DELUXCOTE® CONCENTRATE

Reduce Backup Coats – Withstand Process Stresses

Deluxcote concentrate was developed to reduce backup coats while building a shell that withstands the stresses of handling, dewax and pouring. Its unique formula is designed to build thicker, stronger and more flexible individual shell coats. Deluxcote concentrate is allowing foundries around the world to streamline their shell-building processes.

Customer Testimonials

- "We have 40% faster throughput with Deluxcote concentrate."
- "25% more parts go out the door."
- "We're using half as much patching materials as our previous shell required."
- "We've reduced a couple of coats and almost cut our robot cycle time in half."
- "We've increased shell room output and reduced shell room labor, saving about $57,000 a year."

Build a Stronger Shell with up to 50% Fewer Backup Coats

- Increase shell throughput and increase production without increasing labor or overhead costs.
- Reduce work in process inventory.
- Reduce shell room bottlenecks.
- Reallocate labor to other bottleneck areas.

Eliminate or Substantially Reduce Cracking

- Reduce scrap and rework related to shell cracking and defects like finning and inclusions.
- Reduce quantity of patching material required and labor time used to apply patch.
- Focus labor on pouring instead of shell reparation.
- Dramatically reduce or eliminate the need for a post-autoclave seal coat.

Use with a Wide Variety of Refractory Materials

- Benefits are available with your current refractory materials – no need to make changes.
- Just add Deluxcote concentrate to Levasil® F0830 colloidal silica and water – no other materials required.

Deluxcote concentrate is designed to give the investment caster numerous process & economic benefits through:

- Fewer dips per shell
- Better crack resistance, even with fewer coats
- Excellent wetting and draining properties
- Higher green strength
- Dry times similar to existing specialty binders
- Reduced material consumption

The actual benefits obtained by each foundry may vary depending on the particular foundry application and the critical process parameters that are targeted by each foundry.

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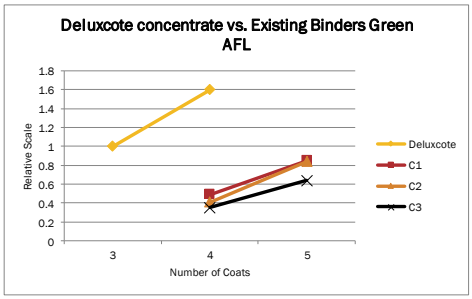
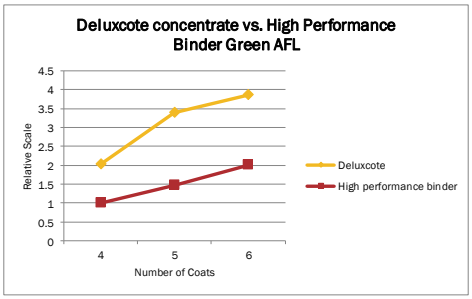
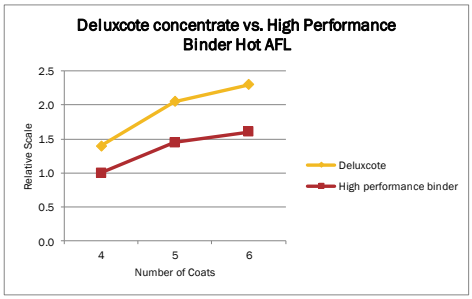
Technical Data

To illustrate the capabilities of binder made with Deluxcote concentrate, the green AFL measurement, in particular, demonstrates the versatility of the binder shell with Deluxcote concentrate versus existing high performance binders. At 4 coats, Deluxcote concentrate's shell has the same AFL as an existing high performance binder shell at 6 coats. Deluxcote concentrate's binder effectively completes the job with fewer coats.







Typical Material Properties*

Base Composition	Colloidal Silica
Other Composition	Proprietary
Total Solids Content (Including SiO_2)	31.1%/weight
Particle Size (Approximate)	10 nm
pH at 77°F (25°C)	10.6
Specific Gravity	1.144
Weight/Volume	9.54 lbs/gal (1.14 kg/l)
Viscosity at 77°F (25°C)	<50 cps
Na_2O Content (Weight)	0.41%
Particle Charge	Negative
Color	White

*These results are based on the testing methods, frequency and procedures of Ransom & Randolph or its approved suppliers. The levels referenced herein are only for general guidance and do not constitute a firm specification.

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Formulations

Due to the unique nature of the product, the formulation implemented will vary from foundry to foundry. This flexibility allows the foundry to obtain the maximum number of benefits from Deluxcote concentrate. The following formulation is for casters just starting out.

