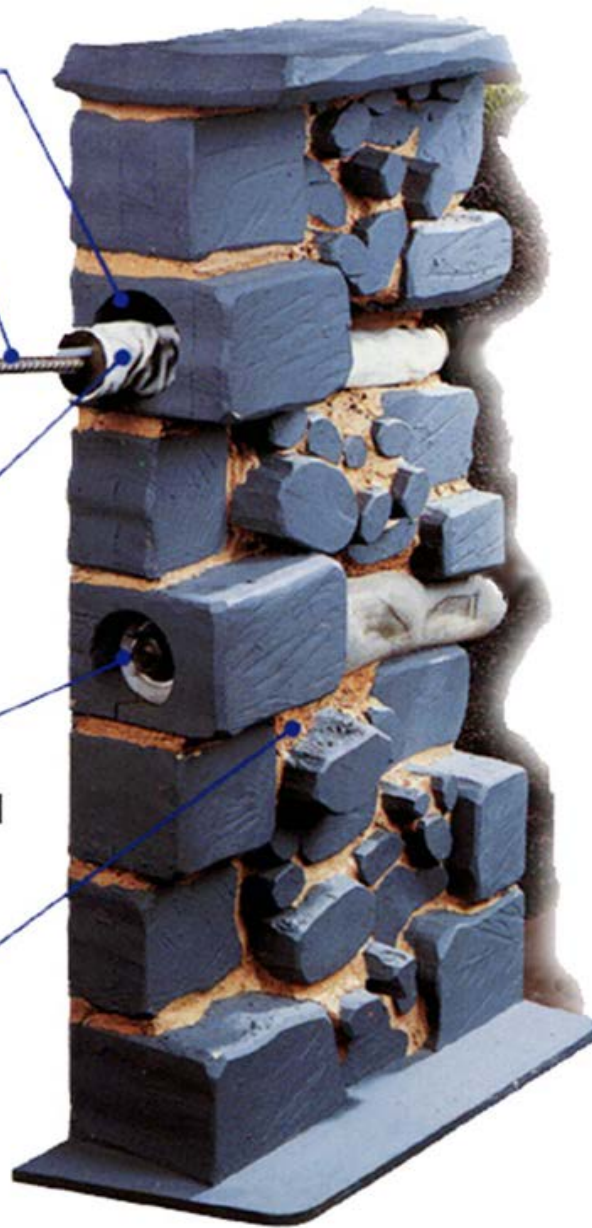
main anchor body
available as a square
or circular hollow
section or solid bar
profile

