

# MasterFlow<sup>®</sup> 648

Low creep, high strength, high flow, high temperature epoxy grout

## DESCRIPTION

**MasterFlow 648** is a precision epoxy resin grout, consisting of 3 components – resin, hardener and specially blended inert aggregates. On mixing, the components yield a high flow, high strength grout. The grout is designed for use even in narrow gaps under baseplates and to effectively transfer all static and dynamic loads to the equipment foundation even at elevated service temperatures.

## RECOMMENDED USES

**MasterFlow 648** is recommended for grouting heavy-duty machines exerting high dynamic loads on foundations. It is suitable for minimum 15mm gap below the baseplate. The product is ideal for situations where:

- Gaps below baseplates are narrow and / or where the baseplates are large.
- Machine baseplates can attain high temperatures in service. Eg: heavy duty compressors in petrochemical industries.
- Machines exert high vibratory / tensile loads on foundations. Eg. ball mills in the steel industry.
- The grout bed is likely to be exposed to spillage of aggressive chemicals. Eg. grout beds below machines in chemical industries.
- Machines have to be commissioned quickly. Eg. production machines taken out for maintenance.

## FEATURES AND BENEFITS

- **High flow** - Effective grouting of even narrow gaps **and large baseplates**.
- **High tensile and flexural strengths** – Efficient transfer of operational loads to foundation. Withstands high dynamic loads.
- **High strengths even at elevated temperatures** - Maintains alignment and level even with elevated baseplate temperatures.
- **High bond strength**- Protects machine from vibrations by effective dampening.
- **High resistance to creep** - Maintains alignment and level over long time.
- **Good chemical resistance** - Durable even when exposed to certain industrial chemicals.
- **High early strengths** - Allows early load transfer. And Rapid commissioning of machines.
- **Variable fill ration** – Flowability can be optimized for ease of application and to maximize the cost of effectiveness.

## PROPERTIES

	Test Temp	Std Flow*	Hi Flow*
Comp. strength <sup>1</sup> , MPa			
1 day	23°C	85	75
7 day	23°C	>100	85
Tensile strength <sup>2</sup> , 7d MPa	23°C	15	13
Flexural strength <sup>4</sup> , 7d MPa	23°C	31*	28
Creep <sup>5</sup> , 7d @ 4.4 MPa load, cm/cm	60°C	4x10 <sup>-3</sup>	6x10 <sup>-3</sup>
Flexural Modulus <sup>4</sup> , 7d, GPa	23°C	15	11
Co efficient of expansion <sup>6</sup> , cm/cm/°C	23 - 99°C	34x10 <sup>-6</sup>	41x10 <sup>-6</sup>
Density (Mixed) kg/L	23°C	2.17	2.09
Shrinkage <sup>5</sup> , unrestrained-linear, %	23°C	0.005	0.0065
Tensile bond strength to steel <sup>7</sup> , 7d, MPa	23°C	21	
Shear bond strength to steel <sup>7</sup> , 7d, MPa	23°C	28	

1. ASTM C 579 B
2. ASTM C 579 B, Modified 40mm cubes
3. ASTM C 307
4. ASTM C580-74
5. ASTM C1181
6. ASTM C531
7. ASTM C 882-92 (adapted)

\*Cured 24hr at room temp. Post cured 16hr at 60°C, and conditioned 24hr at test temp.

\*\* **Mix Types:** used Standard flow mix with 4 bags of filler per set of resin and hardener packs; Hi flow mix with 3 bags of filler per set of resin and hardener packs.

The performance data is typical and based upon controlled laboratory conditions. Actual performance on the job site may vary from these values based on actual site conditions.

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## Chemical resistance

**MasterFlow 648** grout can resist non-oxidising mineral acids and salts, alkalis, dilute oxidising acids and salts and some organic acids and solvents. The level of resistance is dependent on the combination of chemicals it is exposed to, their individual temperatures, the duration of exposure, etc.

## Fill ratios

The fill ratio is the weight of aggregate to that of the combined resin and hardener components. **MasterFlow 648** is designed to be utilized at a variable fill ratio from 6.75:1 (Standard flow – 4 bags of aggregate) to as low as 5.06:1 (Hi-flow – 3 bags of aggregate)

**MasterFlow 648** maintains a high bearing area when fill ratios are decreased. In addition, physical properties, including high temperature performance, are maintained.

The chart below provides guidelines for the amount of aggregate that can be removed from a unit in order to optimize both flow and cost per cubic metre. In using this guide the temperature of the foundation and plate is the critical concern; however, grout and ambient temperature are also important.

Possible Reduction in Aggregate:		
Temperature	Std. Flow Mix for ≤2m flow and ≥50mm gap	Hi-flow mix for >2m flow and ≥ 50mm gap
> 32°C	NIL	NIL
21-32°C	NIL	Up to ½ bag
10-21°C	Up to ½ bag	½ to 1 bag

## APPLICATION

For information about application, please obtain a copy of the Master Builders Solutions “Application

Guide for MasterFlow Epoxy Grouts” from your local representative.

## Curing

**MasterFlow 648** is self-curing

## Pour Thickness

**MasterFlow 648** can be used for deep pours. When pour thickness exceeds 150mm, use of the steel reinforcing bar and MasterFlow 678 is recommended. With the unique variable fill ratio of **MasterFlow 648**, the minimum pour thickness can be as low as 12mm in many applications.

## ESTIMATING DATA

Normal Flow	104.3kg	48L
Hi flow	81.6kg	39L

## PACKAGING

Kit Size	104.3kg
Part A	10.1 kg
Part B	3.4 kg
Part C	4 x 22.7kg

## SHELF LIFE

**MasterFlow 648** Part A & B 12 months

**MasterFlow 648** Part C 24 months

Store out of direct sunlight, clear of the ground on pallets protected from rainfall.

## PRECAUTIONS

For the full health and safety hazard information and how to safely handle and use this product, please make sure that you obtain a copy of the Master Builders Solutions Material Safety Data Sheet (MSDS) from our office or our website.

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The technical information and application advice given in this Master Builders Solutions publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

## NOTE

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