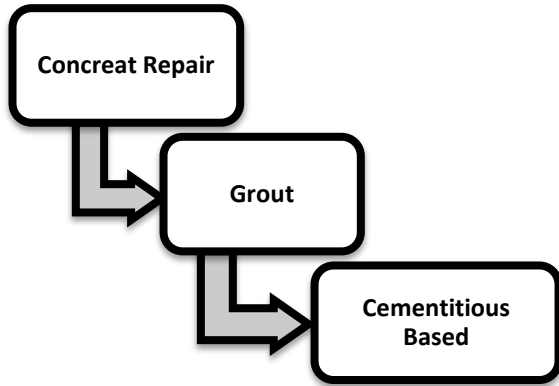


## FAMILY TREE



## PRODUCT DESCRIPTION

Single component, dry cementitious grout powder, formulated from cement, selected additives, well graded and non-reactive aggregates that when mixed to water will produce excellent flow properties, shrinkage compensation, frost resistance, and high compressive strength.

It is carefully manufactured to be chloride free that when mixed with water will provide flowing grout with high resistance to cement washout specially when placed in tidal zone or under water.

## FIELD OF APPLICATION

<b>Area Type</b>	: <input checked="" type="checkbox"/> Dry	<input checked="" type="checkbox"/> Semi-wet	<input checked="" type="checkbox"/> Submerged
<b>Area Location</b>	: <input checked="" type="checkbox"/> Internal	<input checked="" type="checkbox"/> External	
<b>Type of Installation</b>	: <input checked="" type="checkbox"/> Horizontal	<input checked="" type="checkbox"/> Vertical	
<b>Area of Application</b>	: <input checked="" type="checkbox"/> Under water micro concrete repair and grouting	<input checked="" type="checkbox"/> Bridge column and jetty piers	<input checked="" type="checkbox"/> Repair to concrete piles
	<input checked="" type="checkbox"/> General strengthening by jacketing	<input checked="" type="checkbox"/> Repair and grouting of dams	
<b>Thermal behaviour</b>	: Excellent thermal behaviour		

## PROPERTIES

- |  |  |
|--|--|
| • Non-shrinkage characteristics.                   | • Ready dry pre-mix, just add water    |
| • No risk of cement washout when placed underwater | • High early strength                  |
| • Free flowing                                     | • Dense materials and Low permeability |
| • High bond strength                               |  |
| • Chloride free                                    |  |

## PREPARATION

<b>Working Conditions</b>	: 4° to 50°C.
<b>Tools / Equipment</b>	: Mechanically powered mixer, mixing plastic bucket
<b>Substrate</b>	: The Substrate should be sound, clean and free from contamination. Surface laitance curing compound and other contaminations should be removed by sand/grit blasting or manually by wire brush or any effective method.
<b>Priming</b>	: No required.
<b>Points of Attention</b>	: A water tight formwork should be erected to avoid any grout loss.

## MIXING

<b>W/P ratio</b>	: <u>Flowable</u> 4.5 Litre of fresh & clean water / 25 kg of powder Water content shall be adjusted based on the application and required consistency
<b>Mixing Speed</b>	: 400 - 600 rpm.
<b>Process</b>	: To ensure proper mixing, a mechanically powered mixer or drill fixed with suitable paddle should be used. Depending on the consistency required, the addition of 4.5 litres (Flowable) of clean

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water should be added to a clean container. The 25 kg powder is then added slowly to the water while mixing continuously with a low speed mixer/drill (400 - 600 rpm).

- At low temperatures (below 8°C), warm water is recommended to achieve the early strength. And the formwork is recommended to be kept longer time.
- At high temperatures (35°C and above), cold water (less than 20°C) must be used for mixing.