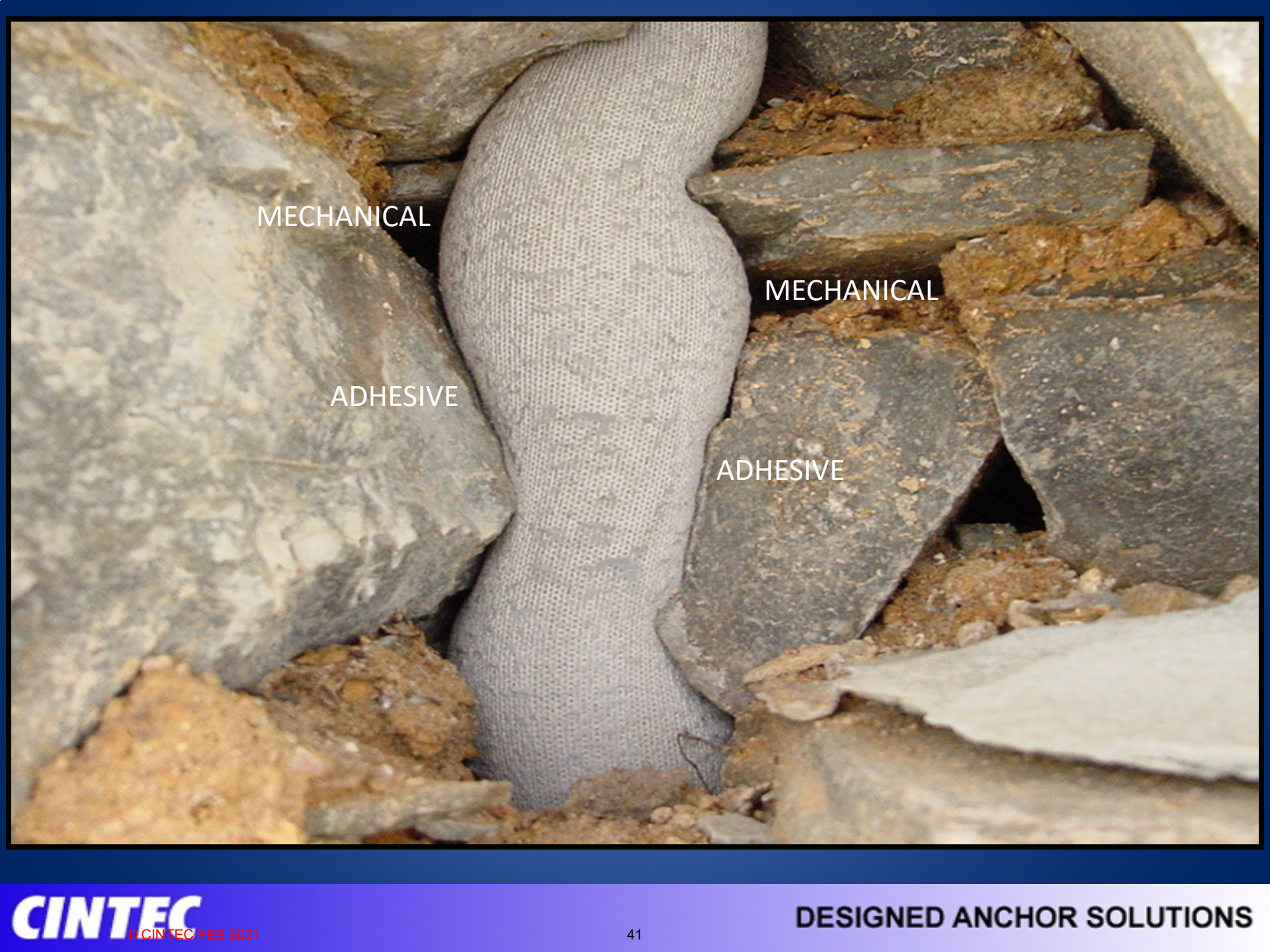
fabric containing
anchor

grout injection moulds
anchor to the shape and
spaces within the walls

inner wall substrate

Model courtesy of
WT Fixings & Combi-tec





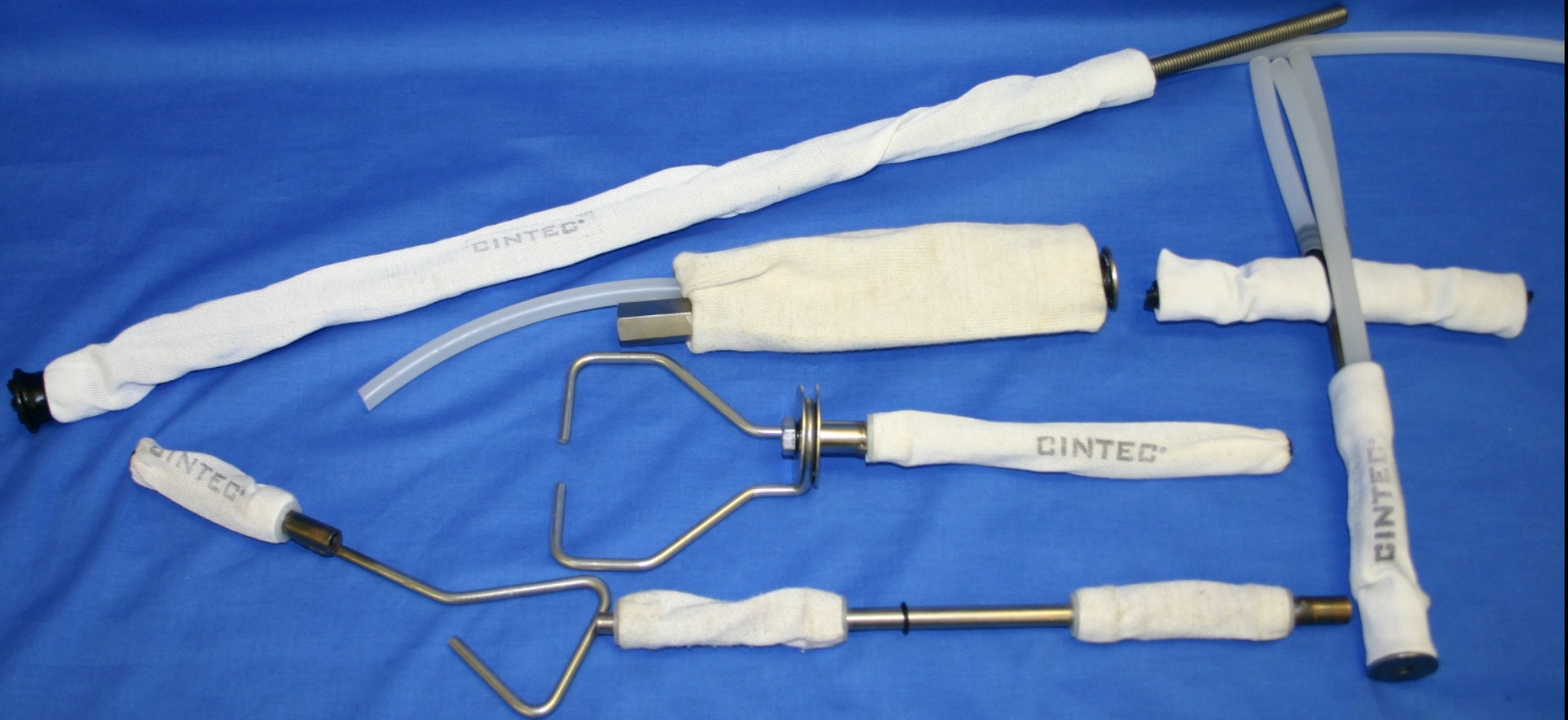
MECHANICAL

MECHANICAL

ADHESIVE

ADHESIVE

PROJECT SPECIFIC ANCHORS





GROUT MILK PRESENT

SOCK IS BULBED

SOCK IS GREY

SOCK FIRM TO TOUCH

CORED HOLE



PATCHED CORE HOLE (NOT WELL DONE)



