



Maintenance Support Workforce Category

LOGISTICS COMMUNITY OF INTEREST

5423 SANDBLASTING SERIES
COMPETENCY-BASED LEARNING MAP AND TRAINING STRATEGY

PUBLISHED: 2019

Sandblasting Competency-Based Learning Map Overview

The United States Marine Corps (USMC) Logistics Community of Interest (COI) developed this competency-based learning map to support the 5423 Sandblasting series professional development of technical competencies and training. This learning map is organized by a group of competencies, when combined together define successful performance in the 5423 Sandblasting series. Competency-based learning maps are essential resources for career development and useful for identifying the knowledge and skillsets needed to meet and/or enhance their skills in this occupational series. Learning maps are comprised of several components, described in Table 1 below:

Table 1. Components of a Competency-Based Learning Map

Competency Titles and Definitions	Describe the capabilities required within a position or job role
Proficiency Target Levels	Define different levels of required performance (Entry, Journeyman, Expert) within a competency area
Behavioral Indicators (BIs)	Examples of activities performed by an individual that illustrate how a competency is demonstrated at varying levels of proficiency: Entry, Journeyman, and Expert
Training	<p>Mandatory: Training required to be completed based on Federal, State, or Marine Corps requirements/regulations</p> <p>Recommended: Core, Core-Plus, and Sustainment training identified to enhance performance in competency areas</p> <ul style="list-style-type: none"> • Core: Initial training that all personnel should have in related position from entry to senior levels • Core-Plus: Advanced training that is necessary for career progression that all mid-senior personnel should have in addition to the core training. • Sustainment: Training intended to maintain credentials or a good training course to have, but not necessary for career advancement • Career Enhancing: A good training course to have, but not necessary for career advancement

Sandblasting Series Defined

This standard is used to grade nonsupervisory jobs involved in setting up, operating, and performing preventive maintenance on complete stationary and portable sandblasting equipment and machines used for cleaning metal and nonmetal surfaces. The work requires a knowledge of the operating and preventive maintenance features of sandblasting equipment and machines, cleaning characteristics of metals and nonmetals, cutting or abrasive quality of a wide variety of sand-like abrasives, and the optimum air pressures with specific abrasives to obtain the desired finish without damage to workpieces. The work requires the skill to position and hold workpieces and blasting nozzles, and carry out blasting operations and procedures in a safe manner.

Competency Areas

Two Competencies have been identified for the successful performance in the 5423 series:

1. Direction and Comprehension
2. Sandblasting Operations

Proficiency and Skill Band Definitions

The Proficiency Rating Scale (Table 2) below details the rating given for each level of proficiency and its corresponding definition. Proficiency levels describe the degree of competency required to perform a specific job successfully; these levels relate to the work required for a specific job. Different jobs require different levels of proficiency for successful performance. The proficiency levels provided in this learning map indicate the **minimum** proficiency target for successful performance.

Table 2. Proficiency Rating Scale

1	Basic	No Proficiency	Conceptual Knowledge Only/No Experience
2	Applied	Low Proficiency	Able to Apply with Help
3	Intermediate	Moderate Proficiency	Able to Apply Autonomously
4	Advanced	High Proficiency	Proficient/Able to Help Others
5	Expert	Very High Proficiency	Expert Knowledge

The USMC COIs have outlined a career progress structure that more accurately reflects the change in your abilities and responsibilities over time. That structure is called the Skill Level Structure (Table 3). It is associated with each occupational series and follows you from the time you are an entry-level employee until you attain the level of a management employee. Career progress in the USMC has traditionally been based on the federal government pay schedule system. The ratings within the pay schedule system are associated with Job Skill Levels within the 5423 series indicated as follows:

Table 3. Skill Level Structure

Job Skill Level	Definition	Pay Plan	Beginning Grade	Target Grade
1	Entry	WG	5	7
2	Journeyman	WG	7	7
3	Expert	WL/WS	7	7

Behavioral Indicators (BIs)

It is important to define how competencies are manifested at different skill levels. Behavioral Indicators are on-the-job examples of behaviors and activities that illustrate how a competency is demonstrated at varying skill levels and provide an objective description of the behavior that can be observed in an individual as evidence that they either have or do not have the skills at the required level needed for the competency. These are examples of what the competency could look like at varying skill levels and are not inclusive of all behaviors demonstrating the competency for each skill level. This information is provided as a tool to help guide evaluations of employee proficiency; however, it should not be used as a checklist for employees' behaviors.

Training

The Logistics COI has identified training (Table 4) that is applicable to the 5423 series. They are either mandatory or recommended according to your command and billet. While these trainings are not required, staff are encouraged to complete these programs to improve and formalize their skillsets. Work with your supervisor to ensure you meet training requirements.

The Core training courses found in Appendix A are recommended and may not be inclusive of all training available. These courses are aligned to competencies throughout the learning map. Training titles and vendors are subject to change as the courses evolve. Additionally, several external resources (Defense Acquisition University (DAU), MarineNet, Lynda.com, etc.) provide a variety of training opportunities available to all personnel for professional knowledge and skill enhancement.

