



INSPECTION, INTEGRITY AND CORROSION TRAINING

Materials for Sour Service

5 day course

Classroom, online or in-house

Course overview

A high strength bolt or a hard heat affected zone can crack within hours of meeting wet hydrogen sulphide, with no metal loss to warn anyone. NACE MR0175 and ISO 15156 exist to keep such materials out of sour wells and plant. Delegates first learn the chemistry: how H₂S partial pressure, pH and chloride define the severity regions, and how sulphide stress cracking, hydrogen induced cracking, stepwise cracking and stress oriented hydrogen induced cracking differ. They then work through the hardness limits for carbon and low alloy steels, welding and hardness traverse requirements, and the tables governing martensitic, austenitic and duplex stainless steels and nickel alloys. Laboratory qualification by NACE TM0177 and TM0284 testing is explained, with refinery wet H₂S practice under NACE SP0472. Delegates leave able to specify and challenge sour service material documentation.

What you will learn

- Explain how hydrogen sulphide causes cracking without measurable metal loss
- Determine the sour severity region from H₂S partial pressure and pH
- Distinguish sulphide stress cracking, HIC, stepwise cracking and SOHIC
- Apply the hardness limits for carbon and low alloy steels and their welds
- Select corrosion resistant alloys from the ISO 15156 environmental limit tables
- Interpret TM0177 and TM0284 laboratory test reports
- Specify hardness control for welding in refinery wet H₂S service
- Evaluate a supplier's material compliance documentation for sour duty

Who should attend

- Materials and corrosion engineers in oil and gas production
- Well completion and subsurface equipment engineers
- Refinery engineers responsible for sour water and amine units
- Procurement and quality engineers buying sour service materials
- Welding engineers qualifying procedures for H₂S duty

Course outline

- 01 Hydrogen sulphide chemistry and severity regions
- 02 Sulphide stress cracking and hydrogen induced cracking
- 03 Stepwise cracking and SOHIC
- 04 Carbon and low alloy steel hardness limits
- 05 Welding and hardness traverse requirements
- 06 Corrosion resistant alloys in ISO 15156
- 07 Laboratory testing to TM0177 and TM0284
- 08 Refinery wet H₂S practice
- 09 Material documentation for sour duty

Upcoming dates

Dates	Venue	Format	Fee per delegate
2 to 6 November 2026	Online	Online	R8,500
4 to 8 January 2027	Casablanca, Morocco	Classroom	USD 1,325
15 to 19 February 2027	Kampala, Uganda	Classroom	USD 1,325



Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 1,325** 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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