PATCHED CORE HOLE (WELL DONE)

CORNER REBUILDING



BEFORE



AFTER

Christchurch Cathedral N.S.W



PRINCE'S GATE TORONTO CANADA POST -TENSIONING





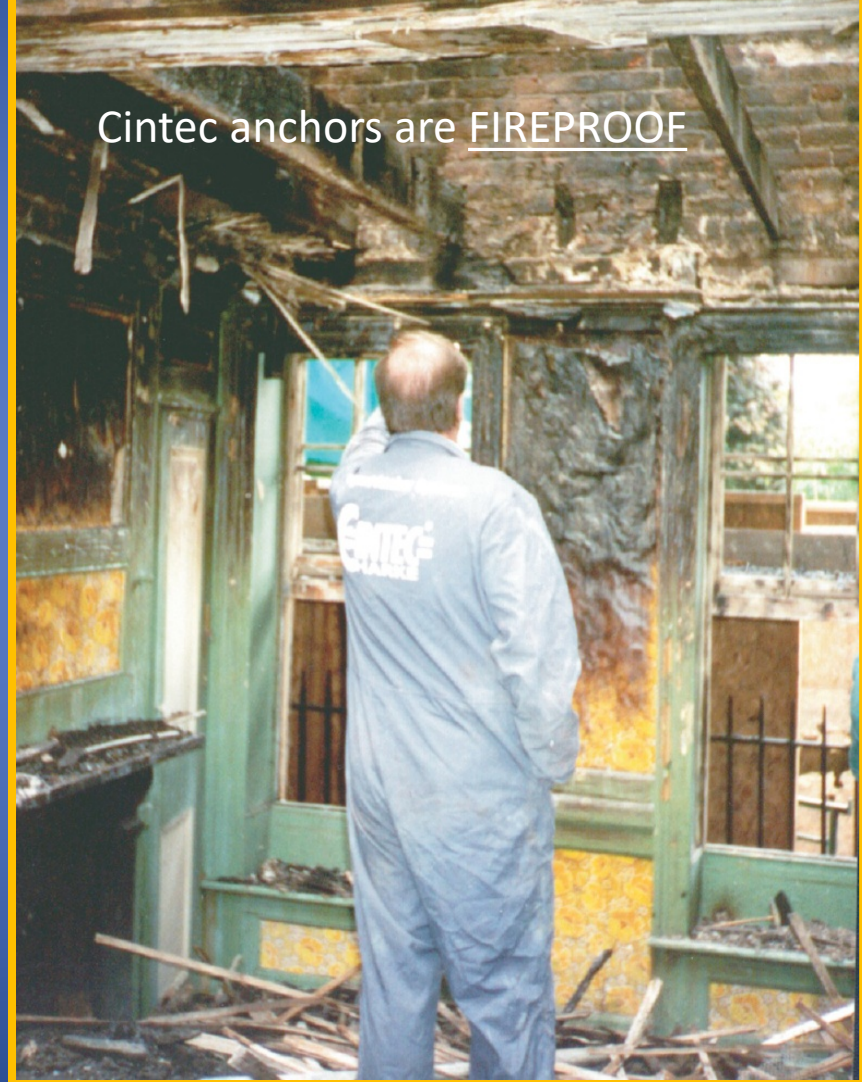
FULLERS BREWERY



FULLERS BREWERY FIRE DAMAGE



Cintec anchors are FIREPROOF



FULLERS BREWERY ANCHOR TESTING





Hole damage due to percussive drilling

No matter how much epoxy/resin is added.....
The attachment cannot be improved!



THE ADVANTAGES

- Custom Designed
- Cementitious
- Highly durable, fireproof
- Controlled grout flow
- Invisible when installed
- Speed of installation



Resumes of Training Staff



**Cintec TRAINING STAFF
TECHNICAL EXPERIENCE**

**Robert Lloyd-Rees, CAHP.FFB.MIABTI
CEO/COO**

Trained as a Building Surveyor in 1960 and has spent over 60 years dealing with the restoration of the built environment...In 1986 was one of the first people to be trained by GÖLZ (UK) Ltd and GÖLZ in Europe in Dry Diamond drilling. Robert has over 40 years' experience with Cintec

Gene Quesnel, Divisional Manager

For the past 14 years, has worked alongside Engineers, Architects and Contractors assisting in the development and application of Cintec anchoring and reinforcement systems to suit their various projects.

A considerable part of his time is spent on-site, training on the proper use and placement procedures of Cintec anchors.

Kent Crawford, BSE, Territory Manager

Kent obtained his BSE at Old Dominion University Norfolk Virginia. As Territory Manager he's responsible for training and certifying all Contractors within his territory.

