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MasterRoc[®] MP 355

Highly-Reactive, Two-Component Polyurethane Injection Resin

Description

MasterRoc MP 355 is a two-component, solvent-free polyurethane injection resin specifically designed for stopping rapid water flow and ground stabilization.

Applications

Recommended for use in:

- Control of high volume water ingress
- Stabilization of fractured rock, sands and gravels, and land-fill materials
- Void filling
- Repair of concrete structures



Features

- When in contact with water, the product forms a rigid foam. In the absence of water, the product reacts and forms a stiff, rubber-like material
- Fast-reacting material where structural strength or rigidity is required

Benefits

- Reacts either with or without water. This is a significant safety advantage as the material will always be cured
- Modification of the reaction can be achieved adding an accelerator and a thixotropic agent, which are supplied separately, to Component A.

Performance Characteristics

Technical Data (Typical)

	Color	Viscosity cP (mPa.s)	Density lb/ft ³ (kg/L)
Component A	Brown	320 (320)	62.4 (1.00)
Component B	Dark Brown	240 (240)	77.4 (1.24)
Accelerator 10	Yellowish	500 (500)	62.4 (1.00)
Accelerator 15	Yellowish	1000 (1000)	62.4 (1.00)
Accelerator 25	Transparent	20 (20)	56.2 (0.90)

Tested at 68 °F (20 °C)

Guidelines for Use

Components A and B are delivered ready-to-use. They are injected in the ratio of 1:1 by volume using a two component injection pump equipped with a static in-line mixer nozzle, as shown below.

Special requirements: The foaming reaction time is dependent significantly on the temperatures of the polyurethane resin, the rock and the ground water. The MasterRoc MP 355 resin can be given three fundamentally different properties by the use of three different accelerators, namely:

- MasterRoc MP 355 Accelerator 10
- MasterRoc MP 355 Accelerator 15
- MasterRoc MP 355 Accelerator 25

For a high foaming factor (approximately 20 to 25) and a rapid reaction for water cut-off injection: Add the Accelerator 10 to Component A at a dosage of 0.5 to 2% (by mass of Component A).

For a dense foam (foam factor of 7 to 9) with high mechanical strength for ground improvement: Add the Accelerator 15 to Component A at a dosage of 0.5 to 2% (by mass of Component A).

If large amounts of water are expected in soil or rock and strong foam with low expansion factor is needed: Accelerator 25 should be premixed in Component A at a dosage of 0.1 to 1% (by mass of Component A).

MasterRoc MP 355 Accelerator Dosage Table

Dosage of Accelerator, Percent by mass of Component A	Equivalent volume of Accelerator, fl oz/gal (mL/L)		
	Accelerator 10	Accelerator 15	Accelerator 25
0.10	—	—	0.1 (0.9)
0.25	—	—	0.3 (2.4)
0.50	0.6 (4.8)	0.7 (5.2)	0.6 (4.7)
0.75	0.9 (7.1)	1.0 (7.8)	—
1.00	1.2 (9.5)	1.3 (10.4)	—

If there is no water in the ground, or a particularly rapid reaction is required: Water can be premixed to Component A, at 2% by volume of Component A.

Mixing: After the addition of either the Accelerator or water to Component A, the can should be shaken vigorously to ensure even dispersion throughout the resin prior to injection. To achieve the best mixing of the components during injection, the inclusion of a static in-line mixer in conjunction with the mixing head is strongly advised. The length of the static mixer should be approximately 12.5 in. (32 cm) for correct mixing.

Cleaning of injection equipment: For short breaks in injection, pump only Component A through the in-line static mixer nozzle. After finishing the injection, for storage of the equipment pump, clean with

water-free engine oil through the pump and injection lines. A flushing agent for polyurethane resin may also be used.

Storage and Handling

Storage Temperature: If stored in dry conditions, in unopened, tightly closed original containers and within a temperature range of 40 °F and 95 °F (5 °C and 35 °C), the components of MasterRoc MP 355 resin have a shelf life of 24 months.

Safety: Refer to the Safety Data Sheet for safety measures. Avoid contact with skin and eyes by using the required personal protective equipment, such as overalls, gloves and eye goggles. If contact with skin occurs, wash thoroughly using soap and water. If contact with eyes occurs, rinse thoroughly with an eyebath filled with boracic solution and seek medical advice. The cured products are harmless. Uncured products should be prevented from entering local drainage system and water courses. Spillage must be collected using absorbent materials such as sawdust and sand, and be disposed of in accordance with local regulations.

Safety precaution for void filling and ground improvement: Large single volumes of resin in the ground will generate a significant amount of heat due to the exothermic reaction between the two components. During void filling and ground improvement injections, always determine the maximum amounts to be injected in order to avoid very large single volumes close to the tunnel. This can cause overheating of the reacting resin, and can potentially cause smoke development and/or melting and boiling of the resin.

For these types of injections, always apply the resin in a foaming mode (with 2% water pre-mixed to Component A). The general recommendation is:

- **Drill hole length of 13 to 30 ft (4 to 9 m):** Max. 58 gal (220 L) of the mixed materials (29 gal (110 L) of each part)
- **Drill hole length of 30 ft (9 m) or more:** Max. 95 gal (360 L) of mixed materials (48 gal (180 L) of each part)

If there is a need for larger amounts of resin to resolve the issue, one can re-drill and inject 24 hours later.

For drill hole lengths shorter than 13 ft (4 m), always avoid any single concentrations or volumes of resin larger than 35 gal (132 L) of mixed material (18 gal (68 L) of each part). Should backflow occur, the injection must be terminated (or pumping speed significantly reduced) until the backflow is blocked.

Packaging

MasterRoc MP 355 resin is available in the following packaging:

- Component A:** 5 gal (20 L) pails
49 gal (185 L) drums
- Component B:** 5 gal (20 L) pails
49 gal (185 L) drums

Related Documents

Safety Data Sheet: MasterRoc MP 355 resin

Additional Information

For additional information on MasterRoc MP 355 resin, contact your local sales representative.

Master Builders Solutions creates technologies for the construction industry inspiring people to build better. We are active in ~40 countries and operate 35 production sites with over 1,600 employees. We develop, produce, and market high-quality chemical admixtures, as well as adjacent core technologies, to master the challenges of today and support a decarbonized future. Our people are pivotal and pair leading technologies and a strong brand heritage to surpass our customers' expectations and drive continuous value creation.

Limited Warranty Notice

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