

	<b>Buntrock Industries, Inc.</b> Investment Casting Supplies	Document#: 7.14
		Rev#: 0
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Rev	Description of Change	Author	Date
0	Initial Release	Tim George	1/12/14

#### 1.0 Scope:

- 1.1 This procedure describes a method for determining the quality of the liquid portion (i.e. binder plus additives) of water-based slurry by means of a gelation test.

#### 2.0 Purpose:

- 2.1 This is an accelerated gelation test that will indicate the stability of slurry binder. This information is very important in assessing the overall quality of the slurry and the risk of gelation.

#### 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 Oven capable of 140° F ± 5° F (60° C ± 2° C).
- 4.2 Sample containers with tightly fitted caps (20 to 200 ml capacity).
- 4.3 Plastic wrap such as Saran Wrap.
- 4.4 Fresh binder for use as a standard.

#### 5.0 Procedure:

- 5.1 Obtain sample of test binder extracted from slurry per section 7.13. Fill the sample container about half to two-thirds full with test binder. Record or mark on the container the liquid level.
- 5.2 Place plastic wrap over mouth of container, then tightly cover with the cap. Note that plastic wrap is intended to help prevent evaporation loss during time in oven.
- 5.3 Place in oven held at 140° F ± 5° F (60° C ± 2° C) for one week.
- 5.4 Repeat items 5.1 to 5.3 with sample container filled with fresh binder for use as a standard.
- 5.5 On a daily basis, visually observe the viscosity of the sample; compare it to the standard and record results. Also check the liquid level and abort test if liquid level drops which indicates unacceptable evaporation loss.

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6.0 Results:

- 6.1 If viscosity of test sample, as in item 5.5, is similar to standard, quality is acceptable.
- 6.2 If viscosity of test sample has increased relative to standard, polymerization is occurring and the test sample is beginning to gel.
- 6.3 If sample binder gels, the slurry is at risk and plans should be made to discard the slurry.  
Note that the gelation test accelerates events approximately 7 to 10-fold. For example, one day at 140° F (60° C) is equivalent to approximately 7 to 10 days at ambient temperature.

7.0 References:

- 7.1 None.