Silo Fittings

- The cement filling pipe attachment is best located 1 metre above ground level for easy access by the truck operator.
- The cement weigh hopper requires accuracy to within 3% at all times. Hardened cement in the hopper can affect the weighing accuracy and so the hopper should be regularly cleaned and calibrated.
- Filling pipes should be arranged such that excessive horizontal runs and/or tight bends of less that 1 metre radius are avoided. The filling pipe should enter the top of the silo at a tangent.
- If horizontal runs are necessary, they should be kept at ground level where air pressures are highest.
- The total length of the delivery pipe should be kept to a minimum.
- Overfilling can cause severe dust emissions from the silo. The structural soundness of the silo may also be put at serious risk posing a threat to personal safety. The inclusion of a high level alarm is recommended to avoid the consequences of overfilling.
- A pressure relief valve is necessary should excessive air pressures build up on the silo. A valve of 100mm diameter and responding to a pressure of 5kN/m^2 is sufficient.

All the information contained in this leaflet is supported by an advisory service freely available to help with special problems or queries that may arise.

Irish Cement Series

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2 Blockwork & Plastering
3 Precast Concrete Paving
4 Floor Screeds
5 Concrete on the Farm
6 Cement Silos

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Using Irish Cement

Cement Silos

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A Guide to Operation - Cement Silos

Bulk storage of cement in silos is the preferred method of storing cement for concrete production. The following recommendations can ensure the safe, clean and trouble-free operation of cement silos.

The Cement Silo

- The sizing of a cement silo depends upon the demand placed on it. Ideally one should aim for a storage capacity of at least 2 days production.
- Extra capacity should be included in the silo to allow for variations in the supply timetable.
- The bulk density of fresh cement varies from 1000kg/m^3 aerated to 1350kg/m^3 packed. The capacity of a silo may therefore be reduced by over 25% with freshly aerated cement. It is therefore advisable to be conservative when estimating the weight of cement required to fill a silo.
- The silo should be erected securely and inspected regularly. It is important that all connections are kept free of hardened cement.
- Silos and supply lines should be clearly marked to display the type of cement that they contain. Split silos should indicate the contents of each sector of the silo.

Cement Deliveries

- Proper vehicle access to the silo is essential. With vehicles up to 15 metres long and 40 tonnes in weight, both adequate ground strength and manoeuvring room are required.
- Lighting is required if deliveries are to be made outside daylight hours.
- Advance planning will facilitate delivery at specified times.
- The level of cement in the silo should always be checked before filling begins.
- Ensure that the time between filling of the silo and shutting off the cement supply is kept to a minimum to avoid overfilling.

Air Filter

- Filters are necessary to remove cement dust from the excess air leaving the silo during the filling operation.
- The air filter is often located on top of the silo with extracted dust allowed to drop into the silo below.
- Easier access to the filter can be provided by placing the filter closer to ground level and connecting it to the top of the silo with a feed pipe of 200mm diameter. Extracted cement dust can then be conveyed to the weighing hopper at ground level.
- Most modern filters are self-cleaning pressure filters. While a minimum of attention is required with these filters, it is recommended that a weekly check of the filter efficiency be made using the electronic control unit located at ground level. A visual inspection of the filter bags should also be undertaken every 2-3 months, depending on the frequency of use.
- Older static type filters (i.e. non-fan-assisted) require a greater degree of maintenance if they are to perform properly. The filter bag should be inspected and cleaned (as necessary) at least once per week. This avoids blockages, which would cause excessive dust and dangerous internal pressures during filling.
- An air filter should be large enough to handle the maximum airflow experienced through it. For normal road tankers, operating at pressures of up to 200kN/m^2, airflow of up to 20m^3/min is expected. An extra allowance of 10m^3/min should be added for filtration of air from the silo discharge point. A total filter capacity of 30m^3/min is therefore recommended as a minimum.