

TECHNICAL INFORMATION

TOPFLOW CONCRETE

Topflow Concrete is specifically designed to flow easily through highly congested, heavily reinforced areas.

APPLICATIONS

- Areas of complex formwork
- Areas of congested reinforcement
- Mass fill pours
- Environmental classification mixes available – can assist with BREEAM requirements
- Can be used both horizontally and vertically

CHARACTERISTICS

- Designed to meet the demands of any type of construction
- Self-compacting properties make Topflow Concrete suitable for any job with areas of difficult access or complex formwork configurations
- Can be designed with either 10mm or 20mm coarse aggregate depending upon application required and also maximum 25% recycled aggregate when available.
- Supplied with cementitious replacement as standard
- Low-heat and high sulphate resistance mixes available

ADVANTAGES

- Reduced labour – due to the ease of placement, large pour sizes are achievable with reduced labour and plant requirements
- Health and Safety – reduced labour and plant requirements lead to reduced health and safety hazards

- No vibration – with no vibration, the problem of vibration white finger is eliminated
- Noise – eliminating traditional methods of placing and finishing concrete reduces noise, which is particularly important in inner-city and built-up residential areas
- Flexible placing – ideal for jobs with difficult access or where longer pumping distances are involved
- Flexible supply – available from all Tarmac readymix plants
- Waterproof – can be supplied with an integral waterproofing admixture

SPECIFICATION

Maintenance of fluidity – typically two hours.

Compressive strength at 28 days – 35-50N/mm².

Water/cement ratio – to customer's requirements.

Maximum Sulphate Resistance Classification – DC-3 or DC-3z with low-heat version.

Concrete is designed so its compressive strength suits the specification and the water/cement ratio will meet the requirements of the client wherever possible.

Note: when installing horizontally, please follow the same installation guidance and recommendations as per Topflow Horizontal

INSTALLATION

Topflow Concrete can be laid over any stable substrate.

UNDERFLOOR HEATING

Topflow Concrete is suitable for laying over underfloor heating; however the following precautions need to be made.

1. Reinforcement mesh (typically A142 or A193) should be used. Ideally this should be tied to the heating pipes prior to installation
2. Minimum depth of concrete cover to the top of the heating pipe should be 50mm
3. Careful consideration should be given to bay sizes and the location of construction joints

BOND TO SUBSTRATE

- When the concrete is laid unbonded to the substrate, a polythene membrane of suitable thickness will be required
- When the concrete is to be laid bonded, steel reinforcement mesh will be required. Bonding compound (such as an SBR type product) to be applied

PERIMETER ISOLATION

- A compressible strip with a minimum thickness of 8mm and maximum of 15mm should be fixed around the walls
- The isolation strip is also required to be fixed around vertical features such as columns and pipe ducts
- Particular attention must be taken at re-entrant angles such as doorways, bays and alcoves
- Ensure the perimeter isolation is placed at right angles into all corners of the room
- On exterior angles it may be necessary to double up the isolation to ensure that the minimum thickness is maintained around the angle
- The most suitable material for this is a self-adhesive ethafoam strip; a small amount of steel mesh should also be placed around any internal corner or extrusion through the slab

SUBSTRATE PREPARATION

- In all cases, a polythene membrane of 120 micron minimum thickness and 250 micron maximum thickness must be laid on the substrate
- Topflow Concrete is highly fluid and this requires the membrane to be substantially watertight to prevent loss of material
- The sheet should be laid with a 300mm overlap, adhesive tape at least 50mm wide should be applied along overlapping joints of the sheets to seal them
- Care should be taken to ensure the membrane is folded, or cut and sealed, into a corner
- Around the perimeter of the room, the edges of the polythene membrane should extend well above the intended level of topping or should be taped to the ethafoam strip
- Care should be taken to ensure no ridges or folds are left on the surface of the polythene

CONDITIONS

- Topflow Concrete can only be laid when the air temperature is between 5°C and 30°C
- The substrate must not be frozen and ideally should be within the above temperature range

SETTING OUT LEVELS

- The thickness of the concrete from the highest point of the prepared substrate should not be less than 50mm and should incorporate measures to counter plastic shrinkage
- To adequately set out the levels before placing the concrete, the highest point should first be found
- To easily identify the thickness to be laid a series of tripods with a height adjustable indicator should be used. A tripod should be placed at the highest point to denote the top of the finished floor and a nominal minimum thickness of 75mm
- Other tripods should be placed at two to three metre intervals across the floor and the indicators set using a laser-levelling device with the first tripod as the datum

SLUMP-FLOW MEASUREMENT

When Topflow Concrete arrives on site, the slump-flow of the material should be 650mm – 750mm when measured using the appropriate equipment. If the mix is outside of the target range, then advice should be sought from your Tarmac Readymix representative as to the appropriate course of action.

PUMP PRIMING

If the concrete is to be pumped, prior to pumping it is essential that the pump is primed. The pipes must be systematically 'lubricated' with a slurry made up of approximately 10kg of pure cement mixed with 10l of water. The slurry should be fed through the pipes and fully recovered at the other end before any of the concrete is discharged.

PUMPING

When placing the product, the hose should be held approximately 500mm from the substrate. The pipe should be moved in a sweeping motion and should not be held stationary above any fixed point. Topflow Concrete should be poured until the pre-set levels, as denoted by the tripods, have been reached.

DAPPLING

- When the material has been placed to the desired levels within a room/area, it should be dappled immediately to obtain the best surface finish. The T-bar should be moved across the surface of the concrete with a dappling motion to generate a wave-like ripple across the surface
- The dappling should occur in two directions, the second being perpendicular to the first. The first pass should be a deep pass to approximately two-thirds of the depth of the concrete; the second a light pass over the surface

CURING

- Following placement, a curing membrane should be sprayed over the surface using a mist sprayer. Care should be taken to follow all relevant health and safety procedures when using the curing membrane, including goggles and respiratory equipment where required
- It is essential to ensure complete coverage of the surface as per manufacturer's guidelines

FOLLOWING PLACING

- The surface will be suitable for light foot traffic after 24 hours and can be worked on after a period of 72 hours from placing
- The slab should not be loaded with palletised materials until at least seven days
- Partitions can be erected after a minimum of seven days from the time of placing. Floor finishes should ideally be applied within a 60-day period after placing
- The slab should be protected from excessive winds or drying for 48 hours after placing

BAY SIZES (WHEN INSTALLED WITHOUT CRACK CONTROL MESH REINFORCEMENT)

Saw cut joints should be detailed at 40 times the depth of the slab (in mm) e.g. a slab that is 75mm deep = $40 \times 75 = 3,000\text{mm}$, therefore joints must be at $3\text{m} \times 3\text{m}$.

Please note that bay sizes can be increased by utilisation of fibre reinforcement technologies and/or including Shrinkage Reducing Admixtures (SRAs) within the mix.

For more details visit
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