

MasterFlow 648

Epoxy based, high-high strength precision grout

DESCRIPTION

MasterFlow 648 is a three component, epoxy based, non-shrink, high strength grout. It has high early and final strengths.

When three components mixed, MasterFlow 648 forms a mortar with a flowable consistency which can be easily applied by hand or machine.

MasterFlow 648 can be used in thicknesses from 10 mm up to 150 mm.

FIELD OF APPLICATION

MasterFlow 648 is used for assembling and fixing of the following items:


- Industrial turbines, generators and compressors
- Very large reciprocating compressors
- Industrial turbines, generators and compressors.
- Rolling, stamping, grinding, drawing and finishing mills.
- Forging hammers.
- Rail tracks, crane rails.
- Paper machine sole plates.
- Machinery and equipment requiring high strength maximum bearing.

Note: For wind turbine installations please refer to our MasterFlow 9000 series grouts.

FEATURES AND BENEFITS

- Meets the requirements of EN 1504-6.
- High ultimate compressive, flexural and tensile strengths. Therefore able to withstand heavy static and dynamic loads.
- Rapid curing reduces downtime and allows prompt scheduling of new installation.
- Excellent adhesion to steel and concrete ensuring full transmission of loads.
- Resists many industrial chemicals allowing use in harsh environments.
- Very low shrinkage ensures full contact at load transfer.
- Long decades of year track record in heavy industrial conditions provide confidence to new specifiers of clients.
- Maintains very high performance even at higher working temperatures with reduced creep and ensures precision alignment is maintained.
- Specifically designed to allow a variable filler ratio to optimise flow ability, bearing area and economics.
- Can be applied in thicknesses ranging from 10 -150mm.

- For hand or machine application.
- Zero shrinkage for excellent durability.
- Excellent freeze/thaw resistance.
- Impermeable to water and chlorides.

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BASF Bautechnik GmbH Dr.-Albert-Frank-Str. 32 D-83308 Trostberg	
13 DE0209/01	
EN 1504-6	
Anchoring product EN 1504-6 Principle 4.2	
Pull- out strength	Displacement ≤ 0,6mm at load of 75 kN
Chloride ion content	≤ 0,05 %
Glass transition temperature	62 °C
Creep under tensile load after continuous loading of 50 kN for 3 months	Displacement ≤ 0,6mm
Reaction to fire	Class F
Dangerous substances	Comply with 5.3 (EN 1504-6)

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APPLICATION METHOD

(a) Surface Preparation

The concrete should be free of frost, curing membranes, waterproofing treatments, oil stains, laitance, friable material and dust. The concrete surfaces should be chipped and if there is a water leakage it must be drained or properly plugged. Surfaces should be dry. Particular attention should be paid to bolt holes to ensure that these are dry. Use vacuum and/or oil free compressed air to remove free standing water. The concrete areas to be grouted should not be primed or sealed.

Base plates, bolts, etc. must be clean (SA 2½) and free of oil, grease and paint etc. to obtain proper adhesion. Set and align equipment. If shims are to be removed after the grout has set, then lightly grease them for easy removal. Priming the metal surfaces is only required when a long delay between cleaning and grouting will allow corrosion and contamination.

Ensure formwork is secure and watertight to prevent movement and leaking during the placing and curing of the grout. The area should be free of excessive vibration. Shut down adjacent machinery until the grout has hardened. In hot weather, base plates and foundations must be shaded from direct sunlight. Bags and buckets of grout should be stored in the shade prior to use. In cold weather, the temperature of base plates and foundations should be raised to over 10°C.

(b) Mixing

The fill ratio is the weight of the aggregate to combined resin and hardener components. MasterFlow 648 is designed to be utilised at a variable fill ratio (resin / aggregate) from the standard 1 / 6.75 ratio to as low as 1 / 5.07 (hi-flow version) The standard 60 litre unit of MasterFlow 648 CP Plus includes 100kg (4 - 25kg bags) of aggregate. This can be reduced to as low as 3 bag yielding 52 litres.

Resin and filler components can be purchased separately. Unlike most epoxy grouts, MasterFlow 648 maintains high bearing area when fill ratios are decreased. In addition, physical properties including high temperature performance are maintained. By determining the proper fill ratio for a particular project and purchasing accordingly, the cost per litre, flow and physical properties are optimised. A guideline for suggested fill ratios is shown below.

Temperature	Thin pours or long distance	Standard grouting
> 32°C	4 bags	4 bags
> 21 - 32°C	3.5 – 4 bags	4 bags
> 10 - 21°C	3 – 3.5 bags	3.5 bags

In using this guide the temperature of the foundation and plate is the critical concern, however, grout and ambient temperature are also important.

Add all the contents of the hardener container to the resin component and mix thoroughly for at least 3 minutes. Transfer to a mechanical mixer. Add the aggregate, mixing thoroughly until a uniform consistency is obtained. At low temperatures (10°C) the flow characteristics of MasterFlow 648 will be reduced and installation times increased.

