



# NACE Coating Inspector Level 3 Oral Exam NACE-CIP3-001

Exam Preparation Guide  
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## Introduction

The Coating Inspector Level 3 oral exam is designed to assess whether a candidate has the requisite knowledge and skills that a minimally qualified Level 3 Coating Inspector must possess. The CIP Level 3 Peer Review is an intensive, detailed oral examination that is given in front of a three-member review board and is based on the Coating Inspector body of knowledge. A candidate should have “expert knowledge” of all corrosion, surface preparation, cleanliness, environmental conditions, test instruments, coating mixtures, and safety. They should also be able to perform unsupervised non-destructive inspections of liquid and non-liquid coatings to any substrate and demonstrate technical knowledge, problem solving ability regarding issues that may arise on site and is capable of supervising basic (CIP level 1) and intermediate (CIP level 2) coating inspectors.

Test Name	NACE- Coating Inspector Level 3 Oral Exam
Test Code	NACE-CIP3-001
Time	2 hours
Number of Questions	10 (6 Technical & 4 Practical)
Format	Oral Examination
Passing Score	2/3 vote of peers

## Target Audience

A certified level 3 coating inspector (NACE Certified Coating Inspector - Level 3) is recognized as an advanced inspector who:

- Is highly skilled and experienced in corrosion, surface preparation, cleanliness, environmental conditions, test instruments, coating mixtures, and safety
- Can undertake unsupervised non-destructive and destructive inspections of liquid and non-liquid coatings applied to any substrate
- Has demonstrated technical knowledge, problem solving ability regarding issues that may arise on site and is capable of supervising basic (CIP level 1) and intermediate (CIP level 2) coating inspectors

# Requirements

## Requirements for Coating Inspection Program Level 3- Certified

■ Pre-requisite e ■ 1 Core Exams ■ Work Experience ■ Application

<b>Prerequisite:</b>
Certification - CIP Level 2
<b>Course Requirements</b>
None
<b>Core Exam Requirements</b>
Exam – Coating Inspector Level 3 Oral Exam – CIP3
<b>Application Requirements</b>
<ul style="list-style-type: none"><li>• Five years (minimum) verifiable coatings related work experience and</li><li>• Qualification references</li></ul>

### Certification renewal requirements–

- Recertification application\* required every 3 years
- 1.5 years of Corrosion work experience in Coating Inspections

Upon successful completion of requirements, the candidate will be awarded a **NACE Coating Inspector Level 3 -Certified**.

*\*Approval required*

# Exam Blue Print

## Domain 1 - Safety - 2.5%

- Demonstrated understanding of all safety related information in Level 1 & Level 2
- Demonstrated ability to respond appropriately as a NACE Inspector to minor and major safety issues

## Domain 2 - Inspection Process - 15%

- Demonstrated understanding of the Inspection Process as defined in Level 1 & 2
- Demonstrated ability to explain the Inspection Process as it applies to a simple and a difficult scenario
- Demonstrated ability to make positive suggestions to improve job flow and quality at all stages of the Inspection Process

## Domain 3 - Corrosion - 5%

- Demonstrated understanding of Galvanic Corrosion and Basic CP c/w Cathodic Disbondment Testing
- Demonstrated ability to identify various corrosion types
- Demonstrated ability to make positive suggestions to improve job flow and quality when provided with specific corrosion data/criteria

## Domain 4 - Environmental Controls and Inspection - 5%

- Demonstrated understanding of Environmental Controls as outlined in Level 1 & 2
- Demonstrated ability to use SSPC Guide 6 & 12
- Demonstrated ability to evaluate data provided by electronic hygrometers and data loggers
- Demonstrated ability to make positive suggestions to improve job flow and quality when provide with specific environmental data

## Domain 5 - Surface Preparation and Inspection - 20%

- Demonstrated understanding of all surface preparation methods and standards outlined in Level 1 & 2
- Demonstrated ability to explain acceptable variations in appearance as defined by the various surface preparation standards
- Demonstrated ability to evaluate surface preparation data provided by all surface preparation inspection instruments outlined in Level 1 & Level 2
- Demonstrated ability to make positive suggestions to improve job flow and quality when given specific surface preparation data

## Domain 6 - Coatings and Inspection - 20%

- Demonstrated understanding of all standard and specialty coatings & linings outlined in Level 1 & 2
- Demonstrated ability to differentiate Organic vs. Inorganic; Thermoset vs. Thermoplastic; Convertible vs. Non-Convertible
- Demonstrated ability to identify the primary curing mechanism by generic class of coating
- Demonstrated ability to identify common coating defects by generic class of coating
- Demonstrated ability to evaluate coating data provided by all coating inspection instruments outlined in Level 1 & 2
- Demonstrated ability to identify coating failure modes and potential causes
- Demonstrated ability to understand coating surveys
- Demonstrated ability to make positive suggestions to improve job flow and quality when given specific coating data

### **Domain 7- Coating Application - 7.5%**

- Demonstrated understanding of all application methods outlined in Level 1 & Level 2 methods including basic troubleshooting
- Demonstrated knowledge of how to troubleshoot airless and plural component spray application methods
- Demonstrated ability to make positive suggestions to improve job flow and quality when given specific coating application data

### **Domain 8 - Documentation - 10%**

- Demonstrated understanding of all documentation information outlined in Level 1 & 2
- Demonstrated ability to develop and critique an Inspection and Test Plan, and Final Report
- Demonstrated ability to make positive suggestions to improve job flow and quality when given specific documentation data

