MonniGrout CES

Dual expansion hydrogen free precision grout

Product Description

MonniGrout CES is composed of Portland cement, special aggregates and shrinkage controlled high performance additives. It is supplied as a dry powder in pre-weighed bags ready to use on site, which requires only addition of clean water to produce cohesive mix. MonniGrout CES is a precision grout, non-metallic, chloride and hydrogen free, high strength for grouting & anchoring applications. MonniGrout CES can be applied generally in thickness from 10 mm to 125 mm for flowable and 5-50 mm as mortar paste.

Uses

- Grouting & anchoring structural steel and pre-cast concrete members.
- Transfer of axial loads in demanding
- applications.
- Under-plate grouting & light machine beds.
- Bed grouting of bridge bearings.

Advantages

- Factory controlled pre-blend ensures consistent
- high quality.
- Requires only addition of water on-site at the
- time of usage.
- Chloride free, High early & ultimate strength and low permeability ensure the durability of the hardened grout
- High physical and mechanical properties.
- Non-shrink characteristics.
- Suitable for cable grouting and post tensioned tendons

Usage Instructions

Surface Preparation

The surface should be sound, clean, free from loose material, grease, laitence, dirt curing compound, etc.

Wet the substrate to achieve a saturated and surface dry condition prior to application of MonniGrout CES.Erect hopper system and form-work, make sure that the shuttering is watertight by use of a polyurethane sealant such as **Vetoflex PU780** or a rubber gasket seal. This step is important to insure no cement paste and water leak from the shuttering. It is essential that the base plate is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots. If leveling shims are used and are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

Unrestrained Surface Area

Generally the gap width between the perimeter form-work and the plate edge should not exceed 150 mm on the pouring side and 50 mm on the opposite side. It is advisable where practical to have no gap at the flank sides.

Mixing

For best results a mechanically powered grout mixer should be used. When quantities up to 50 kg are used, a slow speed drill fitted with a high shear mixer is suitable. Larger quantities will require a high shear vane mixer. Do not use a colloidal impeller mixer.
To enable the grouting operation to be carried out continuously, it essential that sufficient mixing capacity and labor are available. The use of a grout holding tank with provision to gently agitate the grout may be required.
The selected water content should be accurately measured into the mixer. The total contents of the MonniGrout CES bag should be slowly added and continuous mixing should take place for 5 minutes. This will ensure that the grout has a smooth even consistency.

T +974-4460-0862
E office@monneli.com
A New Industrial Area, Street #2, Zone 81, Gate 235
P.O.Box 13310, Doha, Qatar
monneli.com

Approx. Flow Distance in mm is shown below:

Consistency	Gap width	Head Height	
W/P ratio	mm	100 mm	250 mm
0.14 (Flowable)	10	350 mm	1240 mm
	20	920 mm	2650 mm
	30	1550 mm	3000 mm
	40	2200 mm	3200 mm
	50	3000 mm	≥ 3400 mm
0.16 (Fluid)	10	880 mm	2540 mm
	20	1850 mm	3000 mm
	30	2950 mm	3200 mm
	40	≥ 3200 mm	≥ 3400 mm

Placing

At 25ºC place the grout within 20 minutes of mixing to gain full benefit of the expansion process.

MonniGrout CES can be placed in thicknesses up to 125 mm in a single pour when used as an under-plate grout. For thicker sections it is necessary to fill out MonniGrout CES with well-graded silt free aggregate to minimize heat build-up. Typically a 10 mm aggregate is suitable.

Any bolt pockets must be grouted prior to grouting between the substrate and the base plate.

Continuous grout flow is essential. Sufficient grout must be prepared before starting. The time taken to pour a batch must be regulated to the time to prepare the next one.

Curing

On completion of the grouting operation, exposed areas should be thoroughly cured. This should be done by the use of **Vetocure XT425** water based curing compound and wrapping with polyethylene sheets.

