	GILES CHEMICAL		
	COMPANY POLICY / PROCEDURE		
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	Author: Carl Mooney		
		Job Specific	

Safety: Wear safety glass and/or goggles when working in the lab.

Purpose: CRYSTAL SIZE DETERMINATION – DRY PRODUCT

Procedure:

Background Information:

As Epsom Salt crystals form in a cooled saturated solution of magnesium sulfate, all assume the same rhomboidal configuration. Not all these are the same size, however. As commercially produced they range from passing 8 mesh (8 rectangular openings per linear inch) down to dust (smaller than 200 mesh). Some crystals larger than 8 are formed in the process but they are screened out, redissolved, and recirculated. To some users crystal size is not important, but to others the size range has bearing on application and usage. Packaging characteristics and ease of blending with other materials are typical requirements. Consequently it is important to determine the crystal size range of a given sample as a means of quality control. Giles' crystals are characterized as to sizes as all passing 8 mesh, and by the amounts retained on 12, 16, 20, 60, 90, 120 mesh sieves and dust (>10 mesh).

Scope:

A laboratory sample is obtained during each production shift. The date, shift, time, grade of product, dryer temperatures, and operator must be recorded on the sample. The lab sample is screened using stacked vibrating sieves having openings gradually decreasing in size (see detail above). The accumulation on each sieve and the bottom pan are removed and weighed individually. Retention weights on each mesh and the bottom pan express the crystal size range in the sample.

Equipment:


Sieves and Sieve shaker -- CSC Meinzner # S1232-1

Weighing Balance -- B440 Sartorius

Timer -- S / P C 6510 - 1 3 Channel


Small Spatula

Sheet of 8 1/2" x 11" office letter paper

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Steps –

1. Calibrated Sieves are used to run sieve analysis. Sieves used for daily product are mesh Size 12, 16,20,60,90,120, and pan.
2. A sheet of paper is placed on the balance and the balance tarred to zero.
3. Approximately 50 grams of the sample of salt is weighed unto the paper.
4. The salt sample is then placed on the top of the Sieve stack (12 mesh)
5. The stack cover is put in place and tightened down.
6. The vibration mechanism is activated and allowed to run for two minutes, using the timer provided.
7. When vibration has stopped
 - a) remove top sieve pan, lid attached, invert pan, tap or scrape the screen lightly to remove lodged salt particles.
 - b) The pan is then lifted from the cover and all the crystals will remain on the inverted cover.
 - c) Transfer the crystals to the paper and weigh.
8. The crystal size determination is reported as the percentage retained on each sieve and the bottom of the pan.
9. Sieve Analysis can be run with other mesh sizes if needed.

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TRAINING DOCUMENTATION

	EMPLOYEE	TITLE	SIGNATURE	DATE
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Revision Number	Revision Date	Revision Author	Revision Description
00	03/27/2006	CM	New Document
01	11/06/2008	PT/SL	1) Added mesh size at background information to include 90 mesh screen 2) Added need to record Date, Shift, Time, Product Grade, Dryer Temperature, and Operator to be recorded on sample at scope. 3) #6 a. Corrected work scrap to scrape 4) Quality Manager placed document on new format
02	06/29/09	SL	1) Added Calibrated Sieves and mesh sized to first step. 2) Added Sieve analysis can be ran with other mesh sizes if needed as step #8