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# **BASF CONSTRUCTION CHEMICALS AUSTRALIA and NEW ZEALAND**

## **APPLICATION GUIDE for MASTERFLOW® UNDERWATER GROUTS**

Masterflow® 88UW  
Masterflow® 1688UW

**IMPORTANT: READ THIS FIRST**

BASF Construction Chemicals does not warrant the performance of this product unless the instructions of this document and other related BASF Construction Chemicals documents are adhered to in all respects.



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## **1. SURFACE PREPARATION**

The surface must be free of all algae and marine life growth and unsound material. This can be accomplished by use of high pressure water blasting or other below water level methods. If possible the surface concrete should be removed to expose new uncontaminated concrete.

## **2. FORMING**

Forms should be watertight and strong enough to withstand the hydraulic pressure of plastic, flowable or fluid grout, without leaking. A tremmie pipe should be installed on installations where the grout has to be placed more than 1.5 meters below the surface. The interior surface of the form should be treated with a form release agent to ensure that it can be removed when the grout is set.

When placing the grout, all forms should extend vertically at least 100mm above the high tide mark to ensure complete filling of the space to be grouted and prevent overflowing. This will allow the water displaced to be removed or collected if this is required. The side forms should not be tight against the column so that grout can completely encapsulate the section to be grouted. A minimum space of 30mm is required for both the Masterflow 88UW or the 1688UW.

**HEADER BOX** - The header box should be suitable to discharge into the tremmie pipe and be large enough to maintain a head of grout during the grouting process. If the grout is to be pumped then the tremmie pipe should be directly connected to the pump discharge and be flexible enough to allow the slow removal of the tremmie pipe during grouting. Forming materials, such as wood, which absorb water, should be coated with water resistant oil (form oil), a form release agent (such as Rheofinish FR222) or plastic coating. Often plastic forms are used and these should also be coated with form release agent to allow easy removal.

## **3. MIXING GROUT**

Mortar mixers and paddle-type mixers are most often used for mixing grout. Small volumes of grout can be most efficiently mixed using hand held Festo style mixers. Mortar mixers especially those connected to a positive displacement pump (such as the Deguna 20 or the Meyco GP 2000) are ideal for this sort of grouting as usually the grout has to be placed some distance from the mixing place.

An adequate potable water supply should be located adjacent to the mixer. Never use sea water.

Consistency of the grout should be checked initially and periodically thereafter to see that it meets flow and consistency specifications.



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### **BASIC PRINCIPLES (Masterflow 88UW)**

- A. Wet out the mixing container with water. Place the mixing water in the mixer first, then add the dry grout rapidly in a steady stream. Do not let large clumps drop in at one time.
- B. The best retarder for non-catalysed grouts is a lower "as mixed" grout temperature. This is usually accomplished through the use of cold or iced mixing water or cool storage of the dry grout material.
- C. BASF grouts are supplied in a ready to use form requiring only the addition of water. Do not add any other dry materials (sand, cement etc).
- D. Do not use grout from damaged bags.
- E. Mix with potable water only.
- F. Do not mix by hand.

### **BASIC PRINCIPLES (Masterflow 1688UW)**

- A. Premix the part A first to ensure that the heavy fillers are dispersed as they can settle during storage
- B. Add all of the Part B to the predispersed part A and mix thoroughly until the material becomes uniform
- C. Only use full kits and begin the grouting process within 5 minutes of mixing
- D. If filling a prepacked column use a tremmie pipe to ensure grout is introduced to the lowest level of the column
- E. The Masterflow 1688UW will displace the water
- F. For a coating mortar to adhere to wet surfaces the Masterflow 1688UW can be mixed with Filler F1 or F5 to produce a suitable mortar

### **SMALL SIZE BATCHES**

Small batches are those in which one or two bags are mixed at one time with a drill-mixer (eg; Festo) and grout stirrer in a 20 to 25-litre pail. Add all the required water to the mixing pail. Slowly and uniformly add the grout into the water over 30 seconds while mixing. Do not "dump" the grout into the mixer. This may cause lumping, which will be hard to break down. Mix for 1-2 minutes at 300-400rpm ensuring the mixing blade is kept below the surface of the grout to prevent air entrapment. Excessive mixing will entrap air, reducing flow and strength. For Masterflow 1688UW mix whole kits using a drill type mixer as above.

### **MEDIUM-SIZE BATCHES**

A medium-size batch is one prepared in a power driven mixer, using from 1 to 20 bags per batch. The most widely used equipment is the common horizontal-shaft, paddle-type mortar mixer connected to a positive displacement discharge pump. (not suitable for Masterflow 1688UW).



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#### **4. PLACING GROUT**

Grout should be placed as quickly as possible after it has been properly mixed. Grouts may be poured or pumped at a fluid or flowable consistency. The method of placement will depend on the size of the object grouted, its shape, available access to accomplish the grouting, clearances, obstacle around which the grout must be placed and environmental temperatures.

Placement of grout should be through a tremmie pipe if the distance below the water level is more than 1.5 meters. Recommended below water grout thickness for Masterflow 88UW is 25-150mm, with a minimum of 15mm and the thickness for the Masterflow 1688UW 20-80mm. Depth of grouting will depend on situation but as a rule of thumb if applied through a gravity fed tremmie then a depth of no more than 5 meters can be grouted. If a pump is used then much larger depths can be grouted as the grout can be placed at whatever depth the pump can pump to.

#### **5. COLD WEATHER GROUTING (below 10 degrees Celsius)**

Cool and cold temperatures affect the properties of grout in the same manner as concrete and mortars. Cold temperatures will slow the curing and strength gain of the grout so longer cure times should be anticipated. If water below 10c is encountered then the Masterflow 1688UW should be used and allowed to react for 10 minutes before applying to ensure the reaction rate is sped up.

#### **6. PUMPING MASTERFLOW GROUTS**

BASF grouts can be pumped with the same equipment that will pump cement-sand or pea gravel mixes. Pumps should have a hopper capable of mild agitation. A 50mm internal diameter pump hose is preferred, although smaller diameter hose can be used for short distances.

Keep the line from the pump to the discharge outlet as short as possible. Protect the grout pipe from heating by the sun by covering with wet burlap or cloth. Pack the grout line in ice and use iced mixing water when temperatures are extreme to retard stiffening from heat build-up and minimise line plug-ups. All reducers of line diameter from the pump outlet should be long tapers rather than abrupt reducers. The latter creates a restriction that can cause the grout to bridge the smaller opening and plug the line. All valves should be of the quick opening gate, plug or similar types to allow unrestricted passage of the grout. (Do not use globe valves or similar types that severely restrict flow of the grout even when fully open.)



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## 7. CURING

No curing is necessary with Masterflow 88UW and 1688UW when used underwater.

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