Cleaning

MonniGrout CES should be removed from tools and equipment with clean water immediately after use. Cured material can be removed mechanically.

Technical Data

Category		Typical Values	
Elastic Modulus BS6319		29.2 KN/mm2 @ 28 days	
Pot Life @ 25ºC		25 minutes	
Setting Time ASTM C953		Initial ≤4 hrs, Final ≤8 hrs	
Expansion ASTM C940-10a ASTM 1090-10		≤2.0% in plastic state (Start: 15 min, Finish: 4 hrs) ≤0.3% in hardened state(Start: 8hrs, Finish: 56 days)	
Flow Cone Efflux Time ASTM 939-10		20 - 30 Seconds	
Fresh Wet Density		2.2 kg/Liter	
Consistency (W/P) ASTM C1107 (Typical values)		0.14 Flowable	0.16 Fluid
Compressive Strength (ASTM C942)	1 day	30 N/mm2	25 N/mm2
	7 day	60 N/mm2	55 N/mm2
	28 day	80 N/mm2	75 N/mm2
	90 day	85 N/mm2	80 N/mm2
Flexural Strength (BS 6319)	1 day	2 N/mm2	2 N/mm2
	7 day	9 N/mm2	7 N/mm2
	28 day	11 N/mm2	9 N/mm2
	90 day	12 N/mm2	11 N/mm2

All values are subject to 5-10% tolerance

Standards Compliance

- ASTM C1107/1107M-14 (previously CRD621) as
- Type C (Dual Expansion).
- ASTM C938-10
  Sampling as per ASTM C943
- ASTM C1741 (Testing of post tensioning tendon
- grout)
- EN 934: 2012 (testing as per EN480, EN 13395)
- EN BS 6920 elevated temperatures, suitable for contact with potable water.

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Packaging & Coverage

Product	Pack Size	Consumption
Vetogrout CG511	25 Kg bag	1.9 - 2.1 Kg/m²/mm thickness
Yield (approx.)	Trowellable Flowable Fluid	12.3 Liters, 12.8 Liters 13.2 Liters

Shelf Life & Storage

Original sealed bag of MonniGrout CES has a shelf life of 12 months provided it is stored clear of ground in a dry and shaded place.

Limitations

Low temperature working

When the air or contact surface temperatures are 5ºC or below on a falling thermometer, warm water (30 - 40ºC) is recommended to accelerate strength development.

For ambient temperatures below 10ºC the grout consistency should be flowable and the form-work should be maintained in place for at least 36 hours.

Normal precautions for winter working with cementitious materials should then be adopted.

High temperature working

At ambient temperatures above 35ºC the mixed grout should be stored in the shade Cool water (below 20ºC) should be used for mixing the grout.

MonniGrout CES is alkaline and should not come into contact with skin and eyes. Avoid inhalation of dust during mixing.

Gloves, goggles and dust mask should be worn.

Health & Safety

MonniGrout CES gq _ji_jglc _lb qfmsjb lmr amkc glrm amlr_ar ugrf qigl _lb cwcq, ?tmgb glf_j_rgml md bsqr bspgle kgvgle, Ejmtcq* emeejcq _lb bsqr k_qi qfmsjb `c umpl, Gd amlr_ar ugrf qigl maaspq* u_qf ugrf u_rcp, Qnj_qfcq rm cwcq qfmsjb `c u_qfcb gk kcbg_rcjw ugrf njclrw md ajc_l u_rcp _lb kcbga_j _btgac qmsefr, MonniGrout CES gq lml+dj_k k_`jc,

