

Materials in Shipbuilding

Delivery Method: eLearning || Duration: 4 hours || Course Fee: 380 €

Category: Material, Welding & NDT

Available languages: English

Certificate

On completion of the training program, the student will be awarded:

- A Certificate of **Materials in Shipbuilding**, issued by Bureau Veritas Solutions Marine & Offshore.

The Certificate of **Materials in Shipbuilding** is obtained after completion of the course and passing the online test.

Presentation

This training course provides a general introduction to materials and their basic properties. It includes an overview of metallic and non-metallic materials used in modern shipbuilding.

Whom the course is for

The course **Materials in Shipbuilding** is aimed at anyone interested in getting familiar with the different materials used in modern shipbuilding. This may include Ship Managers, Technical Superintendents, Ship Masters, Officers and Seafarers; Shipyards Technical Staff; Surveyors; P&I and/or Insurance Inspectors; Naval Architects; etc.

Objectives

On completion of the training, students will be able to:

- Understand the importance of materials' properties for shipbuilding, know the basic mechanical properties of materials and the testing procedures, be familiar with the concept of tribology, and know the two most common types of wear.
- Know the main groups of steels used in shipbuilding, their main properties and places of application, and understand the difference between steel and cast iron.
- Know the composition, properties and places of application of aluminium and copper alloys in shipbuilding.
- Get familiar with the synthesis, structure and properties of polymers; know the most common types of polymers used and their place of application.
- Understand the role of matrix and reinforcement phase in the structure of composites and know the fabrication methods of composite parts.

Program

Module 1 – Basic Material Properties

- History
- Structural components and materials of modern vessels
- Basic material properties
- Mechanical properties of materials
 - Tensile test
 - Toughness
 - Fatigue
 - Creep
 - Hardness
- Tribological properties of materials
 - Friction
 - Wear

Module 2 – Metallic Materials used in Shipbuilding

- Classification of metallic materials
- Steels
 - Normal strength steels
 - Higher-strength steels
 - Steels for boilers and pressure vessels
 - Ferritic steels for low-temperature service
 - Stainless steels
 - Steel forgings
 - Steel castings
- Cast iron
- Aluminium and its alloys
 - Classification
 - Heat treatment
 - Wrought aluminium alloys
 - Cast aluminium alloys
- Copper and its alloys
 - Classification
 - Brass (Copper-Zinc alloys)
 - Bronzes
 - Copper-Nickel alloys

Module 3 – Plastic and Composites used in Shipbuilding

- Polymers (plastics)
 - Classification
 - Application in marine engineering
- Composites
 - Composition
 - Classification
 - Polymer matrix composites
 - Processing of fibre-reinforced composites
 - Structural composites