



FLOWABLE FILL™

Versatile Low Strength Mix



Flowable Fill™ is a controlled low strength mix of sand, cement and water. Either flyash or chemical admixtures are added to form small spherical particles which lubricate the mix, increasing its cohesiveness and flowability.

Flowable Fill™ is a flowable cohesive slurry which can be used as a fill or backfill material. It has similar consistency to blockfill and can be placed with minimal effort, without vibration or tamping.



Physical Properties

Firth Technical Services have designed Flowable Fill™ as a controlled low strength material. The following data describes the properties of the material in the wet and hardened states.

Slump Flow	350-500mm
Wet density	1500-2200 kgm ³
7 days compressive strength	0.5-2.0 MPa
28 days compressive strength	1.0-2.5 MPa

Applications

- Backfilling utility trenches.
- Filling around bridge abutments and retaining walls.
- Restricted access locations.
- Structural fill under foundations or floor slabs (i.e. site concrete).
- Filling disused or abandoned storage tanks, pipes or structures. A concrete pump can be linked directly to the tank for ease of filling.

Benefits of Flowable Fill™

- **Reduced access problems**
Placement by chute or pump reduces problems associated with tight or restricted access when placing granular fill.
 - **Speed**
Rapid discharge from chute or pump and fast placing minimises delays and road closure time.
 - **Narrower service trenches**
Utility trenches can be narrower because they do not have to accommodate compaction equipment.
 - **Improves worker safety**
Workers do not have to enter trenches in order to backfill with Flowable Fill™, reducing their exposure to cave-ins.
 - **Reduces equipment needs**
Unlike compacted hard fill, Flowable Fill™ can be placed without the need for loaders and compaction equipment, or supervision by the specifier.
 - **Eliminates storage and waste of granular fill**
Unlike conventional fill, there is no wastage of Flowable Fill™ caused by being stored on site. The correct quantity of Flowable Fill™ can be delivered directly to the trench at the time it is required.
 - **Versatility of mix designs**
Mix designs can be adjusted to meet specific requirements. Flowability can be adjusted, setting times accelerated or retarded, and density reduced by the addition of foam.
 - **Less risk to pipes and service ducts**
When backfilling over pipes with Flowable Fill™ there is less chance of accidental damage than with conventional compaction operations.
 - **Easy to deliver and place**
Ready mixed concrete trucks can deliver the required quantities. Flowable Fill™ can be placed into large areas directly by chute or pump. It is almost self-levelling and does not require vibration. It is quickly placed and usually requires only one person to direct the chute.
 - **Strong and durable**
Load carrying capacity is typically higher than compacted hard fill. Flowable Fill™ is also less permeable and thus more resistant to erosion.
 - **Will not settle over time**
There is no on-going maintenance with Flowable Fill™. It does not form voids during placement, and will not settle or rut under traffic loading.
 - **Can be easily excavated**
With compressive strengths of 1 – 2.5 MPa, Flowable Fill™ can be excavated with conventional digging equipment.
 - **Eliminates dewatering**
Flowable Fill™ will displace any water standing in a trench.
 - **Utility identification**
Flowable Fill™ can be coloured to assist identification of the utilities in each specific trench. Flowable Fill™ has been developed by Firth Technical Services as an “on demand” product that can be supplied from any Firth ready mixed concrete plant.
- Many uses are listed above, but specifiers should keep this material in mind for any situations where fill is needed.



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