



Accredited Africa Training Institute for Capacity Development

Unit FO409, Hatfield Plaza · 1122 Burnett St, Hatfield 0028 · Pretoria, Gauteng · South Africa

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COURSE BROCHURE

API 571 Damage Mechanisms

Custom Courses / Energy, Oil and Gas

Unit Standard AATICD-0421 · NQF Level 5 · 6 Credits · 3 Days

COURSE OVERVIEW

This course provides a comprehensive understanding of API 571 damage mechanisms relevant to the refining and petrochemical industries. Participants will learn to identify, evaluate, and manage damage mechanisms to ensure asset integrity and operational safety.

Category	Custom Courses
Subfield	Energy, Oil and Gas
Unit Standard	AATICD-0421
Accreditation	SAQA Accredited · NQF Level 5 · 6 Credits
Duration	3 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply the API 571 methodology to identify potential damage mechanisms in process equipment.
- Analyze the causes and consequences of various damage mechanisms, including corrosion, cracking, and mechanical damage.
- Evaluate the susceptibility of materials to specific damage mechanisms based on service conditions.
- Design inspection and monitoring strategies to detect and mitigate damage mechanisms.
- Implement risk-based inspection (RBI) practices aligned with API 571 and API 580 standards.
- Demonstrate the ability to document and communicate damage mechanism findings effectively.

WHO SHOULD ATTEND

- This course is designed for mechanical engineers, integrity engineers, inspection personnel, and maintenance professionals working in the oil, gas, and petrochemical sectors.

COURSE OUTLINE

Day 1: Introduction to Damage Mechanisms and Materials Degradation

- Overview of API 571 and its relationship to API 510, 570, 580, and 581.
- Damage mechanism classification: mechanical, corrosion, metallurgical, and high-temperature.
- Key factors influencing damage: material, environment, temperature, stress, and time.
- Introduction to common damage mechanisms: general corrosion, localized corrosion, and mechanical cracking.
- Role of materials selection, fabrication, and welding in damage susceptibility.
- Documentation and reporting of damage mechanisms in fixed equipment records.

Day 2: Detailed Study of Damage Mechanisms and Inspection Methods

- Corrosion mechanisms: uniform attack, pitting, crevice, galvanic, and microbiologically influenced corrosion (MIC).
- Mechanical damage: fatigue, erosion, erosion-corrosion, and mechanical cracking (e.g., stress corrosion cracking).
- Metallurgical damage: hydrogen embrittlement, hydrogen-induced cracking, and graphitization.
- High-temperature damage: creep, thermal fatigue, and high-temperature hydrogen attack.
- Inspection methods: visual, ultrasonic testing, radiography, eddy current, and others.
- NDE selection criteria and limitations for each mechanism.
- Prevention and mitigation: coatings, cathodic protection, chemical inhibition, and material upgrades.

Day 3: Application of API 571 in Integrity Management and Practical Integration

- Damage mechanism review process: data collection, screening, and documentation.
- Linking damage mechanisms to RBI methodology and risk ranking.
- Case studies: failure analysis and root cause analysis using API 571.
- Developing inspection plans: selecting NDE methods, frequencies, and coverage.
- Managing damage mechanisms through fitness-for-service (FFS) assessments.
- Emerging issues and updates in API 571.
- Group exercise: damage mechanism identification and inspection planning for a pressure vessel.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **6 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 13,900.00	R 13,900.00
1	In-House	R 18,100.00	R 18,100.00
1	On-Campus (Pretoria)	R 20,800.00	R 20,800.00

UPCOMING SESSIONS

Start	End	Method	Venue
30 Sep 2026	02 Oct 2026	On-Campus	Maseru, Lesotho
30 Sep 2026	02 Oct 2026	On-Campus	London, UK
05 Oct 2026	07 Oct 2026	On-Campus	Mbabane, Eswatini
05 Oct 2026	07 Oct 2026	Online	—
06 Oct 2026	08 Oct 2026	On-Campus	Nairobi, Kenya
06 Oct 2026	08 Oct 2026	On-Campus	Lusaka, Zambia
07 Oct 2026	09 Oct 2026	On-Campus	Bangkok, Thailand
07 Oct 2026	09 Oct 2026	On-Campus	Windhoek, Namibia

Contact us if no suitable date is listed — on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard AATICD-0421) and click **Get A Quote / Apply**. Select your training method and number of delegates — your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za — our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically — the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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