

# **IALA World Wide Academy**

## ***Model Course for Aids to Navigation***

### **LEVEL 2 Technician Training**

## **Surface Preparation before Coating** **Module 5 Elements 5.1 - 5.2** (IALA WWA L2.5.1-2)

**Edition 1.0**

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## DOCUMENT REVISIONS

Revisions to the IALA Document are to be noted in the table prior to the issue of a revised document.

Date	Page / Section Revised	Requirement for Revision

## FOREWORD

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) recognises that training in all aspects of Aids to Navigation (AtoN) service delivery, from inception through installation and maintenance to replacement or removal at the end of a planned life-cycle, is critical to the consistent provision of that AtoN service.

Taking into account that under the SOLAS Convention, Chapter 5, Regulation 13, paragraph 2; Contracting Governments, mindful of their obligations published by the International Maritime Organisation, undertake to consider the international recommendations and guidelines when establishing aids to navigation, including recommendations on training and qualification of AtoN technicians, IALA has adopted Recommendation E-141 on Standards for Training and Certification of AtoN personnel.

IALA Committees working closely with the IALA World Wide Academy have developed a series of model Courses for AtoN personnel having E-141 Level 2 technician functions. This model course on Surface Preparation before coating should be read in conjunction with the Training Overview Document IALA WWA.E-141.Level 2.Tech.0 which contains standard guidance for the conduct of all Level 2 model courses

This model course is intended to provide national members and other appropriate authorities charged with the provision of AtoN services with specific guidance on the training of AtoN technicians in Surface Preparation before Coating. Assistance in implementing this and other model courses may be obtained from the IALA World Wide Academy at the following address:

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## TABLE OF CONTENTS

<b>1</b>		
<b>DOCUMENT REVISIONS</b>		<b>2</b>
<b>FOREWORD</b>		<b>3</b>
<b>TABLE OF CONTENTS</b>		<b>4</b>
<b>1 INTRODUCTION</b>		<b>5</b>
1.1	Scope	5
1.2	Objective	5
1.3	Course Outline	5
1.4	Table of Teaching Modules	5
1.5	Specific Course Related Teaching Aids	5
1.6	References	6
<b>2 PART B - TEACHING MODULES</b>		<b>6</b>
2.1	Module 1 - Introduction to surface preparation	6
2.1.1	Scope	6
2.2	Module 2 – Surface repairs	7
2.3	Module 3– Materials in Use	7
2.4	Module 4 – Standards and Controls	8
2.5	Module 5– Surface Preparation	9
2.6	Module 6– Site Visit	9

# PART A - COURSE OVERVIEW

## 1 INTRODUCTION

### 1.1 Scope

This course is intended to provide technicians with the practical training necessary to become competent in Surface Preparation before coating to AtoN structures.

This course is intended to be supported by further practical training modules buoy cleaning, corrosion of structures and maintenance procedures. Details of these supporting model courses can be found in the Level 2 Technician training overview document IALA WWA L2.0.

### 1.2 Objective

Upon successful completion of this course, participants will have acquired sufficient knowledge to understand the how to prepare surfaces before coatings are applied within their organizations and factors affecting their operational efficiency.

### 1.3 Course Outline

This course is intended to provide technicians with the practical training necessary to become competent in surface preparation before applying coatings to AtoN structures. The complete course comprises 6 modules, each of which deals with a specific subject representing an aspect of surface preparation before coating. Each module begins by stating its scope and aims, and then provides a teaching syllabus.

### 1.4 Table of Teaching Modules

Module title	Time in hours	Overview
Introduction to coatings	1.5	This module introduces : <ul style="list-style-type: none"><li>- Main aim of the use of coating</li><li>- Different types of coating</li></ul>
Surface repairs	1.0	Defects to be corrected Methods of repair
Materials in use	2.0	Different methods of preparation for various materials in use.
Standards and controls	1.5	Process control requirements for effective preparation and coating
Surface preparation	2.0	Paint removal and surface preparation before coating
Site visit	2.0	Visit to a facility for practical experience of knowledge learned
Evaluation	1.0	Test
<b>Total Hours:</b>	11	

### 1.5 Specific Course Related Teaching Aids

- 1 This course involves both classroom instruction and practical experience in a work area course will be both classroom and workshop based. Classrooms should be equipped with blackboards, whiteboards, and overhead projectors to enable presentation of the subject matter.

