



United States  
Office of Personnel Management

# **FWS Job Grading Standard for**

# **Sandblasting**

**5423**

**TS-29, 3/74**

**Workforce Compensation and Performance Service  
Classification Programs Division  
June 1998, HRCD-5**

## WORK COVERED

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.

## WORK NOT COVERED

This standard does not cover work that:

- Involves the operation of shot peening machines to blast bent and twisted areas of parts to increase their resistance to fatigue cracks. (See [Shot Peening Machine Operating Series, 3769](#).)

## TITLES

Jobs covered by this standard are to be titled *Sandblaster*.

(NOTE: Although the use of sand as an abrasive has generally declined, the traditional title of "Sandblaster" is being retained for this job grading standard. The same basic principles of sand-blasting are applied in most abrasive blasting equipment and machine operations. Also, the term "sand" is generally applied to any abrasive of sand-like quality, whether it is metal or nonmetal.)

## GRADES

This standard does not describe all possible grades at which jobs might be established. If jobs differ substantially from the skill, knowledge, or other work requirements described for the grade levels of the jobs in the standard, they may warrant grading either above or below the grades of these jobs, based on sound job grading methods.

**5423-5****Sandblaster, Grade 5****5423-5**

*General:* The grade 5 sandblaster operates a machine or cabinet type of abrasive blasting equipment to process small or moderate size metal or nonmetal items. The equipment operated is usually preset and requires only minor valve adjustments occasionally to regulate the velocity of the abrasive stream for the type and extent of cleaning to be done. The abrasives used are standard types such as metal grit or seeds for machines and glass beads for cabinets. Typically, the work at this level involved following established procedures in preparing workpieces and blasting equipment, loading blasting machine rotary tables or tumble barrels, setting timer for various workpieces and conditions, using scraping tool to remove stubborn tar, scale, paint, etc., or performing a single manual sandblasting process, i.e., in blasting cabinets, to carry out production runs. Grade 5 sandblasters are also required to maintain their equipment in optimum operation as specified by preventive maintenance schedules and safety requirements.

*Skill and Knowledge:* Knowledge of the operating requirements of rotary blast machines, tumble blast machines, and nozzle blast cabinets including the use of foot levers and the control/operation of gauntlets, nozzle blasts, air pressures, abrasive feeders, rotary table, tumble drums, timers, and switches. Knowledge of loading methods and techniques on rotary table or in tumble drums and cabinets. Ability to use this knowledge to prepare, load, operate, adjust, and maintain sandblasting machines and cabinets.

Knowledge of the cleaning characteristics of the more common metals, metal alloys, and synthetic materials with standard sandlike abrasive agents such as metal grit, metal shot, seed, glass bead, or others that are used in blasting machines and cabinets. Ability to use this knowledge with guides provided to regulate air pressure and flow of abrasive in accordance with the type of item or surface being cleaned and the time required to adequately clean all surfaces.

Ability to properly place and position metal and nonmetal parts on rotary tables, in perforated barrels, or at proper angles in blasting cabinets to thoroughly clean all sides. Ability to operate timers and switches or foot levers to control or regulate air pressure and the velocity of abrasives.

Ability to follow specific sandblasting instructions, shop orders, blasting machine manuals, and established machine loading and cabinet maintenance procedures. Ability to perform the established sequence of steps to load and unload blasting machines, regulate the flow of machine abrasives, replenish abrasive supply, start or stop blasting machines, or operate blasting cabinets. Ability to apply minor maintenance procedures such as removing debris or materials which clog moving parts of rotary tables and tumblers.

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*Responsibility:* Is assigned sandblasting work orally or through established instructions and procedures. Independently follows the sequence of steps to load machines, regulate air pressure and abrasive flow, replenish abrasive supply, operate blasting machines and cabinets, and perform minor maintenance procedures outlined in sandblasting instructions, shop orders, and blasting machine or cabinet maintenance manuals. Notes obvious malfunctions of machine, requirements for servicing and notifies the supervisor.

A higher grade worker or supervisor is available for assistance on unusual problems and to spot check completed work.

*Physical Effort:* Work assignments involve prolonged standing, some walking, and frequently stooping and bending. Continually handles objects weighing from 2 to 11 kilograms (5 to 25 pounds) and, occasionally, objects weighing in excess of 11 kilograms (25 pounds).

*Working Conditions:* Work is normally performed mostly inside, in large, well lighted shop areas with adequate heating and ventilation. Is subject to the possibility of cuts and strains, and is exposed to constant noise, dust, and fumes from blasting machines. Is required to wear safety equipment such as gloves, arm shield, goggles, and safety shoes.

