BASF
The Chemical Company

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 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. 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. 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.

PROPERTIES

		Test Temp	Mix Type**	
			Std. flow	Hi-flow
Comp. Strength, MPa	1 d	23°C	85	75
(ASTM C579, Method B, Modified 40mm cubes)	7 d	23°C	100	85
		*60°C	59	57
		*77°C	43	48
Tensile Strength, MPa (ASTM C307)	7 d	23°C	15	13
		23°C	31	28
		*60°C	28	24
Flexural Strength, MPa (ASTM C880-74)	7 d	*77°C	24	21
Creep, cm/cm, (ASTM C1181) at 4.4 MPa load	7 d	60°C	$4x10^{-3}$	$6x10^{-3}$
Flexural Modulus, GPa (ASTM C880-74)	7 d	23°C	15.0	11.0
		60°C	11.6	8.9
Co efficient of expansion,cm/cm/°C (ASTM C531)		23 - 99°C	$34x10^{-6}$	$41x10^{-6}$
Density (Mixed) kg/L		23°C	2.17	2.09
Shrinkage, un-restrained– linear, % (ASTM C531)		23°C	0.005	0.0065

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

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

Bond strength (Standard flow mix)

* Tensile bond strength to steel MPa 7d 23°C 21
* Shear bond strength to steel MPa 7d 23°C 28
* Adapted from ASTM C482-81, re- approved 1992

Chemical resistance

MasterFlow 648 grout can resist nonoxidising 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.

APPLICATION

Consult BASF Epoxy Grout application guide.
Surface Preparation Prepared surfaces should be sound, dry, rough and free from contaminants. Clean the bottom of base plates free of rust, mill

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scale, oil, grease and other such contaminants. Use an effective method recommended by ICRI such as, wet grit blasting, high pressure water jetting, etc., to remove any weak concrete layer followed by vacuum cleaning.

Fill ratios This is the ratio of filler to the combined resin system by weight. **MasterFlow 648** is designed to accept fill ratios from 5.06:1 to 6.75:1. i.e. 3 to 4 bags of filler can be mixed with one pack each of resin and hardener. The quantity of filler reduction, from the max. 4 bags, depends on flow distance, gap and the ambient conditions as per the guidelines below.

Filler reduction guidelines:		
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

Formwork Proper design of formwork, based on the geometry of the space being grouted, is essential for effective grouting. It must be grout-tight and strong to withstand the fluid pressure of the grout.

Mixing MasterFlow 648 should be mixed mechanically. BASF Construction Chemicals recommends a pan type mixer, a mortar mixer or for small kits (one or less bags of powder) a slow speed (< 200 rpm), geared power drill fitted with a grout stirrer. Empty Component B completely into the Component A container and mix until the mixture is homogeneous. Pour the mixture into the mixer drum (or a clean dry pail) and keeping the mixer running, add Component C slowly. Only mix until the Component C is fully wetted by the resin. Avoid overmixing.

Placing Place the mixed grout within 30 minutes after mixing. **MasterFlow 648** can be placed to a thickness of 15 to 150 mm in a single pour. Larger thickness can be grouted in multiple layers. Consult BASF Construction Chemicals for advice.

Baseplate grouting : Pour the mixed grout into the header box of formwork continuously until the completion of the job.

Bolt grouting : Tremmie the grout in layers of max. 150mm in bolt pockets.

Curing MasterFlow 648 is self-curing.

ESTIMATING DATA

The yield per pack depends on the filler ratio used.

Mix	(A+B)	Yield
Standard 4.0 bags	13.5 g	48L
Hi-flow 3.0 bags	13.5 kg	39L

PACKAGING

MasterFlow 648 is available in a set of 3 components as below :

Component Description Packaging

A Resin	10.1kg pail
B Hardener	3.4kg can
C Filler	22.7kg bag (by 3 or 4)

SHELF LIFE

MasterFlow 648 has a shelf life of 12 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 BASF Material Safety Data Sheet (MSDS) from our office or our website.

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BASF Construction Chemicals offices in ASEAN

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