MONOKOTE® MK-1000 HB | Simplified Yield Chart

1 First step in measuring nozzle yield is to determine the gallons of water per bag.

For batch mixers use the charts below. For continuous mixers, instructions are provided to the right.

BATCH MIXER / Timed Sump Pump

Mix Water Chart (based on 3 bag mix)

Water drop in inches	Gallons per batch	Gallons per bag
13 1/2	23.25	7.75
14 1/2	24.75	8.25
15 1/4	26.25	8.75
16 1/4	27.75	9.25
17	29.75	9.75

*This is valid for 55 gallon drum with a **22.5 in diameter** and for 3 bag batches.*
To determine water used measure the water drop in inches and multiply by 1.72.

CONTINUOUS MIXER / Inline Digital Flow Meter

1. Fill the continuous mixer hopper level to the top with dry material.
2. Zero the flow meter by depressing the on button for 3 seconds.
3. Start the continuous mixer and count the number of bags emptied into the mix hopper.
4. Run the mixer until 5 or more bags have been mixed. Start and stop operations are OK.
5. Stop the mixer level with the top as in step 1.
6. Once level, now read the number of gallons on the flow meter.
7. Divide the number of gallons by the number of bags mixed.

EX: 68 gallons divided by 8 bags = 8.5 gallons per bag.

2 Once the water has been determined use the yield chart to find your target cup weight.

NOZZLE YIELD FOR INJECTED APPLICATION (b)

Yield (a)		Water				
		8.25 U.S. gal 31 L	8.75 U.S. gal 33 L	9.25 U.S. gal 35 L	9.75 U.S. gal 37 L	Dry Density (PCF)
3.25 m^2	35 BF	660	680	705	725	19.5
3.35 m^2	36 BF	640	660	685	705	18.9
3.44 m^2	37 BF	620	645	665	685	18.4
3.53 m^2	38 BF	605	630	645	670	18.0

a) Yield based on 1 inch (25.4 mm) thickness
b) Cup weights are based on an actual 980 ml cup. Cup weights in table are in grams.

Warning: A minimum density of 18.0 pcf is required to meet 1,000 psf bond strength.

***NOTE:** Nozzle yields should be taken 3 times a day; more frequently if changes occur in the mixing or conveying process.*

Allow enough time for changes in mix time, water ratio, pump speed, and new accelerator mixes to reach the nozzle before taking the cups.

MONOKOTE® MK-1000 HB | Injected

Accelerator Mixing:
One 60 lb Bag/10 gallons water

Concentration 1270 g/liter cup (specific gravity)

1. Mix Monokote accelerator in a GCP injection system as directed on the accelerator bag.
2. Place an empty one liter container on scale and press “on/tare” to tare the container.
3. Fill the container level (flat) to the top with accelerator.
4. As an alternate to 1–3 above, place a hydrometer in the solution and determine the specific gravity.

Note: Freshly mixed solution contains small air bubbles. Target 1260 grams.

Calculating bags per hour with a batch mixer

- Completely empty the mixer into the pump hopper.
- Mix a new 2 or 3 bag batch.
- Let the pump hopper run down until all most empty (do not draw air).
- Note the level of material remaining in the hopper.
- Empty the new batch into the pump hopper and start the stop watch.
- Time the mix until the new mix reaches the same level. (Continuous pumping is best).
- Stop the watch and record the time. Using the data recorded, calculate the bags per hour as demonstrated in the CALCULATION EXAMPLE presented later in this section.

Calculating bags per hour with a continuous mixer

- Fill the continuous mixer to the top with dry material.
- Let the pump hopper run down until all most empty (do not draw air).
- Note the level of material remaining in the pump hopper.
- With the pump pumping, start the mixer and stop watch.
- Continuous pumping is best. If the pumps stops and starts, then stop and start the stop watch as well.
- Continue to mix and convey at least 3 bags and make sure the dry mixer hopper is filled to the top as in step 1.
- Allow the 3 bags to run down until the pump hopper is at the same level noted.
- Once 3 bags have run down, stop the watch and record the time and calculate using the example below.