Daryl Davis

Daryl is Cintec's specialist trainer for all long anchors up to 100 feet +. Daryl has over 30 years' of experience with Cintec Within the last five years has supervised the drilling and installation of over 35,000 feet of masonry drilling and the successful installation of more than 25,000 Cintec anchors.

Patrick Morrissey B.S.C.E.

Patrick looks after the five Boroughs of New York City. He obtained his Degree in Civil engineering from Manhattan College, Bronx, NY and post graduate studies at NJIT. Has over 40 years experience in construction and industry. Pat is also a fellow of I.C.R.I. He has over 20 years experience with Cintec.



TRAINING Course Test



ANSWER

1. All Cintec anchors have three main components:

A

Sock
Vent tube
SS Body

B

Sock
Presstec Grout
SS Body

C

Both A and B

2. Cintec anchors are:

A

Mechanical

B

Adhesive

C

Both

3. All Cintec anchors must be installed in a clean, dry cored hole:

A

TRUE

B

FALSE

4. Presstec grout is normally mixed, 1 bag grout to:

A

6.5 Litres
water

B

5.0 Litres
water

C

4.5 Litres
water

5. The mixing time sequence for Presstec grout after it has been slowly added to water is:

A

Mix 5 minutes
Sit 4 minutes
Mix 2 minutes

B

Mix 4 minutes
Sit 4 minutes
Mix 30 seconds

C

Mix 4 minutes
Sit 5 minutes
Mix 30 seconds

6. The normal "POT LIFE" of Presstec grout is about:

A

15 to 30
minutes

B

45 to 60
minutes

C

75 to 90
minutes

7. The special epoxy in Presstec grout is fireproof:

A

TRUE

B

FALSE

ANSWER

8 Cintec anchors should be wetted before inflation:

A
Always

B
Never

C
Only if core
hole is dry

9 Before putting grout in pressure pot, it must be put through a strainer:

A
If grout is
not smooth

B
Always

C
If left in sun

10 The normal inflation pressure is:

A
30 psi

B
40 psi

C
50 psi

11 Cintec anchors should only be installed when the wall temperature is:

A
Above 10
degree C

B
Above 5
degree C

C
Above 0
degree C

12 The best way to confirm hole depth is to check with anchor to be used:

A
TRUE

B
FALSE

13 Cintec grout is:

A
Cementitious

B
Cementitious with
special epoxy

C
European
epoxy/resin

14 The fill tube on horizontal Cintec anchors, when being inserted, must be:

A
On side

B
On top

C
Does not
matter

ANSWER

15 To insure proper insertion of anchor, it should be:

- | | | |
|---|------------------------------|-----------------|
| <u>A</u> | <u>B</u> | <u>C</u> |
| Screwed in
in a clockwise
direction | Pushed in and
out quickly | Neither |

16 Indicators of proper inflation are:

- | | | |
|---------------------------------------|------------------------------------|-----------------|
| <u>A</u> | <u>B</u> | <u>C</u> |
| Sock turns grey
Grout milk present | Sock bulbous
Sock firm to touch | Both |

17 Cintec anchors may be installed under-water:

- | | |
|-----------------|-----------------|
| <u>A</u> | <u>B</u> |
| TRUE | FALSE |

18 The adhesive pull out strength of Cintec anchors is about:

- | | | |
|-----------------|-----------------|-----------------|
| <u>A</u> | <u>B</u> | <u>C</u> |
| 40 psi | 65 psi | 90 psi |

19 Non-percussive, dry drilling is the only method that can be used when making holes for Cintec anchors.

- | | |
|-----------------|-----------------|
| <u>A</u> | <u>B</u> |
| TRUE | FALSE |

20 No less than a full bag mix of Presstec grout can be made.

- | | |
|-----------------|-----------------|
| <u>A</u> | <u>B</u> |
| TRUE | FALSE |

Score #

Trainee Name: _____ Score %

Date: _____ CINTEC _____



SAFETY



Toolbox Talk: Power Tools

Safety Measures to ensure proper use and avoid serious injuries

Power tools include electric, fuel powered, hydraulic, pneumatic, and powder actuated tools. Always follow manufacturer's instructions on proper use, safety precautions, inspection, and troubleshooting procedures. Maintain power tools in a safe condition.

Proper Use

- Never carry a tool by its cord or lower a tool by its cord.
- Never yank the cord to disconnect it from the outlet.
- Only trained employees are allowed to operate power tools.
- Employees must wear the appropriate personal protective equipment to protect them from particular hazards arising from the use of hand and power tools. For example, employees using these tools may be exposed to falling or flying abrasives (mortar, sand, metal), splashing objects (coatings, paints) or exposed to harmful dusts (grinding mortar joints, flat work prep), fumes, mists, vapors (coatings), or gases. Respirators, hearing protection, or gloves may be needed depending on the tools being used and elements being worked on.
- All power tools should have the cords wrapped up tightly when in storage and not hanging loosely.
- Safety glasses must be worn at all times when operating any type of power tool. No exceptions.
- Store electrical tools in a dry place. If they do get wet, let them dry out for a full 24 hours and then inspect them again to see if the moisture has evaporated before using.
- Remove all damaged portable electric tools from use and tag them "Do Not Use."
- Proper guards are in place and not altered.

