This form is to be used when producing a load of high-grade LMS from dissolved USP Crystal.

LMS Lot #:_____ Start Date: _____ Start Time: _____

Material	Weight %	Target	Actual	Lot Number
USP Magnesium Sulfate	55.3 (hepta basis)	26000 pounds		
City Water	44.7	2518 gallons		n/a
Total	100.0	47000 pounds		See above

Pre-production Cleaning

	Initials	Time
1. Ensure that the Holding Tank is clean, empty, and dry.	_____	_____
2. Ensure Dissolving Tank is empty	_____	_____
3. Rinse the Dissolving Tank with City Water	_____	_____
4. Close bottom valve and fill with City Water	_____	_____
5. Turn on steam coils and condensate return	_____	_____
6. Ensure 3-Way Transfer valve is in the "down position"	_____	_____
7. Open Circulation valve, turn on the Circulation pump, and circulate water for 30 minutes or until the water temperature reaches 74 C or higher. Temp: _____	_____	_____
8. Stop Circulation and Drain the tank by opening the bottom valve	_____	_____
9. Repeat steps 3 through 7 again to ensure tank is clean.	_____	_____
10. Get a second person to verify tank is clean before continuing.	_____	_____
2nd person:	_____	_____

Dissolving USP Crystal

BATCH 1 **Initials** **Date**

1. Close bottom valve and using the flow meter, add 581 gallons of water to the dissolving tank. _____ _____
2. Ensuring 3-way valve is in the down position and steam coils are on, start the circulation pump. _____ _____
3. Allow the water temperature to reach 74C or higher _____ _____
4. Add 3 (THREE) tons of USP Crystal, noting the lot number of the salt added as Batch 1 _____ _____
5. Check the sacks off on the "Sack Check" AFTER they have been put into the tank. _____ _____
6. Allow the solution to reach 74 C or higher. _____ _____
7. Ensure piping on the 3-way Transfer Valve is set up to transfer the LMS to the Hold Tank. _____ _____
8. Place the 3-way Transfer Valve into the "up position" to transfer the LMS to the hold tank. _____ _____

Product	Date	Lot number

BATCH 2

Initials **Date**

1. Once the transfer is complete, place the 3-way Transfer Valve in the "down position" and using the flow meter, add 581 gallons of water to the Dissolving Tank.

_____ _____

2. Allow the water temperature to reach 74C or higher _____ _____

3. Add 3 (THREE) tons of USP Crystal, noting the lot number of the salt added as Batch 2

_____ _____

4. Allow the solution to reach 74 C or higher. _____ _____

5. Ensure piping on the 3-way Transfer Valve is set up to transfer the LMS to the Hold Tank.

_____ _____

6. Place the 3-way Transfer Valve into the "up position" to transfer the LMS to the hold tank.

_____ _____

Product	Date	Lot number

BATCH 3

Initials **Date**

1. Once the transfer is complete, place the 3-way Transfer Valve in the "down position" and using the flow meter, add 581 gallons of water to the Dissolving Tank.

   _____ _____

2. Allow the water temperature to reach 74C or higher _____ _____

3. Add 3 (THREE) tons of USP Crystal, noting the lot number of the salt added as Batch 3

   _____ _____

4. Allow the solution to reach 74 C or higher. _____ _____

5. Ensure piping on the 3-way Transfer Valve is set up to transfer the LMS to the Hold Tank.

   _____ _____

6. Place the 3-way Transfer Valve into the "up position" to transfer the LMS to the hold tank.

   _____ _____

Product	Date	Lot number

BATCH 4

	Initials	Date
1. Once the transfer is complete, place the 3-way Transfer Valve in the "down position" and using the flow meter, add 581 gallons of water to the Dissolving Tank.	_____	_____
2. Allow the water temperature to reach 74C or higher	_____	_____
3. Add 3 (THREE) tons of USP Crystal, noting the lot number of the salt added as Batch 4	_____	_____
4. Allow the solution to reach 74 C or higher.	_____	_____
5. Ensure piping on the 3-way Transfer Valve is set up to transfer the LMS to the Hold Tank.	_____	_____
6. Place the 3-way Transfer Valve into the "up position" to transfer the LMS to the hold tank.	_____	_____

Product	Date	Lot number

BATCH 5

Initials Date

1. Once the transfer is complete, place the 3-way Transfer Valve in the "down position" and using the flow meter, add 581 gallons of water to the Dissolving Tank. _____ _____
2. Allow the water temperature to reach 74C or higher _____ _____
3. Add 3 (THREE) tons of USP Crystal, noting the lot number of the salt added as Batch 5 _____ _____
4. Allow the solution to reach 74 C or higher. _____ _____
5. Ensure piping on the 3-way Transfer Valve is set up to transfer the LMS to the Hold Tank. _____ _____
6. Place the 3-way Transfer Valve into the "up position" to transfer the LMS to the hold tank. _____ _____

Product	Date	Lot number

Load is Complete

Initials Date

1. Once the transfer is complete, stop the pump, open the bottom valve, and wash out the tank with city water. _____ _____
2. Close the valve on the Holding Tank and rinse the piping with City Water. _____ _____
3. Close the steam valve and the condensate valve on steam coils _____ _____

4. Note the total amount of water, salt, and the salt lot number on the table at the top of this batch sheet. _____ _____

Holding Tank and Quality Check

Initials Date

1. Circulate the holding tank for 45 minutes. Time Started: _____Time Finished:_____
_____ _____
2. Sample the Holding Tank into a clean Nalgene sample bottle, label with date, time, Lot number, and operator initials. _____ _____
3. Take sample to the Quality Lab for testing. _____ _____
4. Once the sample is approved by Quality, have them initial the approval on this batch sheet:

Quality Disposition (approved or rejected): _____

Approved by: _____

Date and Time _____

Loading

1. Once the batch is approved by Quality, the batch can be loaded onto the tanker.
2. Use "Liquid Loading System" procedure, P13-PR-200-072, to load the truck. Consider the Holding Tank as the Brine Tank for this purpose. _____ _____
3. When load is complete, rinse the holding tank with city water and leave drain valve open.
_____ _____

Manger Approval / Verification:

Signature: _____ Date: _____

Manager – Attach Liquid Loading System print out and send batch sheet to Quality for filing.

1.0 Reference Documents

N/A

2.0 Change Information

Change to new Doc System Format.