## APPLICATION

<b>Thickness</b>	: Applied in a single layer at thicknesses between 10 – 100 mm when poured above water. When poured under water, thicknesses up to 200 mm can be placed in a single layer. For a greater thicknesses, a washed aggregate between 5 - 12 mm should be added at a maximum ratio of 1:1 by weight.
<b>Coverage</b>	: Approximately 14.5 – 15 litre/25 kg bag depending on consistency & type of application
<b>Process</b>	: <u>Formwork:</u> Make sure that all formwork and shutters are water tight. Seal underneath the formwork and at all joints by using appropriate mastic. The unrestrained areas should be kept to a minimum due to the expansive nature of the product. Also for casting under water, adequate gap between formwork and substrate should be allowed for tremmie pipe while casting vertically
<b>Curing</b>	: Curing is not required for fully submerged applications. A manner similar to concrete. Curing can be conducted by either using concrete curing compound or by using wet hessian and polyethylene.
<b>Cleaning</b>	: All tools / equipment shall be cleaned immediately after use with fresh clean water. Hardened materials should be cleaned mechanically. Care shall be taken not to damage the tools / equipment

## PACKING

<b>Standard Package</b>	: Apollo Flo-Grout UW1 is available in 25 Kg plastic Bags.
<b>Custom Package</b>	: Special packages can be arranged for large requirements.
<b>How to Order</b>	: Specify the Product Name followed with a hyphen and package size.

## STORAGE CONDITION

<b>Shelf Life</b>	: 24 months from the date of manufacturing.
<b>Temperature</b>	: 2°C and 50°C.
<b>Points of Attention</b>	: Store in shaded area and properly sealed in its original packing.

## TECHNICAL PROPERTIES

PROPERTY	STANDARD	VALUE	
<b>Testing Standard</b>	ASTM & BS		
<b>Testing Conditions</b>	Tests were carried out in Apollo R&D laboratory with W/P = 0.25 @ 25°C		
<b>Component</b>	Single component		
<b>Form</b>	Powder		
<b>Colour</b>	Grey		
<b>Compressive strength</b>	ASTM C109/109M-11	1 day	≥ 22 MPa
		3 days	≥ 34 MPa
		7 Days	≥ 38 MPa
		28 days	≥ 45 MPa
<b>Tensile bond strength</b>	≥ 2.5 MPa		
<b>Initial setting time @ 20°C</b>	BS4550	5 – 6 hours	
<b>Final setting time @ 20°C</b>	BS4550	6 – 7 hours	

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# Apollo Flo-Grout UW1

**Apollo Flo-Grout UW1 - 25 Kg – BS/ASTM**

*Single component, cementitious non-shrinkage grout for underwater applications*

<b>Expansion characteristics</b>	ASTM C827/C827M-10	1 - 4%
<b>Fresh wet density</b>		≈ 1.92 gm/ cm <sup>3</sup>
<b>Flow</b>	BS890	≥ 20 cm
<b>Points of Attention</b>	: Compressive cubes were tested under water and restraintment to simulate site conditions. Also typical properties are @ 4.5 litres water/ 25 kg @ 25°C.	

## ATTENTION

**PPE** : It is recommended to use full PPE while working with the product to avoid any possibility of irritation to skin or eyes. In case of accidental contact with eyes, immediately flush with plenty of water for at least 10 minutes and seek medical advice if necessary

**Hazardous Classification** : Non-Hazardous

**Fire** : Non-flammable

## APOLLO AT THE GLANCE

Apollo is confident with the technical solutions and high quality end products served to the customers.

Apollo invites you to explore other services and products:

- |  |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| • R&D and manufacturing custom solutions | • Adhesives                          | • Bonding Agents Systems             |
| • Building Finishing Systems             | • Concrete Admixture                 | • Concrete Repair Systems            |
| • Flooring Systems                       | • Grouts & Anchoring Systems         | • Painting & Putty Systems           |
| • Protective Coatings                    | • Sealant & Jointing Solutions       | • Structural Strengthening Solutions |
| • Surface Treatment Solutions            | • Tile Adhesive & Grouting Solutions | • Waterproofing Systems              |

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