

API COURSE BROCHURES

API 571 - Corrosion and Materials Exam Preparation Training

4 DAYS CLASSROOM

COURSE OVERVIEW

This API 571 course is a comprehensive training program that provides students with a solid understanding of damage mechanisms as outlined by the API 571 standard.

The API 571 Corrosion and Materials Certification is for engineers, inspectors, and industry specialists who want to demonstrate that they understand damage mechanisms in the refining, petrochemical, pulp, and paper industries. The first step in maintaining safe and reliable equipment is to understand and correctly identify damage mechanisms. In order to apply API 510, API 570, API 653, API 580, API 581, and API 579 codes, quality assurance inspectors must be conversant with API 571. When assessing the remaining life of equipment, it is necessary to have a fundamental understanding of damage mechanisms. The training material in the API 571 course covers a wide range of damage processes.

LEARNING OUTCOMES

By the end of this course, participants will learn to:

- To assist participants in comprehending the various degradations and damages done on refinery equipment.
- To be able to detect, analyze, and prevent refinery equipment degradation and damage.
- To provide attendees with advanced information on equipment maintenance, both preventative and predictive,
- To understand the elements that cause damage, to properly monitor and inspect damage, and to prevent or mitigate damage mechanisms.
- To demonstrate the interrelationship between material and service conditions by presenting example corrosion failures.
- Assist participants in passing the certification exams.

COURSE OUTLINE (API 571) :

DAY 1	Session 1	Detailed Overview of below API RP 571, Damage Mechanisms 885°F (475°C) Embrittlement, Amine Corrosion, Amine Stress Corrosion Cracking Ammonia Stress Corrosion Cracking, Ammonium Bisulfide Corrosion (Alkaline Sour Water), Ammonium Chloride and Amine Hydrochloride Corrosion Aqueous Organic Acid Corrosion, Atmospheric Corrosion
	Session 2	Detailed Overview of below API RP 571, Damage Mechanisms Boiler Water and Steam Condensate Corrosion, Brine Corrosion, Brittle Fracture Carbonate Stress Corrosion Cracking, Carburization, Caustic Corrosion, Caustic Stress Corrosion Cracking, Cavitation
	Session 3	Detailed Overview of below API RP 571, Damage Mechanisms Chloride Stress Corrosion Cracking, CO ₂ Corrosion, Concentration Cell Corrosion Cooling Water Corrosion, Corrosion Fatigue, Corrosion Under Insulation, Creep and Stress Rupture, Dealloying
	Session 4	Detailed Overview of below API RP 571, Damage Mechanisms Decarburization, Dissimilar Metal Weld Cracking, Erosion/Erosion-Corrosion Ethanol Stress Corrosion Cracking, Flue Gas Dew Point Corrosion, Fuel Ash Corrosion Galvanic Corrosion, Gaseous Oxygen-enhanced Ignition and Combustion
DAY 2	Session 1	Detailed Overview of below API RP 571, Damage Mechanisms Graphitic Corrosion of Cast Irons, Graphitization, High-temperature H ₂ /H ₂ S Corrosion High-temperature Hydrogen Attack, Hydrochloric Acid Corrosion, Hydrofluoric Acid Corrosion, Hydrofluoric Acid Stress Corrosion Cracking of Nickel Alloys Hydrogen Embrittlement, Hydrogen Stress Cracking in Hydrofluoric Acid
	Session 2	Detailed Overview of below API RP 571, Damage Mechanisms Liquid Metal Embrittlement, Mechanical Fatigue (Including Vibration-induced Fatigue) Metal Dusting, Microbiologically Influenced Corrosion, Naphthenic Acid Corrosion Nitriding, Oxidation, Oxygenated Process Water Corrosion, Phenol (Carbolic Acid) Corrosion
	Session 3	Detailed Overview of below API RP 571, Damage Mechanisms Phosphoric Acid Corrosion, Acid Stress Corrosion Cracking, Refractory Degradation Stress Relaxation Cracking (Reheat Cracking), Short-term Overheating-Stress Rupture (Including Steam Blanketing), Sigma Phase Embrittlement, Soil Corrosion, Sour Water Corrosion (Acidic), Spheroidization (Softening)
	Session 4	Detailed Overview of below API RP 571, Damage Mechanisms Strain Aging, Sulfidation, Sulfuric Acid Corrosion, Temper Embrittlement, Thermal Fatigue, Thermal Shock, Titanium Hydriding, Wet H ₂ S Damage (Blistering/HIC/SOHIC/SSC)
	Session 5	Case study Mock-up test & discussion