Do:

- Do ensure cords from electrical tools do not present a tripping hazard.
- Do inspect and test all power tools daily before use and correct all defects as soon as possible.
- Do protect cords from doors closing on them and pinching the insulation.
- Do disconnect tools when not to use, before servicing, and when changing blades, guards, or bits.
- Do use tools with correct guard, shield, or attachment recommended by the manufacturer.
- Do make sure to use the proper tool for the job.



Don't:

- Do not load tools, such as nails or staples in guns, until immediately before use.
- Do not leave tools unattended in a place where they would be available to unauthorized persons.
- Do not use tools in explosive or flammable environments.
- Do not override, damage, or disable operating switches or safety devices.
- Do not lower or hoist tools using hoses or electrical cords.
- Do not use defective equipment until properly repaired.

Through the OSHA and SWRIInstitute Alliance, the SWRIInstitute developed this toolbox talk for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor.



Review Questions:

- 1) Some employees do not need power tool training.
 - A) True
 - B) **False**: Only trained employees are allowed to operate power tools.
- 2) It is the user's responsibility to inspect the work environment prior to operating any power tool to identify any hazards.
 - A) **True**
 - B) False
- 3) Which one of the following is something you should NEVER do:
 - A) Carry a tool by its handle
 - B) Store a tool in its assigned box
 - C) **Carry a tool by its power cord**
 - D) Clearly mark tools that are inoperable
- 4) Which of the following is a proper safety measure when using a power tool:
 - A) Using guards and shields on all tools
 - B) Always wear safety glasses
 - C) Wear hearing protection
 - D) **All of the above**

Talk Given By: _____ **Date:** _____

Company: _____ **Location:** _____

Printed Name	Signature

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PERSONAL PROTECTIVE EQUIPMENT (PPE)

OSHA requires the use of personal protective equipment (PPE) to reduce employee exposure to hazards when engineering and administrative controls are not feasible or effective in reducing these exposures to acceptable levels. Employers must determine if PPE should be used to protect their workers.

If PPE is to be used, employers must implement a PPE program. The program should address the hazards present; the selection, maintenance, and use of PPE; the training of employees; and monitoring of the program to ensure its ongoing effectiveness.

HEAD PROTECTION

- Workers must wear hard hats when overhead, falling, or flying hazards exist or when danger of electrical shock is present.
- Inspect hard hats routinely for expiration date, dents, cracks, or deterioration.
- If a hard hat has taken a heavy blow or electrical shock, you must replace it even when you detect no visible damage.
- Maintain hard hats in good condition; do not drill; clean with strong detergents or solvents; paint; or store them in extreme temperatures.
- Do not wear your hard hat backwards unless specifically approved by the hard hat manufacturer and your employer.

EYE AND FACE PROTECTION

- Workers must wear only ANSI approved safety glasses, face shields or goggles for welding, cutting, nailing (including pneumatic), or when working with concrete and/or harmful chemicals and to protect against flying particles. Look for Z87 stamped on the frames.
- Eye and face protectors are designed for particular hazards. Be sure to select the proper type to match the hazard that is present.
- Always replace poorly fitting or damaged safety glasses as soon as possible.
- Workers needing corrective lenses must either wear ANSI approved safety glasses with prescription lenses and frames or wear ANSI approved goggles designed to be worn over their regular prescription glasses.

FOOT PROTECTION

- Residential construction workers must wear shoes or boots with slip-resistant and puncture-resistant soles to prevent slipping and puncture wounds.
- Safety-toed shoes are recommended to prevent crushed toes when working with heavy rolling equipment or falling objects.

HAND PROTECTION

- High-quality gloves can prevent injury. Make sure that gloves should fit snugly.
- Always inspect gloves for cuts, tears and discoloration that might indicate excessive wear.
- Hands must be clean before putting gloves on and always thoroughly clean glove exteriors before removing them.
- Glove gauntlets should be taped for working with fiberglass materials.
- Workers should always wear the right gloves for the jobs (for example, heavy-duty rubber for concrete work, welding gloves for welding). Check the Safety Data Sheet (SDS, formerly called MSDS) for detailed information.
- Never use petroleum-based products (Vaseline) under gloves. They can trap chemicals against your skin if they get into your gloves

FALL PROTECTION

- Use a safety harness system for fall protection.
- Where fall prevention cannot be installed, use a “personal fall arrest system” (PFAS). A PFAS includes an anchorage, full body harness, and connector such as a lanyard or lifeline.
- A PFAS must be rigged to limit falls to 6 feet or less without contacting any lower level and limit the arresting forces on the worker to 1,800 pounds or less.
- PFAS components, including safety harnesses, should be inspected before each use for wear, damage and other deterioration.
- PFAS should be designed, installed, and used, under the supervision of a qualified person.

BODY PROTECTION:

- Clothing to protect the body should consist at a minimum of long work pants and a sleeved shirt. When hazardous

liquids, gases, vapors or debris are present, the level of protection needed increases. This may include garments of Tyvek, Nomex, or PVC.

