

## HIGH PERFORMANCE CONCRETE



INSEE RAPID FLOW PLUS is a high performance Blended Hydraulic Cement of Ground Granulated Blast Furnace Slag (GGBFS) or fly ash variants, producing overall high performance and high strength concrete for industrial and infrastructure projects.

Produced with a perfected combination of cementitious materials over the years, INSEE RAPID FLOW PLUS develops high strength in concrete due to increased density of the concrete as a result of the pozzolanic reaction, allowing reduction in structural element sizes and contributing to the increased cost efficiency of the construction. The increased density also reduces permeability of water and other aggressive components such as chloride and sulphate, allowing for highly durable concrete structures. INSEE RAPID FLOW PLUS also improves the properties of fresh concrete such as pumpability, compaction and finish, thus facilitating placement with reduced effort.

## INSEE RAPID FLOW PLUS



## FACT FILE

Name:	INSEE RAPID FLOW PLUS
Type:	Portland Fly Ash Cement/Portland Slag Cement
Sri Lankan Standard:	SLS 1247:2015
Strength Class:	42.5N

## PROPERTIES

Property	SLS 1247:2015 Requirement	INSEE RAPID FLOW PLUS Average
<b>PHYSICAL PROPERTIES</b>		
Compressive Strength (2 days)	≥ 10 N/mm <sup>2</sup>	< 20-25 N/mm <sup>2</sup>
Compressive Strength (28 days)	42.5 - 62.5 N/mm <sup>2</sup>	55 N/mm <sup>2</sup>
Initial Setting Time	≥ 60 minutes	140-170 minutes
Fineness	Not Specified in Standard	380 m <sup>2</sup> /kg
Soundness	< 10 mm	< 1 mm
Relative Density	Not Specified in Standard	~ 3.07
<b>CHEMICAL PROPERTIES</b>		
SO <sub>3</sub>	≤ 3.5 %	< 3.0 %
Chloride	≤ 0.10 %	< 0.08 %
LOI	Not Specified in Standard	< 4.0 %

## COMPATIBILITY

### INSEE RAPID FLOW PLUS is compatible with:

- Chemical Admixtures complying with BS EN 450-1:2014 and ASTM C494
- Fly Ash complying with BS EN 450
- Ground Granulated Blast Furnace Slag (GGBFS) complying with BS EN 15167-1:2006
- Silica Fume complying with BS EN 13263-1:2005 +A1:2009
- Manufactured Sand (M-Sand) complying with BS EN 12620:2013
- Natural Sand, Quarry Sand and Offshore Sand complying with BS EN 12620:2013

## APPLICATIONS

### INSEE RAPID FLOW PLUS is used for:

- High pumpable with fast pouring and consolidating concrete
- Concreting in sulphate environments as in ground water or soil
- Concrete infrastructures such as piling, bridge piers, etc.
- Water structures/Spillways
- Concrete structures exposed to chloride in marine environment seawater (harbours, jetties, bridges, buildings, etc.)
- Concrete structures in sewerage projects (treatment plants, sewer lines, etc.)
- Concrete in contact with water (water supply projects, irrigation structures, canal systems, dams, etc.)
- Large-scale infrastructure development projects with bulk cement requirements
- High-rises and large-scale housing and commercial projects with the requirement for sustainable performing concrete
- High load bearing precast and pre-stressed load bearing concrete elements



# FEATURES & BENEFITS

## High Performance Concrete

INSEE RAPID FLOW PLUS exhibits enhanced, fresh and hardened properties of concrete including high strength, increased durability, lower permeability and increased corrosion resistance, resulting in the elevated overall performance of concrete structures.

## High Strength Concrete

Both slag and fly ash display inherent chemical properties that improve resistance over time thanks to the pozzolanic reaction. This occurs between the free lime of the hydration of the clinker, and the active siliceous in the fly ash and slag with the formation of more calcium silicate hydrate (CSH) – the element that holds the concrete together. This results in denser concrete with enhanced strength that serves as a tool for engineers to optimise concrete mix designs.

## Cost Efficient Concrete Mix Designs

The high strength developed in concrete produced with INSEE RAPID FLOW PLUS allows for a large reduction of admixture and cement consumption in the mix, thus substantially reducing raw material costs. It also leads to optimised structural design that allow for thinner, lighter and fewer structural elements. The optimised mix designs also result in less shrinkage, curling and heat, lowering life cycle costs through increased service life.