### **Domain 9 - Standards - 10%**

- Demonstrated detailed understanding of all relevant standards outlined in Level 1 & 2
- Demonstrated ability to evaluate the pass/fail of specific inspection data based on an identified standard
- Demonstrated ability to make positive suggestions to improve job flow and quality when given a specific standard

### **Domain 10 - Team Work - 2.5%**

- Demonstrated advanced understanding of team work as outlined in Level 1 & 2 and work experience gained since achieving certification
- Demonstrated ability to identify positive or negative factors influencing group behavior
- Demonstrated ability to make positive suggestions to improve job flow and quality while a matter is in dispute

### **Domain 11- Ethics - 2.5%**

- Demonstrated advanced understanding of ethics required of a NACE Certified Coating Inspector (as per attestation)
- Demonstrated ability to react in accordance with the attestation when under pressure
- Demonstrated ability to make positive suggestions to improve job flow and quality when facing an ethical challenge

## **Types of Questions**

### **Description of Questions**

The questions on this exam are presented to the candidate and they must respond at a satisfactory level to the Peer Group. The questions are based on the knowledge and skills required in the industry. The peer review is divided into two parts (technical questions and practical questions) and candidates have one hour for each part.

Each candidate will be asked six technical questions drawn from subject matter covered in CIP Level 1 and CIP Level 2 and they will have a maximum of 10 minutes to answer any one question. For the practical exam, each candidate will be asked at least four practical questions drawn from the subject matter covered in CIP Level 1 and CIP Level 2. A maximum of 15 minutes is allowed for a candidate to answer any one question. There is no NACE training course for this certification. To prepare for this exam, the following practice questions have been provided.

## Sample Questions

The sample questions are included to illustrate the formats and types of questions that will be on the exam. Your performance on the sample questions should not be viewed as a predictor of your performance on the actual test.

### 1. Technical Sample Question:

Coal tar/asphalt cutbacks, vinyls, and chlorinated rubber coatings cure by evaporation of the solvent. Describe some common problems associated with this type of coating that the inspector might encounter.

### 2. Practical Sample Question:

It's 5 P.M. The paint crew has just completed painting a yellow alkyd enamel caution stripe on the helicopter pad on an off-shore platform.

As you climb down you look up at the exposed massive beams bracing the steel deck. The traffic on the deck was very heavy, and it was responsible for delaying completion for three weeks.

The very next morning the owner's representative is questioning you about the two different colors of alkyd that the painters used to stripe the deck. You explain to him that they only used one gallon of alkyd for striping.

Up on the helicopter deck, on the stripe running the total width of the deck you see what appear to be alternate bands of a slightly lighter and darker shade of the same color.

What do you think is the problem?

## Sample Answers

### 1. Technical Sample Answer:

Inspection criteria for solvent evaporation cure coatings may include:

Since all the solvent must evaporate for the coating to be properly cured, solvent-evaporation cure coatings should not be applied too thick. If this occurs, the coating is likely to have solvents entrapped within the film that ultimately can weaken the coating integrity.

Vinyls and chlorinated rubber coatings contain significant amounts of volatile solvents. If applied to a hot surface, these coatings may not be able to wet the surface adequately before the solvents flash off, resulting in a dry, poorly formed film being deposited. The coating film may be porous, with poor film integrity, have low gloss, and be useless as protective coating.

Coal tar and asphalt coatings contain lesser amounts of volatile solvents; if applied to a hot surface, these coatings may develop pinholes in the film, resulting in a porous surface. These heavy bodied coatings if applied too thickly at higher ambient temperatures may skin set, causing solvent entrapment. The film underneath will remain soft, prolonging total cure.

Solvent-evaporation cure coatings should not be topcoated with a different type of coating containing a strong solvent. The topcoat solvent may attack the base coating causing it to redissolve.

Evaporation cure coatings should not be topcoated with an epoxy because as the epoxy cures significant internal stresses develop causing the coating system to delaminate (peel).

Evaporation type coatings may be applied over a different type of base coat. For example an epoxy basecoat may be topcoated with chlorinated rubber. However, if the epoxy coating is hard and slick, poor intercoat adhesion will result.

## 2. Practical Sample Answer (Points to discuss):

- a. The platform is a heat sync issue.
- b. The platform absorbs heat during the day and the beams supporting the platform hold the heat in the evening where the area between cools faster.
- c. Where the coating is in the area of the beams there is sufficient heat to dry the coating on the platform surface.
- d. Area between the beams cools fast in the evening and the coatings does not dry before dew falls on the surface and the coating losses its gloss (looks dull) causing the different appearance.

## Preparation

### Training

N/A

### Reference Material

- NACE Coating Inspection Program Level 1 course materials
- NACE Coating Inspection Program Level 2 course materials

### Books

- Corrosion prevention by protective coatings by Charles Munger and revised by Lou Vincent et. al.
- Practical Math for the Protective Coatings Industry by Raymond Weaver
- Users Guide to Hot Dip Galvanizing by American Galvanizers Association
- SSPC Painting Manual Volume 1- Good Painting Practices
- SSPC Painting Manual Volume 2- Systems and Specifications

### Standards

- ASTM Volume 06.01 Paint- Tests for Chemical, Physical, and Optical Properties; Appearance
- ASTM Volume 06.02 Paint- Products and Applications; Protective Coatings; Pipeline Coatings