



PCS 2 Advanced Theory Exam

Exam Preparation Guide

December 2020

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Introduction

The PCS 2 Advanced exam is designed to assess whether a candidate has the requisite knowledge, skills and abilities (KSAs) that a minimally qualified person in the field must possess working in the field at an advanced level of technology with topics related to protective coatings. The 80 questions are based on the KSAs of the principles needed to be successful in the job for a PCS 2 Advanced person that includes an in-depth discussion of coatings, their basic chemical properties, and any unique considerations for their surface preparation, application and inspection.

Exam Name	PCS 2 Exam
Time	2 Hours
Number of Questions	80
Format	Live Online Remote Proctoring (Examity*)
Passing Score	Pass or Fail

**Delivered through Examity NOT AT Pearson Testing Center*

Target Audience

PCS 2 is recommended for technical personnel who work with protective coatings on a regular basis with testing coating properties and performance, common coating defects, substrates, selecting coating systems, the specification, and surveys and maintenance planning. The PCS 2 Exam and training was designed and targeted to the following people:

- Planners
- Engineers
- Supervisors

The person who may successfully complete the PCS 2 course and exam is able to recognize uses of coatings and linings, best practices, and external factors that influence their use, differentiate between organic and inorganic coatings, and recognize the uses and benefits of convertible coatings. Additionally, they should be able to describe specialty coating types, advantages/disadvantages, and standards that govern them, discuss coating characteristics including the basic chemistry and unique characteristics that affect surface preparation and application needs, perform common test and qualification methods for liquid-applied coatings, recognize the chemistry of non-liquid and liquid applied coatings, describe the various types of tests performed on coatings and identify coating defects, and recognize substrate surface preparation issues and industry standards, configuration types, and factors affecting their coating application. Lastly, the PCS 2 Advanced person should be able to develop a complete and unambiguous coating specification, determine coating system selection goals, objectives, performance requirements, design engineered properties and trade-offs, select the appropriate test to determine the condition of the substrate, and select the appropriate test to determine the condition of the existing protective coating system.

Requirements

Requirements for PCS 2

Prerequisites
<ul style="list-style-type: none">• None required <p>-Recommended-</p> <ul style="list-style-type: none">• Math for the Coatings Professional eCourse• Course – PCS 1
Core Course Requirements
<p>Successfully complete the following course:</p> <ul style="list-style-type: none">• + Course - PCS 2
Core Exam Requirements
<ul style="list-style-type: none">• Exam - PCS 2 Exam
Application Requirements
<ul style="list-style-type: none">• None required

Exam Blue Print

NOTE: At the end of the exam the candidate will receive a chart with strengths and weaknesses that correspond to the Domains listed below. You will have the option to email or print it.

<p>Domain 1 – Coating and Lining Issues in Various Industries</p> <ul style="list-style-type: none"> • Operational Issues • Operating Conditions • Legacy Materials and Practices • Management Philosophy 	<p>3-7 %</p>
<p>Domain 2 – Coatings Overview</p> <ul style="list-style-type: none"> • Coating Components • Curing Mechanisms • Coatings Classification • Generic Chemistry 	<p>1-5 %</p>
<p>Domain 3 – Convertible Coatings</p> <ul style="list-style-type: none"> • Alkyds and oil bases • Polyesters and vinyl esters • Epoxies • Polyurethanes • Polyureas • Organic Zincs • Inorganic Zincs • Silicones • Polysiloxanes • High Solids 	<p>25-29 %</p>
<p>Domain 4 – Non-Convertible Coatings</p> <ul style="list-style-type: none"> • Non-Convertible Curing • Chlorinated Rubbers • Vinyls • Asphaltic Coatings • Acrylic Resins 	<p>1-4 %</p>
<p>Domain 5 – Specialty Coatings</p> <ul style="list-style-type: none"> • Hot-Dip Galvanizing • Fireproofing Coatings • Thermal Spray • Rubber Linings • Glass Linings • Fiber Reinforced Plastic (FRP) 	<p>20-24 %</p>
<p>Domain 6 – Testing Coating Properties and Performance</p> <ul style="list-style-type: none"> • Sources for Coating Test Procedures • Coating Test Procedures • Physical Properties • Application and Film Formation • Properties of Dried Film 	<p>6-10 %</p>