- For jobs that leave clothes very contaminated, bring a set of clean clothes to change into at the end of the day. Wash contaminated clothing separately.

HEARING PROTECTION:

- Wherever it is not feasible to reduce the noise levels or duration of exposures, ear protective devices shall be provided and used.
- Ear protective devices inserted in the ear shall be fitted or determined individually by competent persons.
- Plain cotton is not an acceptable protective device.

Respiratory Protection

- Select the correct respirator based on the hazard.
- Inspect the respirator for missing or worn respirator parts.
- Depending on the type of respirator, the employee must be medically cleared, trained and respirator fit tested prior to respirator use.
- Do not share respirators and only use the respirator that you have been fitted for.

DO:

- Do maintain PPE in a clean sanitary, serviceable condition.
- Do make sure to have PPE meet applicable recognized performance standards, such as ANSI, National Institute for

Occupational Safety and Health, Mine Safety and Health Administration, etc.

DON'T:

- Do not use PPE in lieu of sound engineering and manufacturing practices.
- Do not use PPE without proper training in its use and limitations.
- Do not use damaged or inferior equipment.

REVIEW QUESTIONS

1) The following are examples of Personal Protective Equipment, except:

- a) Head Protection
- b) Foot Protection
- c) Eye and Face Protection
- d) Ladders

2) Workers must not wear hard hats when overhead, falling, or flying hazards exist or when danger of electrical shock is present.

- a) True
- b) False

3) It is appropriate to maintain PPE in a clean sanitary condition.

- a) True
- b) False

Talk Given By: _____ Date: _____
Company: _____ Location: _____

Printed Name

Signature

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FIRST AID A BASIC UNDERSTANDING OF TREATMENTS, PROCEDURES AND INSTRUCTIONS



OSHA requires that employees be given a safe and healthy workplace that is reasonably free of occupational hazards. However, it is unrealistic to expect accidents not to happen at construction sites. Therefore, employers are required to provide medical and first aid and supplies and properly trained personnel to prepare for medical needs in the workplace. This is an overview of how to properly respond to injury and illness on the construction site.

PROVISIONS FOR FIRST AID TREATMENT

- Before the start of a construction project, employers must make provisions for prompt medical attention in case of serious injury.
- When a medical facility is not within reasonable distance from the jobsite, a properly trained employee with a certification card from a qualified training organization must be on site at all times.
- First aid supplies shall be easily accessible.
- All workers should know where the first aid supplies are located.
- The contents of the first aid kit shall be placed in a weatherproof container with individual sealed packages for each type of item, and they shall be checked by the employer before being sent out on each job and at least weekly on each job to ensure that the expended items are replaced.
- In areas without 911 access, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.
- Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.
- In more serious cases, CPR may need to be administered or the use of an AED may be used to revive a worker in cardiac arrest.
- A clear access for emergency vehicles must be maintained throughout the job site.

DO

- Do try to stop the flow of bleeding until medical help arrives. For deep cuts, elevate the wound while you apply pressure. For more serious wounds, push on the pressure points on the inside of the upper arm and the crease of the groin. First aid providers must be trained under OSHA's bloodborne pathogens standard.
- Do be aware that a seriously injured person will frequently go into shock. This can be fatal. While you are waiting for help, lay the person down, cover and raise the feet above heart level.

- Do place an amputated limb or body part in a bag with ice and send it to the hospital with the victim.
- Do flush eyes splashed by chemicals for at least 15 minutes. Then close the eyes, cover them and get medical help. If something is embedded in the eye, keep the person calm until help arrives.

Note: Please see the Safety Data Sheet (SDS, formerly known as MSDS).

- Do cool burns with cool (not cold) running water or a cool water compress (wet towel or handkerchief). Elevate burned limbs.

DO NOT

- Do not touch blood or other bodily fluids without protective gloves.
- Do not provide anything to drink to a person in shock.
- Do not move the victim unless absolutely necessary until you are sure what the injury is and first aid has been rendered.
- Do not move a person with broken bones. The wrong move can cause serious injury—even death.
- Do not use ice, lotion or ointment on a burn.
- Do not hesitate to call 911.

REVIEW QUESTIONS

1) Immediately move the victim away from the area, regardless if the person's injuries cannot be identified.

a) True

b) False: Victims shall not be moved unless absolutely necessary until you are sure what the injury is and first aid has been rendered.

2) If a person were to go into shock, what should you do?

a) Hold them down.

b) Lay the person down, cover and raise the feet above heart level.

c) Stay with them and keep them calm.

d) Nothing.

3) To stop the flow of bleeding until medical help arrives, you should elevate the wound while you apply pressure.

a) True

b) False

Talk Given By: _____ Date: _____

Company: _____ Location: _____

Printed Name

Signature

Through the OSHA and SWR Institute Alliance, the SWR Institute developed this toolbox talk for informational purposes only. It does not necessarily reflect the official views of OSHA or the U.S. Department of Labor.



ELECTRICAL SAFETY ELECTRIC SHOCK CAN CAUSE BURNS, SHOCKS, FALLS AND ELECTROCUTION (DEATH)

According to the Bureau of Labor Statistics, for the last decade, electrical injury has been responsible for an average of 320 workplace deaths and over 4,000 injuries involving days away from work annually in the United States.

