



# TECHNICAL DATA

## Supaflow HF Grout

### *Dual Expansion Class C Grout*

#### **Description**

**Supaflow HF** is a free flowing cement based grout offering high performance and non-shrink characteristics. This product is suitable for pumping and pouring over a large range of application consistencies and temperatures.

**Supaflow HF** is supplied ready-to-use as a dry powdered product requiring only the addition of water to be used for application gap widths of 10-125mm.

**Supaflow HF** is a dual expansion Class C Grout meeting the requirements of the U.S. Corps of Engineers CRD-C-621-83 for non-shrink grouts.

#### **Areas of application**

- Heavy duty base plate grouting
- Structural column grouting
- Crane rail supports
- Structural repairs
- Bridge bearings

#### **Features**

- Dual expansion - no shrinkage
- Excellent flow - gaps down to 10mm
- Versatile application - trowel, pour or pump
- Chloride free - no re-bar corrosion
- High early strength - early commissioning
- Long work time - good for large pours

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The information contained in this Technical Bulletin is as up to date and correct as possible as at the time of issue. The data provided should be used as a guide only as the performance of the product will vary depending on differing operating conditions and application methods.

The sale of any product described in this Technical Bulletin will be in accordance with ITW Polymers & Fluids Conditions Of Sale, a copy of which is available on request. To the extent permitted by law, ITW Polymers & Fluids excludes all other warranties in relation to this product.

## General properties

Shelf Life	: 12 months, unopened, dry
Work Time	: 40 minutes at 25°C
Initial Set	: 4 hours at 25°C (fluid)
Final Set	: 6 hours at 25°C (fluid)

### Water Ratio

Trowellable	: 3.0 Ltr / 20 kg
Plastic	: 3.6 Ltr / 20 kg
Flowable	: 3.8 Ltr / 20 kg
Fluid	: 4.0 Ltr / 20 kg

### Compressive Strength

Trowellable	: 105 MPa at 28 days
Plastic	: 92 MPa at 28 days
Flowable	: 88 MPa at 28 days
Fluid	: 83 MPa at 28 days
Flow Range	: Up to 3.0 metres, unassisted

## Estimating data

Consistency	Water Ratio Litres/20 kg bag	Yield Supaflow HF Grout		Yield Supaflow HF Concrete*	
		Litres/20 kg bag	Bags/m <sup>3</sup>	Litres/20 kg bag	Bags/m <sup>3</sup>
Trowellable	3.0	9.4	106	16.4	61
Plastic	3.6	9.8	102	17.0	59
Flowable	3.8	10.1	99	N/A	N/A
Fluid	4.0	10.2	98	N/A	N/A

\*Supaflow HF Concrete prepared with 20 kg Supaflow HF plus 20 kg of 10mm aggregate.

## Application directions

Use a high shear mechanical mixer or power tool (400 rpm) and appropriate mixing paddle. Refer to ITW Polymers & Fluids Technical Department for suitable choices. Ensure that machine capacity and manpower is adequate to enable grouting to be carried out as a continuous operation. Observe the accurate gauging of water addition and the mixing time. When using a mechanical mixer to prepare the pump and flow consistency grouts, add approximately 90% of the recommended water requirement to the mixer first and then add the dry powder. Mix for 2 minutes before adjusting the consistency with the remainder of the water. Mix until homogeneous for at least another 3 minutes.

For best recommendations contact the ITW Polymers & Fluids Technical Department.