Table 4. 5423 Core Training (All Levels)

Core (All Levels)	
<ul style="list-style-type: none"> Corrosions Basic Course Fundamentals of Coating Application & Inspection 	<ul style="list-style-type: none"> Lean Six Sigma Yellow Belt

Competency Model

A competency model is a group of competencies that together define successful performance in a particular occupation. The Logistics COI has adapted this model from the Department of the Navy (DON) Office of Civilian Human Resources (OCHR) for the 5423 series. The competency model, to include definitions, corresponding BIs, **minimum** proficiency target levels, and training has been provided in the charts below. An increase in proficiency level, (Entry, Journeyman and Expert) determines ability to accomplish tasks in proceeding levels.

COMPETENCY	DEFINITION		
1. Direction and Comprehension	Understands, interprets and carries out instructions, involving task, decision, policy, procedures and directives during sandblasting operations.		
MINIMUM PROFICIENCY TARGET LEVELS			
Job Skill Level 1: Entry		Job Skill Level 2: Journeyman	Job Skill Level 3: Expert
2		3	3
BEHAVORIAL INDICATORS			
Entry	<ul style="list-style-type: none">Follows maintenance standards, manual specifications and standard operating procedures.Accomplishes work, orally and in writing, in accordance with instructions provided by work leaders and supervisors.Follows state, federal, local safety regulations (e.g., safety data sheet, hazardous materials, Job Hazard Analysis).Follows trade requirements to accomplish assigned tasks.Reports accidents and/or mishaps in accordance with current regulations.Follows maintenance standards, manufacturer's specifications, and standard operating procedures.Reports any observed or identified violations in accordance with established guidelines.Interprets and applies instructions pertaining to sandblasting equipment.Interprets rules and regulations regarding operation of sandblasting.		
Journeyman	<ul style="list-style-type: none">Knowledge of cleaning characteristics of surface profile outcomes of different metal types (e.g., brass, corrosion, aluminum, iron, steel).Knowledge of sandblasting equipment, techniques and types of abrasives.Follows oral and written sandblasting instructions, work order/route tag, specifications, shop manuals, and safety rules.		
Expert	<ul style="list-style-type: none">Implements direction from plant management.Assigns and directs daily work flow operations to meet production schedule requirements for sandblasters.Conducts Certified Product Inspection (CPI).Approves and/or mitigates work completed by sandblasters.Ensures state, federal and local safety regulations are met (e.g., safety data sheet, hazardous materials, Job Hazard Analysis).Provides guidance and direction on the appropriate cleaning method for workpieces or surfaces.Ensures compliance of required safety program.Provides technical direction where written guides are not available.Provides input to plant manager in support of the production schedule.		

- Manages resources in support of the production line (e.g., safety, equipment and personnel).

COMPETENCY	DEFINITION		
2. Sandblasting Operations	Set up, load, operate and adjust equipment to perform sandblasting operations.		
MINIMUM PROFICIENCY TARGET LEVELS			
Job Skill Level 1: Entry		Job Skill Level 2: Journeyman	Job Skill Level 3: Expert
2		3	3
BEHAVORIAL INDICATORS			
Entry	<ul style="list-style-type: none">• Identifies composition of surfaces and determine the proper abrasive or combination of abrasives.• Identifies proper blasting equipment and air or vapor pressure needed to remove difficult contaminants.• Prepares sandblasting booths, cabinet and rotary tables for sandblasting operations.• Determines the type and extent of cleaning according to materials, size and type of item and areas to be blasted.• Ensures surfaces are covered appropriately for blasting.• Follows sandblasting procedures for surfaces, structures and objects.• Understands the established sequence of steps to start or stop blasting equipment.• Recognizes the layout of storage areas, (e.g., blast, steam, rotary table, blast cabinet).		
Journeyman	<ul style="list-style-type: none">• Performs sandblasting operations within time requirements• Ensures proper equipment is available to accomplish assigned tasks.• Identifies and recommends continuous process improvement measures.• Uses scraping tools to remove stubborn materials.• Provides input to operational layout of storage area.• Prepares, loads, operates, adjusts and maintains sandblasting equipment and parts.• Performs specific sandblasting operations in accordance with instructions to adjust or replenish abrasive supply.• Validates sequence of steps to start or stop blasting equipment.• Identifies and determines cleaning characteristics for surface profile outcomes of common metals according to type of abrasive material.• Monitors and regulates air pressure and flow of abrasive in accordance with the type of item or surface being cleaned.		
Expert	<ul style="list-style-type: none">• Validates and implements process improvement measures of sandblasting operations.• Oversees sandblasting operations.• Validates and documents sandblasting time variances.• Manages storage areas, equipment and parts.		

Appendix A. Training-to-Competency Mapping

CORE TRAINING	VENDOR	Direction & Comprehension	Sandblasting Operations
CPO- CBC Corrosion Basic Course	CorrDefense	√	√
Fundamentals of Coating Application & Inspection	SSPC (The Coating Specialist)	√	√
Lean Six Sigma Yellow Belt	Installation Training Office	√	√

Appendix B. Acronyms Defined

◆ BI	Behavioral Indicator
◆ COI	Community of Interest
◆ DoD	Department of Defense
◆ DON	Department of Navy
◆ OCHR	Office of Civilian Human Resources
◆ USMC	United States Marine Corps
◆ WG	Wage Grade
◆ WL	Wage Leader
◆ WS	Wage Supervisor