MasterFlow® 648 (formerly known as Masterflow 648 CP Plus)

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 is recommended for grouting heavy-duty machines exerting high dynamic loads on foundations. It is suitable for a 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. E.g. heavy duty compressors in petrochemical industries.
- machines exert high vibratory / tensile loads on foundations. E.g. ball mills in the steel industry.
- the grout bed is likely to be exposed to spillage of aggressive chemicals. E.g.grout beds below machines in chemical industries
- machines have to be commissioned quickly. E.g. 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 including 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 many industrial chemicals.
- **High early strengths** – Allows early load transfer and rapid commissioning of machines.
- **Variable fill ratio** – Flowability can be optimised for ease of application and to maximise the cost of effectiveness.

PROPERTIES

	Test temp	Std flow**	Hi-flow**
Comp. Strength[1], MPa 8 h	23°C	15	-
10 h	23°C	30	-
16 h	23°C	66	-
Comp. Strength[2], MPa 1 d	23°C	85	75
7 d	23°C	100	85
7 d	*60°C	59	57
7 d	*77°C	43	48
Tensile Strength[3], 7 d, MPa	23°C	15	13
Flexural Strength[4], 7 d, MPa	23°C	31	28
	*60°C	28	24
	*77°C	24	21
Creep[5], 7 d at 4.4 MPa load, cm/cm,	60°C	4x10-3	6x10-3
Flexural Modulus[4], 7 d, Gpa	23°C	15.0	11.0
	60°C	11.6	8.9
Co efficient of expansion[6], cm/cm/°C	23-99°C	34x10-6	41x10-6
Density (Mixed) kg/L	23°C	2.17	2.09
Shrinkage6, unrestrained- linear, %	23°C	0.005	0.0065
Tensile bond strength to steel[7], 7 d, MPa	23°C	21	
Shear bond strength to steel[7], 7d, MPa	23°C	28	

1. (ASTM C579 B)
2. (ASTM C579 B, Modified 40mm cubes)
3. (ASTM C307)
4. (ASTM C880-74)
5. (ASTM C1181)
6. (ASTM C531)
7. ASTM C-482-92 (adapted)

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

****Mix types:** Standard flow mix – 4 bags of filler per set of resin and hardener packs; Hi flow mix – 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 resists non oxidising mineral acids and salts, caustics, dilute oxidising acids and salts, plus some organic acids and solvents.
Chemical resistance depends on the chemicals involved, their concentration, temperature and degree of exposure.

Fill Ratio
The fill ratio is the weight of aggregate to that of the combined resin and hardener components. **Masterflow 648** is designed to be utilised 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 optimise 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°C – 32°C	Nil	Up to ½ bag
10°C – 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 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 22.7 kg

SHELF LIFE
Masterflow 648 can be stored in tightly closed original containers for 24 months in controlled environments.

PRECAUTIONS
For detailed Health, Safety and Environmental Recommendations, please consult and follow all instructions on the product Material Safety Data Sheet (MSDS) from our office or our website.

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