

# Resin-Coated Sand Troubleshooting Guide

## Core Making/Molding Issues

**Breakage** – Failure of core during the manufacture or handling process

### Causes

- Over/under-cured core/mold
- Shell wall too thin
- Poor compaction of core
- Improper cooling of core/mold
- Low resin content

**Poor Flowability** – Cores that exhibit areas of poor compaction or do not fill completely in the blowing cycle

### Causes

- Vents plugged
- Blow pressure too low
- Box temperature too hot
- Improper sized invest hole
- Moisture in air line
- Lack of sufficient vents in tooling
- Poor tooling alignment
- Base sand too angular
- Melt point of sand too low

**Slow Invest Rate** – Core or mold taking substantially longer time to build-up desired thickness

### Causes

- Sand is too cold
- Box temperature too low
- Melt point of sand too high

**Lamination** – Separation of the cured surface from the interior shell wall

### Causes

- Blow cycle too short
- Non-use of pulsating blow
- Moisture in air line

**Peel Back** – Layer of partially cured sand that falls away completely from the interior of the core

### Causes

- Box temperature too high/low
- Jarring of machine in rollover stage
- Moisture in air line
- Melt point too low

**Sticking** – Inability or difficulty in removing core/mold from pattern

### Causes

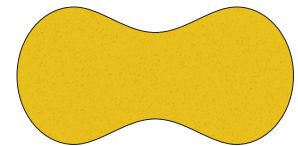
- Excessive buildup on core box
- Under- or over-cured core/mold
- Box temperature too high/low
- Incorrect application of release agent
- Blow pressure too high
- Scratched or damaged core box

**Warping** – Core or mold distortion on ejection of subsequent cooling from pattern

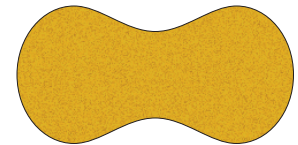
### Causes

- Under-cured core/mold
- Uneven ejection from tool
- Uneven tooling temperature
- Improper support of core/mold during cooling

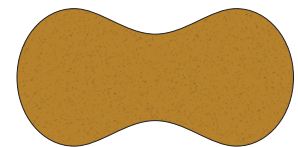
Lake Sand



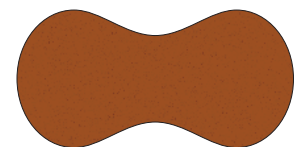
Severely Under-Cured



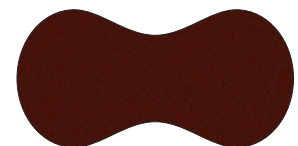
Moderately Under-Cured



Perfectly Cured



Moderately Over-Cured



Severely Over-Cured

For more information about Resin-Coated Sand,  
please call: 800.243.9004 or email: [Sales@CoviaCorp.com](mailto:Sales@CoviaCorp.com)



# Resin-Coated Sand Troubleshooting Guide

## Casting Issues

**Cracking** – Total failure of the core/mold during the casting process

### Causes

- Over-cured core
- Shell too thin
- Extremely cold core/mold
- Lack of print clearance for core in mold
- Weak cores due to low resin content
- Lack of plasticizer in the sand

**Gas Defects** – Entrapped gas in the metal that was emitted from the core/mold

### Causes

- Lack of venting in mold
- Poorly drained cores
- Under-cured core/mold
- Permeability of base sand too low
- Excess free resin
- Resin content too high

**Metal Penetration** - Migration of molten metal in the core/mold interface

### Causes

- Poor density of core/mold
- Over-cured core/mold surface
- Dirty tooling
- Rough core/mold surface
- Base sand too coarse

**Nitrogen Defects** – Porosity caused by the evolution of nitrogen gas emitted from the core

### Causes

- Lack of TRUCOAT LE
- Hexa level in sand too high
- Lack of nitrogen scavenger in sand

**Poor Shakeout** – The inability of the sand to flow freely from the core cavity of the casting

### Causes

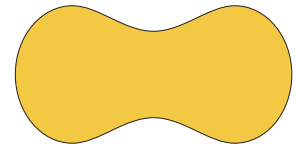
- Shell wall too thick
- Resin content too high
- Lack of shakeout additive

**Veining** – Thermal surface cracking of core/mold that leads to irregularities on the casting's surface

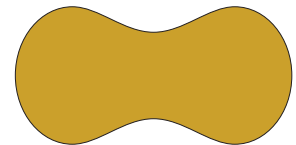
### Causes

- Over-cured core/mold
- Pouring temperature too high
- Lack of natural oxides in sand
- Improper screen distribution
- Lack of anti-veining additive in sand
- Use of round grain sand that is more prone to thermal expansion

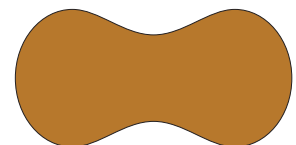
Silica Sand



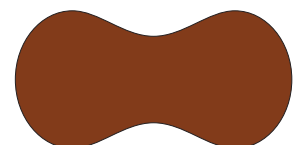
Severely Under-Cured



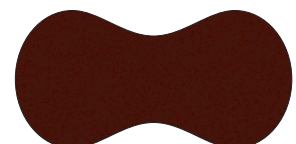
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