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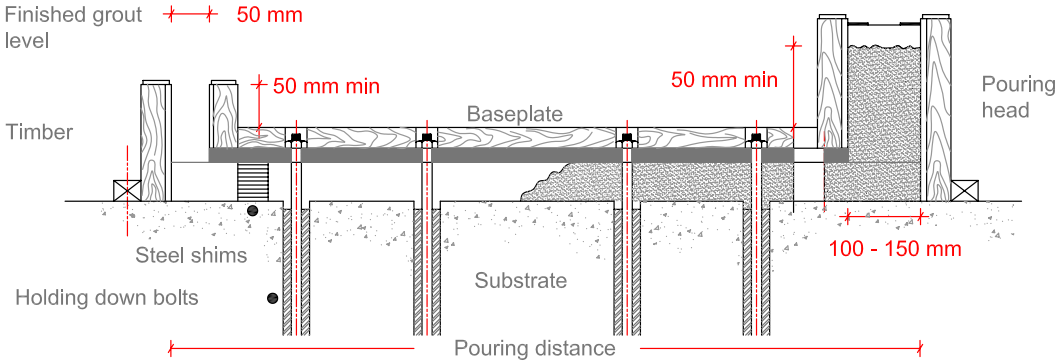
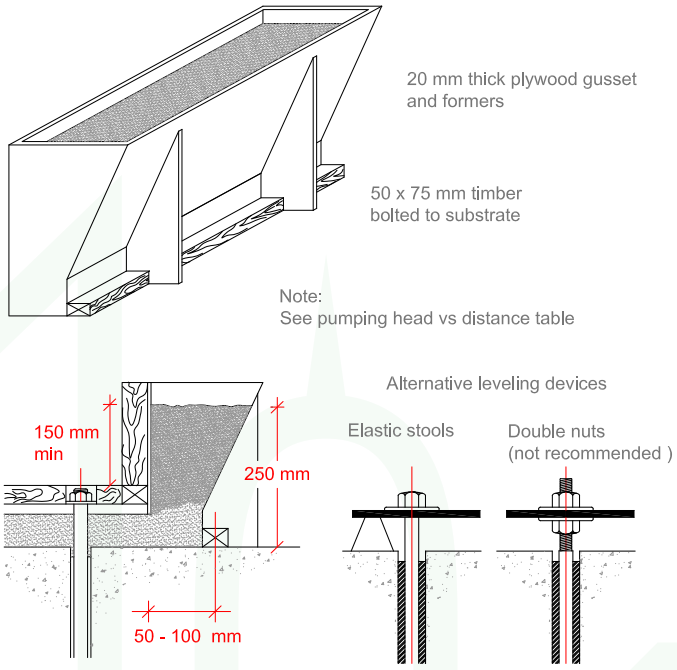
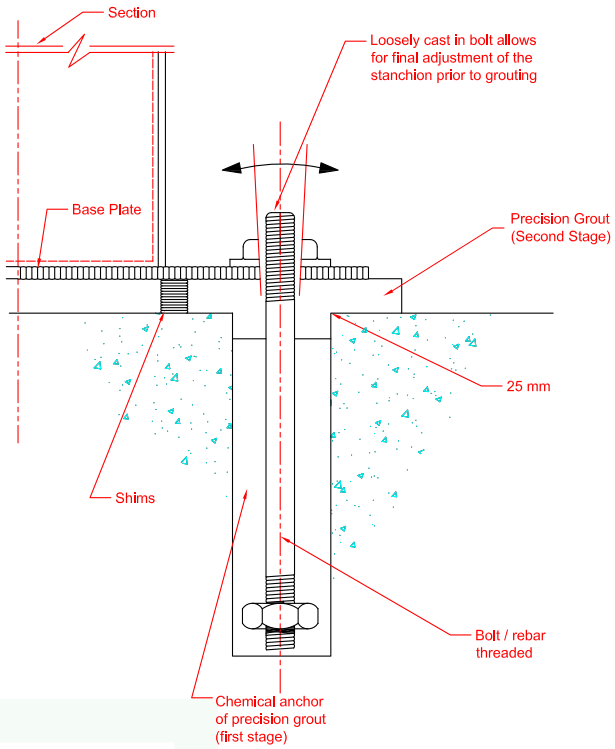
Standard Grouting Details



Installation & Grouting of Base Plates



Typical Hopper System



Typical Detail of Stanchion Base Plate

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