			Formula for 10 Gallons (lbs)				Formula for 10 Liters (kgs)			
% Refractory	Target Slurry Density (g/ml)	Target Viscosity	Levasil® F0830 colloidal silica	Deionized Water	Deluxcote concentrate	Ranco-Sil™ fused silica**	Levasil F0830 colloidal silica	Deionized Water	Deluxcote concentrate	Ranco-Sil fused silica
61%	1.60-1.64	13-16 sec/#5 Zahn	35.3	6.9	10.5	82.4	4.2	0.8	1.3	9.9

**This formula can be used with Ranco-Sil 4 fused silica or Ranco-Sil 140 fused silica.

Application Recommendations

1. Remix the Deluxcote concentrate prior to use to ensure a homogeneous blend of material.
2. For best results, weigh all ingredients when making up a new slurry or making additions to an existing slurry.
3. When building the slurry, add the refractory last. If more than one refractory is used, add the lowest density refractory first: fused silicas (2.2 g/cc), aluminosilicates (2.7 g/cc), zircon (4.5 g/cc). Add refractory slowly for best results.
4. New and makeup slurries must be prepared with a propeller mixer, not in a rotating tank. This ensures proper dispersion of the refractory particles. The propeller mixer must be of adequate HP and RPM. Excessive mixing action can introduce air into the slurry and cause erratic viscosity and/or bubbles in the slurry coat.
5. As with any slurry, the viscosity of the slurry must be stable before use. A stable viscosity is one that does not change by more than 1 second when checked at 1 hour intervals. Viscosity can be increased by adding more refractory and decreased by adding more binder.
6. It is required to replace water lost to evaporation. When water is needed (based on test results for viscosity and/or binder solids), use distilled or deionized water as opposed to tap water, which can contain contaminants that can negatively affect slurry life.
7. Antifoam, wetting and bactericide agents are already formulated into Deluxcote concentrate and other additions may not be compatible. Contact R&R's technical team before making these additions to the slurry.

Slurry Control Procedures

Slurry Control Worksheets are available for download at www.ransom-randolph.com. Slurry Control Worksheets allow you to input data directly and help you calculate values.

Slurry Testing Frequency

R&R recommends running the following tests accordingly.

Slurry Test	Recommended Testing Frequency
Slurry Viscosity	Two Times Per Shift
Slurry Density	Weekly
Refractory Solids	Weekly
Binder Solids	Two Times Per Week
Binder pH	Weekly

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Target Binder Solids Range

The target binder solids range for Deluxcote concentrate is 29.5-31.5% by weight.

Specific Gravity	Binder Solids	Specific Gravity	Binder Solids	Specific Gravity	Binder Solids
1.126	27.3	**1.142**	**29.5**	1.158	31.7
1.127	27.4	**1.143**	**29.6**	1.159	31.8
1.128	27.6	**1.144**	**29.7**	1.160	31.9
1.129	27.7	**1.145**	**29.9**	1.161	32.1
1.130	27.8	**1.146**	**30.0**	1.162	32.2
1.131	28.0	**1.147**	**30.2**	1.163	32.3
1.132	28.1	**1.148**	**30.3**	1.164	32.5
1.133	28.2	**1.149**	**30.4**	1.165	32.6
1.134	28.4	**1.150**	**30.6**	1.166	32.8
1.135	28.5	**1.151**	**30.7**	1.167	32.9
1.136	28.7	**1.152**	**30.8**	1.168	33.0
1.137	28.8	**1.153**	**31.0**	1.169	33.2
1.138	28.9	**1.154**	**31.1**	1.170	33.3
1.139	29.1	**1.155**	**31.3**	1.171	33.4
1.14	29.2	**1.156**	**31.4**	1.172	33.6
1.141	29.3	**1.157**	**31.5**	1.173	33.7

Storage & Handling

Protect from freezing. Deluxcote concentrate must be maintained above 35°F (2°C) to prevent the material from precipitating irreversibly and making the product unsuitable for use. Keep in a cool, dry, well-ventilated area. Keep containers tightly closed. Binder stored in transparent or translucent containers should be sheltered from direct sunlight. Shelf life is 1 year from date (MMDDYY) in batch lot number on label. Rotate stock to maximize shelf life. Remix before using.

Safety

OSHA-approved respiratory protection should always be worn to avoid inhalation of respirable silica dust, which can result in an irreversible lung disease, silicosis. Such exposure includes slurry makeup, casting, knockout and cleanup. See SDS for more information.

Technical Tips

For additional information and recommendations, refer to the Shell Building, Slurry Control, Autoclaving and FlashFire Dewax Method Technical Tips available for download at www.ransom-randolph.com.

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