**5423-7****Sandblaster, Grade 7****5423-7**

*General:* In comparison with the preset control types of abrasive blasting equipment operated at The grade 5 level, the manually set and movement-controlled types of equipment operated by the grade 7 sandblaster are more diversified and include settings, adjustments, and manual applications which are not covered by established procedures or involve coordination in setting up portable units and preparing the worksite. The equipment is housed in special rooms (i.e., bays, chambers, or booths) or enclosed in open areas. The work requires exacting angle and distance settings of blasting nozzles for objects having unusual shapes; varied amounts of air pressures and varied mounts and mixtures of abrasive compounds for stubborn contaminants and heavy corrosion; timed traverse or repeat adjustments of turntable movements (forward, swivel, and reverse) for optimum positioning of moderate size or large complex metal or nonmetal assemblies; or extensive or precise nozzle openings and sweeping direction of blast over difficult internal or external surfaces without causing damages to work or injury to workers nearby.

*Skill and Knowledge:* Knowledge of the operating, control, and preventive maintenance features of automatic blasting bays, nozzle blasting chambers, portable blasting units, and nozzle lasting booths such as control panels, feeder lines, trigger mechanism, pressure and abrasive carburetor, hopper, shaker, abrasive recycler, dust collector, and exhaust system. Knowledge of sandblasting procedures and abrasives for large structures and objects, or small and intricate items of metal and nonmetal composition. Ability to use this knowledge to set up, prepare, operate, regulate, and maintain complete stationary and portable sandblasting equipment safely such that the operation of equipment does not endanger the operator or other employees.

Knowledge of the cleaning characteristics of brass, corrosion resistant steel, aluminum, iron, steel, monel, and other metals or nonmetals. Knowledge of dry and wet blasting compounds including most metal, agricultural, aggregate, glass, and liquid types, and method of use on a variety of base metal or nonmetal surfaces. Ability to use this knowledge to identify the composition of surfaces, and determine the proper abrasive or combination of abrasives, the proper blasting equipment, and air or vapor pressure needed to remove difficult contaminants such as baked sand, slag, rust, scale, paint, or carbon deposits, or to produce various grades of rough or smooth finishes as required.

Ability to properly prepare sandblasting bays, chambers, portable units, booths or open areas, and set up operating controls to blast a variety of metal and nonmetal surfaces, according to the degree of corrosion or the type and extent of cleaning or finish desired. For example, regulate the nozzle orifice for the proper pressure of air or vapor to avoid warping or damaging items or surfaces, and protect surfaces that are not to be blasted with appropriate types of masking tapes or covers. Ability to apply the proper methods and techniques of blasting such as distance of nozzle from surfaces, duration of blasting, angle of blast, and methods for positioning and holding workpieces. Ability to select nozzles for the type of blasting job with proper offsets for reaching behind objects to carry out blasting operations safely.

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Ability to respond to oral or written sandblasting instructions, technical orders, specifications, shop manuals, and safety rules. Ability to use the information to determine the type and extent of cleaning required and the various techniques such as brush, hone, shot, sweep, and spot blasting needed, according to the material, size, and type of item, areas not to be blasted, and the type or combination of abrasives for the various types of metal or nonmetal surfaces. Ability to apply operating and maintenance manual instructions to maintain hoses, nozzles, valves, and other equipment.

*Responsibility:* Is assigned sandblasting work or special blasting problems orally or through written instructions such as specifications, technical orders, equipment operating manuals, and safety rules. On own initiative, interprets instructions to determine the cleaning method for workpieces or surfaces, including the abrasives to use or combination of abrasives for the job; the techniques of setting up workpieces and equipment for large or small surface areas; and the appropriate types of sandblasting equipment and maintenance procedures to perform sandblasting operations safely.

The supervisor provides technical assistance where written guides are not available and checks completed work for overall compliance with acceptable trade practices.

*Physical Effort:* Work assignments involve standing, stooping, bending, kneeling, reaching, climbing, crawling, and crouching in strained and awkward positions for prolonged periods to blast interior and exterior surfaces at various heights up to 30 meters (100 feet). Uses hands, legs, and arms to climb vertical ladders to stagings or suspended platforms. Lifts, carries, and sets up equipment and components that weigh up to 34 kilograms (75 pounds) and, occasionally, objects weighing in excess of 45 kilograms (100 pounds). May be required to control blasting hose with nozzles subject to extremely high pressures (e.g., in excess of 100 psi).

*Working Conditions:* Sandblasting is done inside and outside in open and enclosed work locations under varied temperature, illumination, ventilation, and weather conditions. Is subjected to the possibility of cuts, burns, strains and broken bones. Is exposed to noise, dust, and flying abrasives, rust, scale, paint chips, slag, or loose objects, and all kinds of weather at work locations. Is required to wear heavy protective gloves, clothing, ear protection, air-fed hoods or helmets, respirators, and safety shoes.