Precautions for avoiding electrical shocks include, but not limited to the following:

GENERAL SAFETY PRECAUTIONS:

Safety to personnel and safe operation of machines and tools should be of uppermost importance in all considerations of using electricity on the jobsite. Electrical problems are among the most commonly cited OSHA violations. There are many specific standards that address electrical safety. Refer to the OSHA regulations for specific applications.

Ground Fault Circuit Interrupters: The GFCI is a fast acting device that senses a small current leakage to ground. Within 1/40 of a second it shuts off the electricity and “interrupts” the current flow. It provides effective protection against shocks and electrocution. OSHA requires GFCIs or an assured equipment grounding conductor program on all construction sites and projects.

Extension Cords: Extension cords are convenient ways to provide power to portable equipment. However, they are often misused, resulting in injuries and expensive OSHA fines. The most important thing to remember is that extension cords are for temporary use only. Inspect extension cords for physical damage before use. Check wattage rating on the tool being used with the extension cord; do not use an extension cord that has a lower rating. Don't use extension cords marked for indoor use outdoors. Don't plug one extension cord into another.

Electrical Fires: On construction sites, an electrical fire that may occur is when portable tools overload a power source. If possible to do safely, immediately disconnect the tool or power cord from the power source; this usually results in the electrical fire being extinguished. A Class C or multi-purpose fire extinguisher may also be used to ensure the fire is out.

ELECTRICAL SAFETY DO:

- Do inspect all electrical equipment daily prior to use, and tag as needed and report damaged tools to supervisor.
- Do survey the work site for overhead power lines and other



electrical hazards when using ladders or working platforms. Maintain the required distance from electrical equipment and conductors. This distance depends on the voltage hazard.

- Do provide adequate overload and short-circuit protection for safe operation. The interrupting capacity of all breakers and fuses must be sufficient to clear the fault current rapidly and without damage to itself.
- Do provide cord protection for flexible cords and cables passing through doorways or other pinch points.
- Do keep a fire extinguisher on work site at ALL times. The standard procedure for fighting electrical fires is to open the circuit and then apply an approved extinguishing agent. A carbon dioxide (CO2) extinguisher offers the advantage of extinguishing the fire, cooling the apparatus, leaving no residue, and having no adverse affect on the insulation and metal parts; it may be used on live circuits. CO2 should not be used in confined spaces, unless a breathing apparatus is used. A dry chemical extinguisher may be used; however it will leave a residue.
- Do avoid mixing water and electricity. Keep electrical equipment, hands and feet, and working surface dry.
- Do check all electrical equipment and notify others that are also connected to the power source before resetting GFCI or breakers.

- Do use a GFCI on all construction sites.

DON'T:

- Do not use Shop Made Cords with Receptacle Boxes. Among the most common electrical violations is when a multiple receptacle box, designed to be surface mounted, is fitted with a flexible cord and is placed on the floor to provide power to various tools or equipment. These are not permitted and should be taken out of service.
- Do not use a length or size (wire gauge) extension cord that exceeds the max recommended by tool manufacturer.
- Do not splice extension cords with electrical tape. Splices should be approved permanent splices. Hard service flexible cords 12 AWG or larger may be repaired if spliced so that the splice retains the insulation, outer sheath properties, and usage characteristics of the cord being spliced.
- Do not leave extension cords in walk ways or work areas causing a trip hazard.
- Do not use worn frayed or damaged cords
- Do not fasten extension cords with staples, hang from nails, or suspend from wire.
- Do not exit your vehicle if it comes in contact with electricity. Drive away until the electricity is no longer in contact with you vehicle. If the engine stops running, call 911 for assistance.

REVIEW QUESTIONS:

- 1) A GFCI senses electrical leakage?
 - a) True
 - b) False
- 2) A Fire extinguisher should not be onsite all times in case of electrical or other types of fire?
 - a) True
 - b) False
- 3) Worn extension cords should be removed from service?
 - a) True
 - b) False
- 4) The human body has a low resistance to electricity; this makes it a good conductor?
 - a) True
 - b) False

Talk Given By: _____ Date: _____

Company: _____ Location: _____

Printed Name

Signature

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Hazards and Safe Use of Multi-component Chemical Products in Construction



Introduction

Chemicals can present serious hazards to worker health and safety. Multi-component chemicals present additional hazards. The MSDS provides information that the manufacturer is required to disclose in order to handle the product safely. This includes safe storage, transport and disposal. All MSDS should include a description of the chemicals that are in a product and what steps to take to protect yourself when using the product. A MSDS is required for each component of a multi-component product. Manufacturers or importers of chemicals are required to assess the hazards of these chemicals. This includes hazards that are known to be present in the workplace and that employees may be exposed to under normal conditions of use or in a foreseeable emergency.

Additional hazards may be created when the individual chemicals of a multi-component products are mixed together that may not be addressed on the MSDS of the individual components. The product created by the mixing of multi-component chemicals may require different personal protective equipment, engineering controls, handling procedures, emergency procedures, and disposal requirements.