CALCULATION EXAMPLE: 5 minutes 45 seconds for 3 bag mix

5 minutes x 60 sec per minute =	300 sec
Remaining 45 seconds =	45 sec
Total seconds to pump:	345 sec
Divided by the 3 bags =	115 sec /bag

Divide the 115 seconds for 1 bag into: 3600 sec per hour

Equals 31.3 bags per hour

BAGS PER DAY

Pumping Rates

15 – 20 bags per hour = 90 – 120 bags per day[a]

20 – 30 bags per hour = 120 – 180 bags per day[a]

30 - 40 bags per hour = 180 – 240 bags per day[a]

a) assumes 6 hours of application time.

MONOKOTE® MK-1000 HB

Supplemental Field Application Information

BONDING AGENT REQUIREMENT

Prior to application of Monokote MK-1000 HB, a bonding agent, approved by the fireproofing manufacturer, shall be applied to all concrete substrates to receive MK-1000 HB. A bonding agent may also be required on certain primed or painted steel. Please check with your local sales representative.

FIREBOND™ APPLICATION

Coverage:

Full concentrated strength—up to 1000 ft^2/gal

Diluted 1:1 (with water)—up to 500 ft^2/gal

Container size 5 gallon bucket or 55 gallon drum. GCP recommends using an airless pump for Firebond™ application.

Target Weight - Mixer Density
725-775 grams

1. Mix Monokote as directed.
2. Place an empty GCP 980 ml container on the scale and press on/tare to tare the container.
3. Fill the container with Monokote, tapping lightly to remove air voids.
4. Place the container filled with Monokote on the scale and record the net weight.

   If the weight is above 830 grams, mix longer or speed up the mixing blades.

   If the weight is below 675 grams, mix for a shorter time or slow the mixer blades.

Target Weight - Nozzle Density
605 - 670 grams

1. Set the accelerator flow rate to a “fast trickle”.
2. Start spraying and spray for about one minute until the system stabilizes.
3. After about one minute spray Monokote directly into the GCP 980 ml container. Position the nozzle above the container so that there is no overspray outside the container. Overfill the container.
4. Cut the Monokote level with the top of the container. Wait approximately one minute or until no further swelling is apparent. Again cut the Monokote flush with the top of the container.
5. For accurate readings cut to a smooth surface before the MK begins to set.
6. Place an empty container on the scale and press “on/tare”.
7. Replace the tared container with the identical container filled with Monokote and record the net weight.

Check the charts on page 1 to determine yield and adjust the injection rate to yield no more than 38 board feet per bag. A minimum density of 18.0 pcf is required to meet 1,000 psf bond strength.

MONOKOTE® MK-1000 HB

DELIVERY SYSTEM

- **PUMPS:** Piston, Hydraulic, rotor stator, squeeze pumps.
- **HOSES:** 800 psi plaster grout to 1500 psi Goodyear Gauntlet ¾" whip hose.
- **WATER DELIVERY SYSTEMS:** Timed sump pumps, Digital in-line meters, and Fil-Rite water meters.

APPLICATION

- **Orifice Selection:** The orifice should be as large as possible while still maintaining a proper spray pattern. The faster the pumping rate the larger the orifice size needs to be.
- **Orifice Shield:** The use of an orifice shield is highly recommended. The orifice shield decreases the size of the spray pattern and provides a well-defined spray pattern.
- **Nozzle Air Pressure:** The nozzle air should be set as low as possible (approx. 15-20 psi) while still maintaining a well-defined spray pattern. The air pressure should make a dull buzzing noise rather than a high pitched whine.

Injected Application Thicknesses:

— 1st pass: 3/8" to 3/4"

— 2nd pass: 3/8" to 7/8"

Product Change Over

GCP recommends the use of 5 ounces of retarder per 3 bag mix, with Monokote on the first three batches when switching EITHER TO or FROM cement based Monokote products to gypsum based Monokote products.

Set Times

Set times vary due to job site conditions

With Injection: 5-10 minutes, longer in colder temperatures.

ADVANTAGES

- Excellent option for meeting the IBC building requirements for bond strength in excess of 1,000 psf
- High yield capabilities
- Low pumping pressures
- Low wear on equipment
- Higher production rates

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