

MASTERFLOW[®] 648CP PLUS

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

DESCRIPTION

MASTERFLOW 648CP PLUS is a high performance, 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.

FIELDS OF APPLICATION

MASTERFLOW 648CP PLUS is recommended for grouting heavy-duty machines exerting high dynamic loads on foundations. It is suitable for min. 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. Rapid commissioning of machines.

TYPICAL PERFORMANCE DATA

	Test temp.	Mix Type**	
		Std. flow	Hi-flow
Comp. Strength, MPa (ASTM C579, Method B, Modified 40mm cubes)	1d 23°C	85	75
	23°C	100	85
	7d *60°C	59	57
	*77°C	43	48
Tensile Strength, MPa (ASTM C307)	7d 23°C	15	13
Flexural Strength, MPa (ASTM C880-74)	7d 23°C	31	28
	*60°C	28	24
	*77°C	24	21
Creep, cm/cm, (ASTM C1181) at 4.4 MPa load	7d 60°C	4x10 ⁻³	6x10 ⁻³
Flexural Modulus, GPa (ASTM C880-74)	7d 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, unrestrained - 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 648CP PLUS 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.

APPLICATION

Following are the general guidelines for application. For advice on specific grouting jobs, please consult BASF Construction Chemicals.

Surface Preparation

Correct preparation of concrete substrate and steel surfaces is critical for optimum performance. Prepared surfaces should be sound, dry, rough and free from contaminants.

Clean the bottom of base plates free of rust, mill scale, oil, grease and other such contaminants.

Depending on the substrate condition and environmental requirements use an effective method recommended by ICRI such as, wet grit blasting, high

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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 648CP PLUS** 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:

Temp.	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. Consult BASF Construction Chemicals for advice.

Mixing

MASTERFLOW 648CP PLUS should be mixed mechanically.

BASF Construction Chemicals recommends a pan type mixer, a mortar mixer or 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 648CP PLUS 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 648CP PLUS is self-curing.

CLEANING

Clean the tools and equipment first with water jet, then, if needed with a solvent such as methylene chloride or acetone.

ESTIMATING DATA

The yield per pack depends on the filler ratio used.

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

PACKAGING

MASTERFLOW 648CP PLUS 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

SHELF LIFE

MASTERFLOW 648CP PLUS can be stored in its unopened original packing for 12 months if kept dry and at moderate temperatures.

PRECAUTIONS

Health: MASTERFLOW 648CP PLUS contains certain chemicals which can cause skin irritation if exposed and respiratory reaction if inhaled. Wear gloves, masks and use hand barrier cream while handling the product. Wash thoroughly after handling.

Should skin contact occur, wash immediately with soap and water, or an effective hand cleaner.

In case of accidental eye contact, wash with copious quantities of water and seek medical help immediately. If ingested, do not induce vomiting. Consult a doctor immediately.

The vapours of solvents used for cleaning can be irritating. It is therefore recommended that cleaning is done in well ventilated areas.

Fire: MASTERFLOW 648CP PLUS is combustible. Avoid exposure to naked flame. Do not smoke while handling the product.

Flash point : >100°C for both Part A and Part B.

For detailed Health, Safety and Environmental recommendations, please refer to and follow all instructions on the product Material Safety Data Sheet

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STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **BASF Construction Chemicals** 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.

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