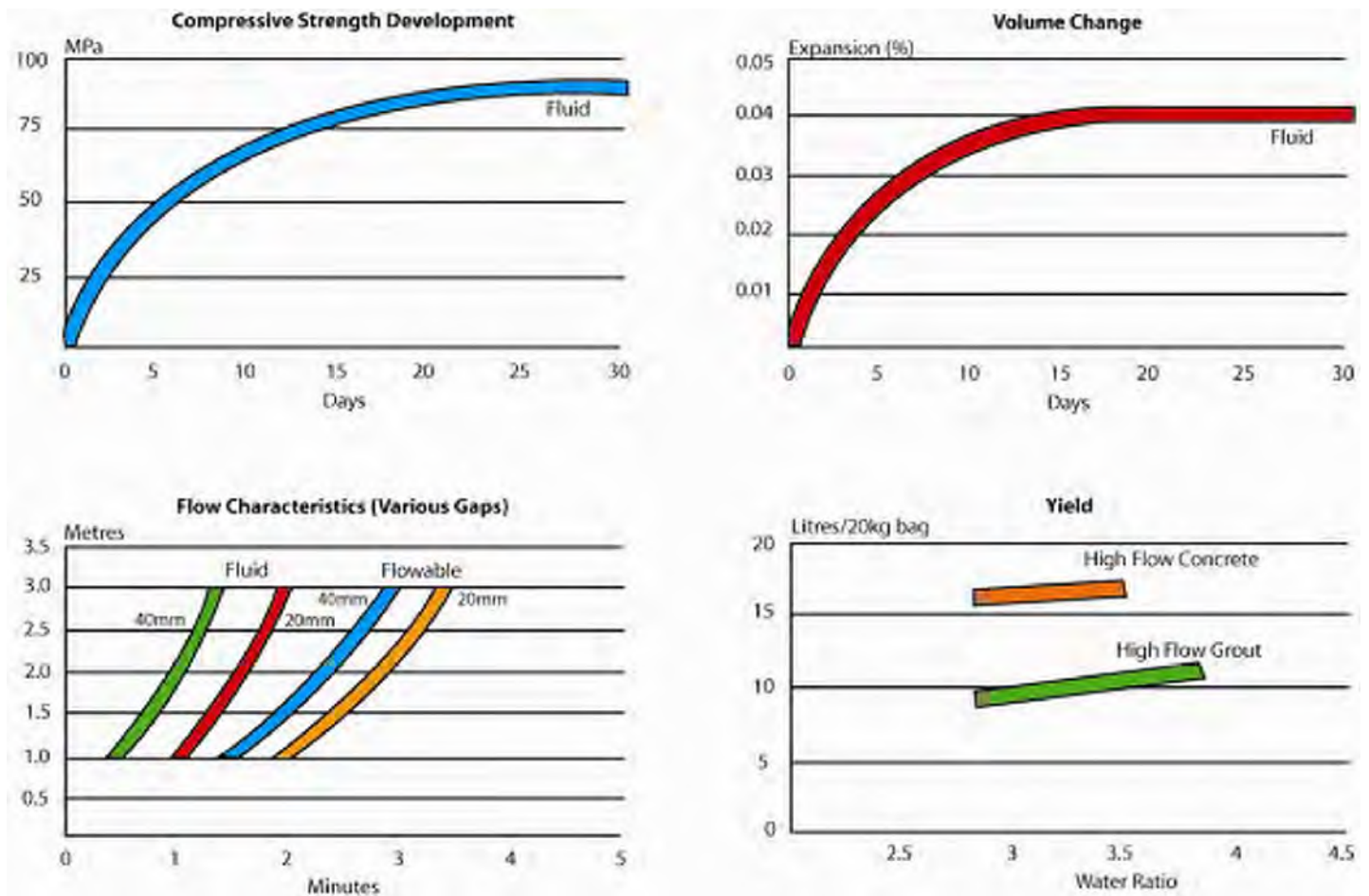
## Curing

After grout has been placed, cover all exposed grout with wet burlap and plastic to prevent moisture loss. Maintain until grout has hardened. After cutting back or finishing, continue curing, for a minimum of 24 hours with wet burlap followed by application of a concrete curing compound to ensure long term curing. Failure to prevent early moisture loss can result in plastic cracking, drying shrinkage, cracks in grout shoulders and a possible reduction in ultimate strength development.

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## Engineering Performance



## Structural repairs

### General

For damaged structures where access is difficult or large quantities of repair material are required and where high strength repairs are demanded, **Supaflow HF** is ideal. These applications will benefit from the excellent flow by gravity or pumping characteristics of **Supaflow HF**.

**Note** In situations where the damage to the concrete is due to reinforcement corrosion then the causes for the failure should be established prior to carrying out the repair. Seek qualified structural engineering ordinances in all structural repairs.

### Substrate preparation

All deleterious substances and loose concrete should be removed to expose a sound clean surface prior to carrying out any repair. A 10mm deep saw cut should be made at the edge of the repair section to avoid feather edges.

### Formwork

The formwork around the repair should be well constructed, securely supported and water tight.

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## Base plate grouting

### Foundation preparation

All surfaces should be free from oil, grease, laitance or any loose material. If the concrete surface is loose, defective or has laitance, it should be cleaned to a sound base. Bolt holes or fixing pockets should be blown clean of any dirt or debris.

A minimum of 2 hours prior to grouting, the prepared foundation should be flooded for pre-soaking with fresh water. Immediately prior to grouting, any standing water should be removed. Inspect pockets and bolt holes for water removal.

Base Plates should be clean and free of all oil, grease and scale. Where necessary air vents should be provided at high spots or shear keys.

Surface preparation guidelines cannot cover all site or field contingencies and it is always recommended to perform an on-the-spot adhesion test as a Quality Assurance audit if doubt exists over the process.