- 2 An alternative to classroom instruction would be to provide the lecture material to students at a distance via the Internet or other electronic means (i.e., "e-learning"). In that case, students would need access to computers and related equipment, and should be provided with a means of interacting with instructors for discussion and to answer questions.

## 1.6 References

In addition to any specific references required by the Competent Authority, the following material is relevant to this course:

- IALA Guideline 1006 On Plastic Buoys
- IALA Guideline 1015 On Painting Aids to Navigation Buoys
- IALA Guideline 1077 On Maintenance of Aids to Navigation
- Technical documentation from equipment manufacturers will be another useful source of information.

## 2 PART B - TEACHING MODULES

### 2.1 Module 1 - Introduction to surface preparation

#### 2.1.1 Scope

This module introduces coatings and specifications for maintaining AtoN structures.

##### 2.1.1 Learning Objective

To gain a **satisfactory** understanding of why surface preparation is an important part of maintenance process of AtoN structures

#### 2.1.2 Syllabus

##### Lesson 1 – Introduction

Surface preparation and coating - why it is used:

1. protection,
2. signal colour

##### Lesson 2 – Selection factors

Factors to be considered in selecting the type and degree of surface preparation:

1. base material
2. coating specification
3. facilities available
4. local environmental conditions

##### Lesson 3 – Specification procedure

Presentation of the procedures that can be used and selection factors:

1. economical
2. technical

3. in house or contractor

## 2.2 Module 2 – Surface repairs

### 2.2.1 Scope

This module identifies repair as an important part of surface preparation.

### 2.2.2 Learning Objective

To gain a **satisfactory** understanding of the types of defect and repair methods

### 2.2.3 Syllabus

#### Lesson 1 – defects to be corrected

1. Damage
2. Corrosion
3. Wear
4. Other depending on the AtoNs in use

#### Lesson 2 – means of repairs

1. Replacement
2. Cut out and renewal of parts
4. Building up worn parts

## 2.3 Module 3– Materials in Use

### 2.3.1 Scope

This modules describes the different degrees of surface preparation that can used depending the type of substrate and the conditions of use of the structure

### 2.3.2 Learning Objective

To gain a **satisfactory** understanding of how specify the type of surface preparation according the type of substrate and the conditions of use of the structure the types of defect and repair methods

### 2.3.3 Syllabus

#### Lesson 1 – wood

1. Inspection
2. Preparation
3. Replacement.

#### Lesson 2 – concrete, masonry

1. Surface etching
2. Salt removal
3. Old coating removal & compatibility with new coating

Lesson 3 – steel

1. Old coating removal
2. Corrosion removal
3. Surface standards SA grades

Lesson 4 – Aluminium alloys and other non-ferrous metals

1. Old coating removal
2. Corrosion removal
3. Surface standards SA grades

Lesson 5 – Plastics and composites

1. Old coating removal
2. Surface preparation
3. Chemical compatibility

## **2.4 Module 4 – Standards and Controls**

### 2.4.1 Scope

This module introduces the standards and the type of controls that can be used in surface preparation

### 2.4.2 Learning Objective

To gain a **satisfactory** understanding of preparation standards and controls.

### 2.4.3 Syllabus

Lesson 1 – Standards

1. SA
2. Environmental
  - Waste
  - Emissions
  - Noise
  - Hazardous products
3. H&S requirements
4. Manufacturers specifications

Lesson 2 – Controls

1. Inspection



## **2.5 Module 5– Surface Preparation**

### **2.5.1 Scope**

This module describes the different existing methods for surface preparation and gives recommendations for paint removal procedures.

### **2.5.2 Learning Objective**

To gain a **satisfactory** understanding of how to be able to use the different type of surface preparation and to be familiar with paint removal methods

### **2.5.3 Syllabus**

#### Lesson 1- paint removal

1. Grit blasting
2. Ice blasting
3. Water jetting
  - High pressure
  - Wet blasting
4. Mechanical scraping

#### Lesson 2 – Mechanical surface preparation methods

1. Grit blasting
2. Manual abrasion
  - Power tools
  - Hand

#### Lesson 3 – Chemical surface preparation methods

1. Etching

## **2.6 Module 6– Site Visit**

### **2.6.1 Scope**

This module covers a visit to a surface preparation facility.

### **2.6.2 Learning Objective**

To see surface preparation taking place in an AtoN environment and to consolidate theoretical knowledge learned