<p>Domain 7 – Surface Preparation Methods for Various Substrates</p> <ul style="list-style-type: none"> • Steel and Cast Iron • Stainless Steels • Aluminum • Galvanized Steel • Concrete Substrates 	13-17 %
<p>Domain 8 – Coatings Selection</p> <ul style="list-style-type: none"> • Coating System Goals and Objectives • Coating System Performance Requirements • Engineered Properties of Coatings • Concrete Considerations 	4-8 %
<p>Domain 9 – The Coatings Specification</p> <ul style="list-style-type: none"> • Role of the Specification • How to Create a Specification • Elements of the Specification • Implementing the Specification • Departures from the Specification • Specification Shortcomings • Effect of Specification Elements on Coating Service Life 	3-7 %
<p>Domain 10 – Surveys and Maintenance</p> <ul style="list-style-type: none"> • Coating Surveys • Planning a Survey of a Facility or Structure • Main Steps in a Coating Survey – Overview • Parts of the Facility • Develop standardized evaluation criteria for condition of substrate and coating • Visual Rating Methods for Assessing Coating Conditions • Determine Condition of Substrate • Tools and Instruments • Estimating Square Footage for Budget Purposes • Documenting and Recording Systems 	1-5 %

Types of Questions

Description of Questions

The exam consists of multiple-choice questions where some questions may have more than one answer. Items with more than one correct answer may contain the phrase “**SELECT ALL THAT APPLY**” and you will need to select more than one answer choice. The questions are based on the knowledge and skills required in the Protective Coatings industry.

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 exam.

1. Commonly, organic materials such as acetones, alcohols, ketons, and esters are known as:
 - A. additives.
 - B. binders.
 - C. resins.
 - D. solvents.

2. What are some common types of modified epoxies?
SELECT ALL THAT APPLY
 - A. Novolac Epoxies
 - B. Phenolics
 - C. Polyamide Epoxies
 - D. Urethanes

3. The flow resistance of a fluid is referred to as:
 - A. viscosity.
 - B. flexibility.
 - C. tensile strength.
 - D. transfer efficiency.

4. Using the ASTM D 714 “Standard Test Method for Evaluating Degree of Blistering of Paint,” where the numerical scale ranges from 10 to 0 what does **10** represent?
 - A. More than 10 Blisters present in the paint
 - B. 10% or less blistering allowed in the paint
 - C. Up to 10 Blisters allowed in the paint
 - D. No Blisters

Answer Key:

1. **D**

Reference: PCS 2 Manual Chapter 2

2. **A, B, C**

Reference: PCS 2 Manual Chapter 3

3. **A**

Reference: PCS 2 Manual Chapter 6

4. **D**

Reference: PCS 2 Manual Chapter 10

Preparation

Required Training

NACE PCS 2

Suggested Study Material

NACE PCS 2 Manual

NACE PCS 1 Manual

Math for the Coatings Professional eCourse Materials

Reference Material Provided During Exam

The PCS 2 Course manual is provided in electronic form during the exam.

What to Expect on Test Day

Remote Online Exam Proctoring

** Remote online proctored exams are offered for select exams.*

The NACE Institute has partnered with Examity to offer remote online proctoring for the PCS 2 Exam. With the new Examity platform, you can take the exam from home without the need to arrange for a proctor or take the exam at a testing site. Please visit this link for information you should know.

<https://naceinstitute.org/certification-resources/online-exam-proctoring>

Examity Demonstration with Automated Proctor

Please visit this link for a demonstration of the computer-based exam. You will have the opportunity to get familiar with how it all works.

<https://vimeo.com/399635210/2eb75207b8>