Prior to the use or mixing of multi-component chemical products, employees should be properly trained on the hazards and safe use of these products.

Material Identification

Multi-component materials are often identified on the MSDS by having a part A, B, C, etc. after the product name. Multi-component material types include **epoxies, polyurethanes, polyureas, polyisocyanates, polyaspartics**, as well as others.

While all potential hazards should be listed on the individual MSDSs if the components are sold to be mixed together (since mixing would be under normal conditions of use), that may not always be the case.

Health Hazards

In addition to the health hazards listed on each of the individual components, there may be health hazards that are created by the mixture that are not listed on the MSDS. The manufacturer should be consulted about these additional hazards. The mixture of the individual components of some multi-component products can produce exothermic reactions (high heat) or produce dangerous respiratory hazards and require additional measures to protect workers, such as engineering controls and personal protective equipment.

The most common health hazards created by the mixture of multi-component products include:

- Flammability and/or combustibility - products can auto-ignite
- Extreme heat - causing burns to skin, eyes, mouth and lungs
- Inhalation hazard - fumes may require respiratory protection
- Allergic reactions/occupational asthma - most common with latex, formaldehydes, isocyanates.

First Aid

First aid treatment for exposure to mixed multi-component products may be different than for the unmixed components. It is important that medical personnel have information about these products

prior to treatment. First aid information for a mixed multi-component product may not be clearly stated on the MSDS. Emergency contact information should be on the MSDS.

Explosion and Fire Information

Extra care should be taken when using multi-component products, especially in confined spaces or areas of poor ventilation. Some of these mixtures are more flammable and/or explosive when combined than they are prior to mixing. Ambient conditions may affect and or accelerate reactions of multi-component chemicals. Special equipment and control measures may be required in order to maintain a safe work environment. The manufacturer should be consulted to determine the proper equipment. Always have the appropriate fire extinguisher(s) ready at the work location. Have MSDS and emergency contact information available. An emergency action plan is recommended when using products that can generate heat or explosion hazards.

Personal Protective Equipment

The personal protective equipment for multi-component products must address the additional risks posed by the products once they are combined. This may include heat and chemical resistant gloves, goggles and face shield, additional or alternate respiratory protection and body covering clothing. In addition to complying with recommendations of the MSDS for the individual components, the product manufacturer should be consulted about the proper PPE required for safe handling of the mixed and unmixed products.

Disposal Information

Disposal requirements for properly blended multi-component products are often different from that of their individual single components. Many of these multi-component liquids are hazardous waste as liquids, but may be disposed of as non-hazardous waste when solid. Disposal of waste products are regulated by federal, state and local authorities.

OSHA Standards

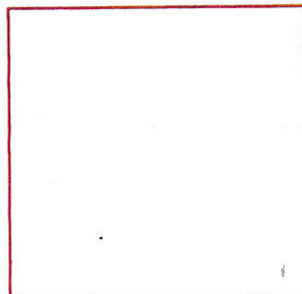
The following are some of the OSHA standards that may apply when using multi-component products

- Confined Space 29 CFR 1926.21(b)(6)
- Fire Extinguishers 29 CFR 1926.150
- First Aid 29 CFR 1926.50
- Hazard Communication 29 CFR 1926.59 (refers to 29 CFR 1910.1200)
- Personal Protective Equipment 29 CFR 1926.28, 29 CFR 1926.95-107

Additional Information:

- Evacuations Plans and Procedures: Portable Fire Extinguishers: OSHA eTool: <http://www.osha.gov/SLTC/etools/evacuation/portable.html>
- Hazard Communication: OSHA Safety and Health Topics Page: <http://www.osha.gov/dsg/hazcom/index.html>
- Medical and First Aid: OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/medicalfirstaid/index.html>
- Occupational Asthma. OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/occupationalasthma/index.html>
- Personal Protective Equipment: OSHA Safety and Health Topics Page: <http://www.osha.gov/SLTC/personalprotectiveequipment/index.html>

OPERATIVE'S 3YEAR IDENTITY CARD



Signature of card holder

Expires 3 years from date of signature - see reverse

This person has been trained in the installation of the Cintec Anchoring System and has achieved the following grade:

Name _____

Grade 1 Wall Ties _____ ☐

Grade 2 Anchors under 3 metre length _____ ☐

Grade 3 Anchors over 3 metre in length _____ ☐

Grade 4 Ground & Rock Anchors _____ ☐

(Includes grades 1,2,3 and post tensioning)

Grade 5 Sectioned Anchors up to 30 metre in length _____ ☐

(Includes grades 1,2,3,4 and assembly on site)

This card remains the property of Cintec North America, Tel 613-225-3381 / (800) 363-6066 and must be surrendered for inspection upon request by all authorised site and Cintec personnel



CONTRACTORS 1 YEAR CERTIFICATE

Certificate No.: 123456LT



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Nov 11th 2011
Date

Signed for and on behalf of
CINTEC

This certificate is valid for one (1) year only from date of signing



CINTEC

REINFORCEMENT SYSTEMS

Tel 1-613-225-3381
1-410-761-0765
Fax 1-613 224-9042

E mail solutions@cintec.com

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