

	<h1 style="text-align: center;">Buntrock Industries, Inc.</h1> <p style="text-align: center;">Investment Casting Supplies</p>	Document#: 7.16
		Rev#: 0
	Title: Slurry Binder Specific Gravity and Silica Content	Page#: 1 of 2

Rev	Description of Change	Author	Date
0	Initial Release	Joe Norvell	2/4/14

1.0 Scope:

- 1.1 This procedure describes the determination of the specific gravity of the binder phase.
- 1.2 This information can be used to determine the binder silica content.

2.0 Purpose:

- 2.1 The silica content of slurry binder affects mold quality and casting quality. As a result, this test is often used as a key control test. Variation in binder silica content will affect mold strength and slurry stability.

3.0 Hazard and Safety:

- 3.1 Consult the Material Safety Data Sheet (MSDS) for required handling procedures and Personal Protective Equipment (PPE) required.

4.0 Equipment:

- 4.1 Container-Volumetric Flask-10 ml. (Fisher No. 10-199-10A or equivalent) or 10 ml pynchnometer.
- 4.2 Balance capable of weighing to 0.01 gm. (fisher No. 2-021 or equivalent).
- 4.3 Eye dropper.

5.0 Procedure:

- 5.1 Obtain sample of binder extracted from slurry per section 7.13, and adjust to 77° F (25°).
- 5.2 Weigh a clean, dry 10 ml. container to the nearest 0.01 gm (WF).
- 5.3 Transfer the sample to the tared 10 ml container.
 - 5.3.1 Fill the volumetric flask to its mark (note the bottom of the meniscus of the liquid should be at the line) and weight of the 10 ml liquid sample determined to the nearest 0.01 gm (WB).
 - 5.3.2 Fill the pynchnometer and replace the lid. Any liquid displaced should be absorbed. (Note that some liquid should be displaced to insure the flask is completely filled.) The weight of the sample should be determined to the nearest 0.01 gm (WB).

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		7.16
	<p>Title: Slurry Binder Specific Gravity and Silica Content</p>	Rev#: 0
		Page#: 2 of 2

5.4 Wash the flask free of binder, dry the outside, and fill to the mark with distilled water at room temperature. Weigh the contents again to the nearest 0.01 gm (WW).

5.5 The specific gravity is calculated as:

$$\text{Specific Gravity} = \frac{WB - WF}{WW - WF}$$

6.0 Results:

6.1 It is recommended to use the graph or chart of silica content vs. specific gravity to determine the silica content of the sample.

6.2 If the silica content falls outside established control limits, the slurry should be pulled from production until corrective action has been completed and verified.

7.0 References:

7.1 None.