



MANUFACTURING AND PRODUCTION

Casting Defects, Solidification and Yield Improvement

3 day course

Classroom, online or in-house

Course overview

Most foundries carry a scrap rate they have stopped questioning, and most of that scrap comes from a handful of defects that repeat because the diagnosis stopped at the symptom. This course goes to the cause. Delegates work through solidification: nucleation, growth, the temperature gradient and the feeding path that determines where the last liquid freezes. Shrinkage is treated as the defect it is, distinguishing macro shrinkage, centreline porosity and micro porosity, each pointing to a different failure in feeding. Gas defects are covered, including hydrogen pickup, blowholes and pinholes, and the moisture and cleanliness that produce them. Inclusions, slag and sand entrainment follow. Cracks are addressed, separating hot tears from cold cracks by their appearance. Mould and metallurgical defects are covered. Diagnosis method is taught explicitly: reading the location, shape and surface of a defect before proposing a cause. Yield improvement follows through riser and gating optimisation. The course closes on scrap tracking and on proving a fix.

What you will learn

- Explain solidification, gradient and feeding path
- Distinguish macro shrinkage, centreline porosity and micro porosity
- Trace gas defects to moisture, cleanliness and hydrogen pickup
- Identify inclusions, slag and sand entrainment
- Separate hot tears from cold cracks by appearance
- Read a defect's location, shape and surface before proposing a cause
- Improve yield through riser and gating design, and prove a fix held

Who should attend

- Foundry metallurgists and methods engineers
- Quality staff investigating casting scrap
- Production supervisors in foundries
- Design engineers specifying castings
- Buyers assessing casting suppliers

Course outline

- 01 A scrap rate nobody questions
- 02 Solidification, gradient and feeding path
- 03 Shrinkage and porosity types
- 04 Gas defects, hydrogen and moisture
- 05 Inclusions, slag and sand entrainment
- 06 Hot tears against cold cracks
- 07 Diagnosis from location, shape and surface
- 08 Riser and gating optimisation, scrap tracking and verification

Upcoming dates

Dates	Venue	Format	Fee per delegate
21 to 23 September 2026	Online	Online	R6,500
25 to 27 January 2027	Accra, Ghana	Classroom	USD 995
22 to 24 March 2027	Johannesburg, South Africa	Classroom	R14,950



Fees and how to register

This 3 day course is **R6,500** per delegate online, **R14,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 995** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afriscience.co.za, or WhatsApp us on **+27 63 479 1136**.

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