BASF
The Chemical Company

MASTERFLOW® 648 CP PLUS

High strength, high temperature, high flow epoxy resin grout

DESCRIPTION

MASTERFLOW 648 CP Plus is a solvent-free, high flow epoxy resin based grout system. Supplied as a three-component system, the final viscosity and flow characteristics can be adjusted to suit the particular project and application by varying the quantity of Part C that is used.

MASTERFLOW 648 CP Plus is based on a highly sophisticated epoxy resin system and provides high early and 7 day strengths as well as excellent resistance to high operating temperatures and crack inducing vibration.

RECOMMENDED FOR

- Precision alignment of machinery, compressors and prime movers in the gas transmission and other industries.
- Foundations under crusher ball mills, slab tables and other equipment in the steel industry.
- The pulp and paper, chemical processing, mining and power industries for a wide variety of applications.
- Application requiring fast turnaround with high early and seven day compressive strengths.

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.
- **Variable fill ratio**
  Flowability can be optimised for ease of application and to maximise the cost of effectiveness.

PERFORMANCE DATA

		Test temp.	Mix Type**	
			Std. flow	Hi-flow
Comp. Strength, MPa (ASTM C579 B)	8h	23°C	15	-
	10h	23°C	30	-
	16h	23°C	66	-
Comp. Strength, MPa (ASTM C579, Method B, Modified 40mm cubes)	1d	23°C	85	75
	7d	23°C	100	85
		*60°C	59	57
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.

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.

PROPERTIES

Chemical Resistance - MASTERFLOW 648 CP Plus 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.
Good housekeeping practices such as immediate cleanup of all spillage will greatly extend the working life of the product.

MASTERFLOW® 648 CP PLUS

The fill ratio is the weight of aggregate to that of the combined resin and hardener components. **MASTERFLOW 648 CP Plus** is designed to be utilised at a variable fill ratio from the 7.0:1 ratio (**standard version 100%**) to as low as 5.6:1 **(hiflow version 80%)**. Unlike most epoxy grouts, **MASTERFLOW 648 CP Plus** maintains a high bearing area when fill ratios are decreased. In addition, physical properties, including high temperature performance, are maintained at high levels.

By determining the proper fill ratio for a particular project and purchasing accordingly, the cost per cubic metre, flow and physical properties are optimised. A guideline for suggested fill ratios is shown below. In using this guide the temperature of the foundation and plate is the critical concern, however, grout and ambient temperature are also important.

Reduction in Aggregate only

Temperature	Very Thin Pours or Very Long Distances	Standard Pours
>32°C	-	-
>21° – 32°C	up to 10%	-
>10° – 21°C	10-20%	10%

The chart above provides guidelines showing the amount of aggregate that can be removed from a unit in order to optimise both flow and cost per cubic metre.

ESTIMATING DATA

1 small kit **normal flow version** will yield 11.8L (0.0118m³)

Normal Flow	23.54kg	11.8 L
Normal Flow	114.16kg	57L
Hi Flow	18.54kg	9.75L
Hi Flow	94.16kg	49.6L

APPLICATION

For information about application, please obtain a copy of the BASF "Application Guide for MASTERFLOW Epoxy Grouts" from your local representative.

Mixing - Thoroughly stir components A and B prior to mixing together. Use a slow running stirrer (max. 600 rpm). Mix for a minimum of two minutes. Transfer to a suitable mixing container and slowly add the Part C. Mechanically mix for a further two minutes and apply immediately. Mix entire contents of each unit as supplied. Do not attempt to split units unless accurate measuring can be assured.

Pour Thickness - MASTERFLOW 648 CP Plus can be used for deep pours. When pour thickness exceeds 150mm, use of steel rebar and **MASTERFLOW 678 DP Plus** is recommended. With the unique variable fill ratio of MASTERFLOW 648 CP Plus, the minimum pour thickness can be as low as 12mm in many applications. When utilising only 80% aggregate, **MASTERFLOW 648 CP Plus** achieves flow rates better than many hi-flow epoxy grouts while maintaining excellent bearing area.

CLEANING

Clean tools, mixer and other application equipment with **Thinner No. 1**.

PACKAGING

Kit size	23.54kg	114.16kg
Part A	2.54 kg	10.16 kg
Part B	1.00 kg	4.00 kg
Part C	20 kg	5 x 20 kg

SHELF LIFE

MASTERFLOW 648 CP Plus can be stored in tightly closed original containers for 24 months in controlled environments.

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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