

Mitsuya Boeki Ltd.

Yamaguchi Kosan Sakaisuji Building
2-2-7, Kyutaro-machi, Chuo-ku, Osaka, Japan
Tel: 81-6-6260-4581 Fax: 81-6-6260-4575
E-mail: mbl@mitsuya-boeki.co.jp

weighing discrepancies each batch shall contain not less than 10 parts of DENKA CSA to 90 parts of Portland Cement, or more than 12 parts of DENKA CSA to 88 parts of Portland Cement by weight.

The DENKA CSA concrete shall be mixed rapidly in the truck for an additional 10 minutes at the Plant before being despatched to the site.

No extra water will be added without the approval of the engineer on site.

3. REINFORCING

Reinforcing bars for the DENKA CSA concrete slabs shall be placed in three layers, with half the bars in one direction in each of the top and bottom layers (staggered to achieve the required spacing), and all the bars in the other direction in the middle layer, so that the centroid of the reinforcing in each direction is in the centre of the slab.

4. FORMWORK

Plywood or pine boxing shall be used for all formwork unless approved by the Engineer or detailed otherwise in the Drawings.

All penetrations, nibs, chases, fixings, sleeves, pipes, conduits, bolts, starter bars, etc. as detailed in the Drawings and as necessary to complete the work shall be accurately positioned and securely held in place.

5. PLACING, COMPACTING AND FINISHING CONCRETE

The contractor shall ensure that the DENKA CSA concrete can be delivered with minimal risk of delays. This may require pours to begin during the night.

The concrete must be protected during adverse conditions i.e. use aliphatic alcohol to protect the surface from drying in hot and/or windy conditions.

Immediately prior to placing concrete, all dirt, sawdust, shavings and any other refuse shall be

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removed from inside the formwork, and all reinforcing shall be clean and free from all loose mill scale, dirt, dust, loose rust, coatings such as oil and paint, or anything which will prevent bonding to the concrete.

The concrete shall be placed and compacted to produce a homogeneous mass which completely fills all the space, including all corners and completely surrounds all reinforcement. The use of vibrators or other compacting equipment shall not cause displacement of the reinforcing or embedded fixtures, nor disturb the formwork.

Concrete finishers should note that typically DENKA CSA concrete leaves little or no excess water to bleed out onto the surface. Therefore the appearance of bleed water on the surface cannot be relied upon as an indicator that the concrete is about ready for finishing.

Floor slabs shall be power floated to give a U3 finish.

6. CURING OF CONCRETE

After the concrete has set sufficiently its exposed surfaces shall be cured by applying water continuously for a minimum of ten days. Alternatively, clear polythene sheets may be used to cover the pre-wetted concrete slab for ten days and the entire slab shall be kept wet at all times beneath the polythene by supplying water under the sheets as necessary.

Care should be taken to avoid wind blowing the polythene sheets off the slab, as this may result in rapid and uneven drying of the slab surface.

Do not use black polythene as dry areas can not be identified and slabs exposed to direct sunlight may be subject to significant temperature change.

7. CONSTRUCTION JOINTS

If not shown in the Drawings construction joints shall be located and built to details as directed or approved by the Engineer.

Joint sealing is generally left as long as possible and is often not performed until the slab is 1 year

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old. Practical issues sometimes dictate earlier sealing and therefore there is risk of shrinkage exceeding the capacity of the jointing material. Larger slabs can exacerbate the situation. This statement applies to concrete whether or not it contains DENKA CSA.

The use of DENKA CSA merely alters the point from which shrinkage occurs. The manufacturer of the joint sealing material should be consulted.

8. CONSTRUCTION OF SLABS ON GRADE

The surface beneath slabs shall be smooth and even with no loose particles or protrusions that could damage the DPC.

A damp proof course (DPC) consisting of 2 layers of 0.25mm polythene shall be laid continuously under the floor slab with 150mm laps. Any perforations or damage to the DPC shall be repaired before concrete is poured over. The DPC layer shall continue through under the boxing and shall not be lapped up over any formwork.

The DENKA CSA slabs need to be isolated so they are not constrained (no reinforcing to continue into the DENKA CSA slab).

All re-entrant corners shall have diagonal reinforcing placed across each corner i.e. 2 x D12.

Any steel angles used on the edges of the slabs should be welded (including slab corners) so as to be continuous along the edge of the slab or alternatively the shortest practical lengths should be used to minimise the risk of restraint and crack inducement.

Any dowel system which allows for the slab to move horizontally in both directions would be acceptable provided the total expected movement (expansion and subsequent shrinkage) of the DENKA CSA slab is allowed for. The larger the slab dimensions, the larger the total movement. High movement dowel systems are available and the manufacturers should be contacted directly for their recommendations. Ground beams are also recommended under movement joints.

The DENKA CSA concrete slabs shall be poured so as to have at least two edges free to allow the concrete slabs to expand without obstruction or confinement. Adjacent slabs shall be poured not

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less than three days apart.

Where slabs are cast against restraints (e.g. walls, footings) a 10mm (or thicker as required for slab dimension and expansion) thick polystyrene layer shall be placed against the restraints and removed a maximum of 24 hours after the slab is poured to allow expansion to take place. Columns shall be isolated from the DENKA CSA concrete slabs.

NOTE: These guidelines do not apply to lime based additives.

Revised: March 2010

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