(c) Application

Lengths of metal strapping laid in the formwork prior to placing may be necessary to assist grout flow over large areas and in compacting and eliminating air pockets. Have sufficient manpower, materials and tools to make mixing and placing rapid and continuous. Where grout must flow some distance, make the initial batch slightly more fluid or flowable than required; this lubricates the surfaces and avoids blockage of the grout that follows. The grout shall be poured continuously and from one side only, to avoid entrapment of air while grouting.

Maintain a constant hydrostatic head, preferably of at least 15 cm. On the side where the grout has been poured, allow 10 cm clearance between the side of the form and the base plate of the machine. On the opposite side allow 5-10 cm clearance between the formwork and the base plate.

Due to differences in temperature between the grout under the base plate, and exposed shoulders that are subject to more rapid temperature changes, debonding and / or cracking can occur. Avoid shoulders wherever possible. If shoulders are required they should be firmly anchored with reinforcing to the substrate to prevent debonding.

Make sure grout fills the entire space to be grouted and remains in contact with the plate throughout the entire grouting placement.

Note: Do not use vibrator for placing the grout!

COVERAGE

1,900 kg / m³ : Filling ratio 1 / 6.75 (1 set resin + 4 bags)

1,700 kg / m³ : Filling ratio 1 / 5.07 (1 set resin + 3 bags)

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FINISHING AND CLEANING

Tools and mixer must be cleaned immediately after use with suitable solvents. Cured material can only be removed mechanically.

CURING

Full cure is reached in 7 days after the application at a constant temperature of 23 °C

WORKING TIME

The following chart is a guide for the working time of a MasterFlow 648 grout at various ambient temperatures.

Temperature	Working time
at 32°C	50 – 60 minutes
at 21°C	90 – 120 minutes
at 10°C	120 – 150 minutes

PACKAGING

MasterFlow 648 is available in unitised package sizes for your convenience.

Comp.A	Comp.B	Comp.C	Set	Yield
10.8kg	4.0kg	100.0kg (4 bags)	114.8kg	60 l
2.7kg	1.0kg	25.0kg (1bag)	28.7kg	15 l

STORAGE

Store at ambient temperatures, out of direct sunlight, in cool, dry warehouse conditions and clear of the ground on pallets protected from rainfall prior to application.

SHELF LIFE

24 months if stored at above mentioned storage conditions.

WATCH POINTS

- Do not apply at temperatures below +10 °C nor above +30 °C.
- Do not add any other substance that could affect the properties of the product.
- In case of thicker applications and complex geometries consult your local Master Builders Solutions representative.

HANDLING AND TRANSPORT

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat, smoke or drink while working and wash hands when taking a break or when the job is completed. Specific safety information referring the handling and transport of this product can be found in the Material Safety Data Sheet. For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

Disposal of product and its container should be carried out according to the local legislation in force. Responsibility for this lies with the final owner of the product.

CONTACT DETAILS

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Product Data				
Property		Standard	Data	Unit
Chemical Base		-	Epoxy	-
Colour		-	Grey	-
Layer Thickness	minimum maximum	-	10 150	mm
Fresh Mortar Density	filling ratio: 1 / 6.75 filling ratio: 1 / 5.07	-	1.90 1.70	g/cm ³
Working Time	10 °C 23 °C 30 °C	-	120 – 150 90 – 120 50 – 60	Minute
Application Temperature (ambient and substrate)		-	+10 - +30	Celcius
Elasticity Modulus (7 days)	filling ratio: 1 / 6.75 filling ratio: 1 / 5.07	EN13412	≥ 19,000 ≥ 16,000	N/mm ²
Thermal Expansion Coefficient	7 days	EN 1770	2.4 x 10 ⁻⁵	1/k
Adhesion to Concrete after Freeze-Thaw (50 cycles with salt)	28 days	EN 13687-1	≥ 2.0	N/mm ²

Mechanical Strength	Temperature	10 °C		23 °C		30 °C	
		Filling Ratio	1 / 6.75	1 / 5.07	1 / 6.75	1 / 5.07	1 / 6.75
Compressive Strength	8 hours					51	51
	16 hours			57	57	57	57
	24 hours			69	69	69	69
	72 hours	58	55	83	82	91	90
	7 days	78	75	89	89	89	89
Flexural Strength	7 days	27	27	28	28	28	28

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Health and Safety

*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Solvent Based Products

Use in well ventilated areas; avoid inhaling. Suitable respiratory equipment may be needed, eg when spraying. Can cause skin, eye irritation. Wear protective eye shields and gloves during use. Do not smoke or allow sparks or naked lights when stored or in use.

Resin Products

Can cause irritation, dermatitis or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

Spillage

Chemical products can cause damage; clean spillage immediately.

DISCLAIMER

"Master Builders Solutions UK Ltd" (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use.

Accordingly, no liability will be accepted by the Company for the selection, by others, of a product, which is inappropriate to a particular application.

Products are sold subject to the Company's standard conditions of sale and all customers, users and specifiers, should ensure that they examine the Company's latest Product Literature.