## Green moulding sand expertise

### Burnt-on sand

**Nature of Defect**
The sand is physically adhering to the casting. Defect occurs more frequently with thick-walled castings at high cooling temperatures.

**Remedies**
- Increase amount of lustrous carbon producers and coke producers in the moulding sand.
- Increase amount of new sand if returning point of the sand is low and consolidation is high.

### Broken Mould

**Nature of Defect**
Flash-like metal penetration in the mould, sometimes partially in the mould are included in the casting.

**Remedies**
- Add more bentonite to increase green tensile strength. Noise compatibility of the moulding sand.

### Erosion

**Nature of Defect**
The sand is washed away, mostly near to the sprue, often accompanied by sand inclusions. Oxides are present on the surface near to the gate.

**Remedies**
- Avoid spraying out of the moulding sand. Increase amount of bentonite in the sand. Increase moulding time of the moulding sand. Increase mould compaction. Use carbonaceous additive with a high lustrous carbon producing ability.

### Explosion

**Nature of Defect**
Defect occurs with alloys having a wide solidification range. Little changeability of the moulding sand. Increase amount of fines e.g. coke in the sand. An increase in the moisture level will influence the thermal conductivity of the moulding sand.

**Remedies**
- Use finer sand. Increase amount of fines e.g. coke in the sand. Improve ramming of the moulds.
- Use dried Cold-Box cores. Reduce organic additions to the sand.

### Fissure Defects

**Nature of Defect**
Holes in the casting, caused by the sand. Cracks are included in the casting. Often caused by lack of air in the moulding sand.

**Remedies**
- Increase amount of lustrous carbon producing material in the moulding sand. Increase amount of lustrous carbon producer in the moulding sand. Increase amount of bentonite.

### Micro-cavities

**Nature of Defect**
Pores structure found in the area of the casting which is later to solidify.

**Remedies**
- Use finer sand. Improve ramming of the mould. Reduce porosity of the moulding sand. Increase amount of bentonite level. Use carbonaceous additive in the moulding sand.

### Scarred Surface

**Nature of Defect**
Scarred casting surface around hot spots, particularly with SI cast iron.

**Remedies**
- Reduce amount of impurities present in the sand that are destroying the oxide skin.

### Surface Blowholes

**Nature of Defect**
Cavities with smooth walls, usually at or in groups.

**Remedies**
- Low casting temperatures are often the case. Benefits may be achieved by reducing the amount of permeability. Reduce fines or add coarser new sand. Reduce organic additions to the sand.

### Surface Roughness

**Nature of Defect**
Rough casting surface finish due to coarse sand.

**Remedies**
- Use finer sand. Increase amount of lustrous carbon producing material in the moulding sand. Increase amount of bentonite in the sand.

### Slag Inclusions

**Nature of Defect**
Irregularly formed sand inclusions just underneath the casting surface, associated with products from the metal slag reaction in other areas.

**Remedies**
- Keep the moulding sand sufficiently preheated by good sand preparation and sand casting. Adjust to optimum compatibility. Reduce the tendency of the moulding sand to the pattern by the use of parting agents.

### Slag Penetration

**Nature of Defect**
The defects are caused by slag being present with the molten metal in the pouring body. If the formation is due to liquid sand, reduce the amount of new sand and use a more active binder. Increase amount of bentonite and coke in the moulding sand.

**Remedies**
- Reduce the amount of new sand. Reduce the amount of bentonite and coke in the moulding sand.

### Sand Inclusions

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Irregularly formed sand inclusions just underneath the casting surface, associated with products from the metal slag reaction in other areas.

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### Surface at Angles

**Nature of Defect**
Smooth wall cavities at the angles of the casting.

**Remedies**
- The cause is insufficient feeding and rain of solidification. Influencing by moulding sand is possible. Reduce the quantity of the casting near to the gate.

### Pinholes

**Nature of Defect**
Accumulation of small subsurface rounded holes. Defects appear after annealing and light machining.

**Remedies**
- Normally the defect is of a metallurgical nature. The mould material may have a certain effect. In case of pits below the surface, the organic additions and the amount of nitrogen in the moulding sand should be reduced.

### Sand Penetration

**Nature of Defect**
Defects are caused by the molten metal penetrating the immediate area of the casting near to the gate.

**Remedies**
- Increase amount of lustrous carbon producing material in the moulding sand. Increase amount of lustrous carbon producer in the moulding sand. Increase amount of bentonite.

### Scabbing

**Nature of Defect**
Mushroom type defect with sharp edges parallel to the casting surface.

**Remedies**
- Increase bentonite level. Use carbonaceous additive with a wide softening range. Increase the amount of carbonaceous additive in the moulding sand. Increase moulding time of the moulding sand. Reduce amount of new sand.

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Non-metallic irregular shaped inclusions, when occurring tend to form on upper casting surfaces.

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**Remedies**
- Reduce the amount of new sand. Reduce the amount of bentonite and coke in the moulding sand.

### Swelling

**Nature of Defect**
Irregular bulges, in most cases widely distributed. Foreign adhering agglomerates of sandmatrix at hot spots and in very confined areas.

**Remedies**
- Reduce compatibility of the sand. Improve ramming of the mould. Increase amount of carbonaceous additive and coke in the moulding sand.

### Metal Penetration

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**Remedies**
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