### Formwork

To ensure quick and easy placement of grout, formwork should be placed around baseplate. Formwork should be higher than the underside of the baseplate. Formwork should be well fixed, watertight and treated with a concrete release agent.

### Placement

To ensure continuous grout flow any bolt holes should be pre-grouted level with the substrate. Sufficient grout must be available prior to commencement and the time taken to pour a mix balanced with the time taken to prepare the next one. Pour from one side only to eliminate the creation of voids by entrapment of air or any surplus pre-soaking water. A grout head must be maintained at all times so that a continuous grout front is achieved. Where large volumes have to be placed **Supaflo HF** may be pumped. A heavy duty diaphragm or squeeze pump is recommended for this purpose.

Make certain that the mixed grout is placed promptly (within 30 minutes of mixing) and continuously before expansion commences. Grout bed should be finished level with the underside of the baseplate.

### Flow distance

Flow depends on mix design, gap width between substrate and baseplate and also head of grout used. As a guideline these results are possible by varying gap width and head of grout.

Gap Width	Maximum Flow Distance in mm	
	50mm Head	100mm Head
Mm		
10	350	900
20	750	1900
30	1250	3000
40	2000	3000

Mix Design: Fluid Consistency, 4.0 Ltr / 20 kg bag

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## Priming

Any exposed reinforcement should be cleaned and primed with **Epirez® Epoxy Mastic Metal Primer (215)** for Structural Steel and sprinkled with **Epirez® Epoxy Mortar Aggregate Extender (QA3)** while still tacky.

To prime the substrate, the formwork should be filled with fresh water and left to stand for a minimum of 2 hours. The water should be drained from the formwork just prior to commencing grouting.

**NOTE:** Where thick sections of **Supaflow HF** are required, refer to **Supaflow HF Concrete** down the page.

## Placement

**Supaflow HF** can be poured or pumped into the formwork. Adequate access should be provided when pouring, such as a “letterbox” in the formwork. If pumping, provide connection ports at regular intervals in formwork (approximately 4m horizontal and 2m vertical). Do not allow grout to fall more than 1 metre as this will increase the chance of air entrapment.

### Compressive development

Cured under restraint to AS 2073, Part 4, 1970

Age (days)	COMPRESSIVE STRENGTH MPa			
	Trowellable	Flowable	Fluid	Supaflow Concrete
1	50	42	36	37
7	80	71	66	70
14	91	84	81	83
28	105	88	83	95

## Special considerations

**Hot Weather Grouting:** If **Supaflow HF** is applied under extreme hot and windy conditions, grout and water should be stored at or below 25°C and if required, substrate should be water cooled. Please contact the ITW Polymers & Fluids Technical Department for full technical assistance and recommendation for special applications.

**Cold Weather Grouting:** The temperature of the grout and surroundings during application should be above the lower application limit of 5°C. Below this, precondition grout, water and substrate to raise the temperature (ideally to approximately 20°C) before applying the grout. Please contact the ITW Polymers & Fluids Technical Department for full technical assistance and recommendation for special applications.

## Supaflow HF Concrete

In applications where thick sections of non-shrink grout are required for repairs or footings, **Supaflow HF** may be specified with extension to decrease exotherm and increase yield.

**Supaflow HF** should be extended with 10mm clean, crushed, silt free dense aggregate such as basalt or river gravel. Up to 20 kg of aggregate can be added to each bag of 20 kg of **Supaflow HF** to produce a free flowing or pumpable high strength concrete. Since this **Supaflow HF Concrete** has excellent flow and self compacting properties, there is no need to vibrate the concrete during placement to produce dense, defect free surfaces when the formwork is removed.

Further technical assistance for specific applications is available from ITW Polymers & Fluids Technical Department.

## Cleaning

**Supaflow HF** should be removed from tools and equipment immediately after use with clean water.

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## Limitations

**Supaflow HF** should not be used at temperatures below 5°C

## Storage and Shelf life

When stored in original sealed containers under dry conditions shelf life is 12 months.

## Packaging

**Supaflow HF** is available in 20 kg moisture resistant, multi-ply bags.

## Ordering Information:

20 kg #E991620

## Safety precautions

**Supaflow HF** is non-toxic, but it is alkaline in nature. Gloves should be worn. Splashes to the skin or eyes should be washed off with clean water. In the event of prolonged irritation, seek medical advice. Keep contents away from children.

**TDG Code:** Not Classified

## Note

The figures quoted for work time, flow, set time, yield and strength development are not definitive. They are dependent on job site conditions and will vary accordingly. In all cases we endeavour to provide typical figures for use as a guide.

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