API 571 Exam Study Syllabus: 2026 Edition

Course Objective: Comprehensive mastery of the 60+ damage mechanisms required to pass the American Petroleum Institute (API) 571 Corrosion & Materials Exam.

The API 571 Exam Study Syllabus is divided into six main phases. Each phase has a title and relevant topics to be studied. To begin studying and preparing for the API 571 exam, you must first obtain the API 571 standard from either the official API website or through any contacts you may have.

After you obtain the API 571 standard, you should begin the study in the phases outlined below.

Phase 1: Foundations of Metallurgy & Corrosion

- **Introduction to API 571:** Overview of the Body of Knowledge (BoK).
- **General Refinery Damage Mechanisms:** Understanding how temperature, pressure, and fluid velocity impact material integrity.
- **Material Selection Basics:** Carbon steel vs. Alloyed steels vs. Stainless steels.

Phase 2: Mechanical & Metallurgical Failure Mechanisms

- **Brittle Fracture:** Temperature thresholds and material thickness.
- **Thermal Fatigue:** Recognizing stress cycles in piping and vessels.
- **Creep & Stress Rupture:** High-temperature long-term damage.
- **Mechanical Fatigue:** Vibration-induced failures in small-bore piping.

Phase 3: Uniform & Localized Loss of Thickness

- **Galvanic Corrosion:** Dissimilar metals and electrolyte environments.
- **CUI (Corrosion Under Insulation):** Identifying high-risk temperature ranges (10°F to 350°F).
- **Soil Corrosion:** Protection methods for buried assets.
- **Microbiologically Induced Corrosion (MIC):** Identifying bacterial damage in cooling water systems.

Phase 4: High-Temperature Corrosion ($>400^\circ\text{F}$)

- **Sulfidation:** The effect of sulfur content in crude oil.

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- **Oxidation:** Scaling and metal loss in heaters/furnaces.
- **HTHA (High-Temperature Hydrogen Attack):** Critical review of the Nelson Curves.

Phase 5: Environmentally Assisted Cracking

- **Chloride Stress Corrosion Cracking (Cl-SCC):** Austenitic stainless steel vulnerabilities.
- **Caustic Embrittlement:** Sodium hydroxide effects on carbon steel.
- **Ammonia SCC:** Damage in heat exchanger tubes.

Phase 6: Final Review & Exam Simulation

- **Data Analysis:** How to read and interpret damage morphology.
- **Prevention & Mitigation:** Material upgrades and chemical injection strategies.
- **Mock API Exam:** 110-question timed practice session.

Once you have completed all of the phases and have a thorough grasp and knowledge of the requirements, you should enroll in an Exam prep course that will assist you in studying for the exam and provide you with a sample exam before enrolling in the final exam on the API website.

This is the website that you should follow in for enrolling in the API 571 exam.

Exam Day Quick Tips:

- **No Calculations:** Focus on the "Affected Materials" and "Critical Factors" sections of the RP.
- **Keywords:** Watch for "Prevention" vs. "Mitigation" in exam questions.
- **Visuals:** Be able to identify a damage mechanism simply by looking at a cross-section photograph.