# ***DRAFT - NOT FOR FILING***

**4123:1-3-12 Portable explosive-actuated fastening tools.**

(A) Reserved.

(B) Definitions.

(1) "Portable explosive-actuated fastening tool (powder-actuated)" means a tool which depends upon an explosive charge to propel or discharge a stud, pin, or fastener for the purpose of impinging it upon, affixing it to, or penetrating another object or material.

(a) "High velocity tool" means a tool or machine which, when used with a load, propels or discharges a stud, pin, or fastener, at velocities in excess of three hundred feet per second when measured six and five-tenths feet from the muzzle end of the barrel, for the purpose of impinging it upon, affixing it to, or penetrating another object or material.

(b) "Low velocity tool" means a tool or machine which by means of a powder-load, actuates a piston, which, in turn, propels or discharges a stud, pin, or fastener, at velocities not in excess of three hundred feet per second when measured six and five-tenths feet from the muzzle end of the barrel, for the purpose of impinging it upon, affixing it to, or penetrating another object or material.

(2) "Protective shield or guard" means a device or guard attached to the muzzle end of the tool which is designed to confine flying particles.

(3) "Stud, pin, or fastener" means a fastening device specifically designed and manufactured for use in portable explosive-actuated fastening tools.

(4) "Tool" means a portable explosive-actuated fastening tool, unless otherwise indicated, and shall include all accessories pertaining thereto.

(C) High velocity tools.

Tools of this type shall have the following characteristics:

(1) The muzzle end of the tool shall have a protective shield or guard no less than three and one-half inches in diameter, mounted perpendicular to and concentric with the barrel, and designed to confine any flying fragments or particles that might otherwise create a hazard at the time of firing.

(2) Where a standard shield or guard cannot be used, or where it does not cover all apparent avenues through which flying particles might escape, a special shield, guard, fixture, or jig designed and built by the manufacturer of the tool being used, which provides this degree of protection, shall be used as a substitute.

(3) The tool shall be so designed that it cannot be fired unless it is equipped with a standard protective guard or shield, or a special shield, guard, fixture, or jig.

(4) Firing the tool.

(a) The firing mechanism shall be so designed that the tool cannot fire during loading or preparation to fire, or if the tool should be dropped while loaded.

(b) Firing of the tool shall be dependent upon no less than two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into

the firing position.

(5) The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force no less than five pounds greater than the total weight of the tool.

(6) The tool shall be so designed that it will not operate when equipped with the standard guard indexed to the center position if any bearing surface of the guard is tilted more than eight degrees from contact with the work surface.

(7) The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.

(8) The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

(D) Low velocity tools -- piston type tools.

Tools of the low velocity piston type shall have the following characteristics:

(1) The muzzle end of the tool shall be designed so that suitable protective shields, guards, jigs, or fixtures, designed and built by the manufacturer of the tool being used, can be mounted perpendicular to the barrel. A standard spall shield, when supplied, shall be utilized with each tool.

(2) Firing the tool.

(a) The tool shall be designed so that it cannot fire during loading or during preparation to fire, or if the tool should be dropped while loaded.

(b) Firing of the tool shall be dependent upon no less than two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.

(3) The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force no less than five pounds greater than the total weight of the tool.

(4) The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.

(5) The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

(E) Minimum instructions for qualifying operators.

Instructions to operators in order to teach them the use of portable explosive-actuated fastening tools shall include, but shall not be limited to the following items:

Only employees who have been trained in the operation of that particular tool in use shall be allowed to operate a powder-actuated tool.

# ***DRAFT - NOT FOR FILING***

The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with manufacturer's recommendation procedure.

(1) Before using a tool, the operator shall inspect it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.

(2) When a tool develops a defect during use, the operator shall immediately cease to use it until it is properly repaired.

(3) Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any person, and hands shall be kept clear of the open barrel end.

(4) No tools shall be loaded unless being prepared for immediate use, nor shall an unattended tool be left loaded.

(5) In case of a misfire, the operator shall hold the tool in the operating position for no less than fifteen seconds, and then try to operate the tool a second time. The operator shall wait another fifteen seconds, holding the tool in the operating position and only then shall proceed to remove the explosive load which shall be done in strict accordance with the manufacturer's instructions. Misfired cartridges shall be placed carefully in a metal container filled with water, and returned to the supervisor for disposal.

(6) A tool shall never be left unattended in a place where it would be available to unauthorized persons.

(7) Fasteners shall not be driven into very hard or brittle materials, including but not limited to cast iron, glazed tile, surface-hardened steel, glass block, living rock, face brick, or hollow tile.

(8) Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side.

(9) Driving distance from edge.

(a) Fasteners shall not be driven directly into materials such as brick or concrete closer than three inches from the unsupported edge or corner, or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used.

(b) Exception: low velocity tools may drive no closer than two inches from an edge in concrete or one-fourth inch in steel.

(c) When fastening other materials, such as a two- by four-inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than seven-thirty-seconds-inch shank diameter no closer than two inches from the unsupported edge or corner of the work surface.

(10) Fasteners shall not be driven through existing holes unless a positive guide is used to secure accurate alignment.

(11) No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

(12) Tools shall not be used in an explosive or flammable atmosphere.

(13) All tools shall be used with the correct shield, guard or attachment recommended by the manufacturer.

# ***DRAFT - NOT FOR FILING***

(14) Any tool found not in proper working order shall be immediately removed from service. The tool shall be inspected each day before loading and shall be repaired in accordance with the manufacturer's specifications.

(F) Strength of charge - identification.

All explosive charges (cartridges and shells) to be used in portable explosive-actuated tools shall be marked by color, in accordance with "Table 12-1," "Identification of cased loads", to designate the strength of the charge.

Table 12.1 Identification of cased loads.

| | Color Identification | | |
|---|---|---|---|
| Power Level | Case Color | Load Color | Nominal Velocity (= 45 f.p.s.) |
| 1 | Brass | Gray | 300 |
| 2 | Brass | Brown | 390 |
| 3 | Brass | Green | 480 |
| 4 | Brass | Yellow | 570 |
| 5 | Brass | Red | 660 |
| 6 | Brass | Purple | 750 |
| 7 | Nickel | Gray | 840 |
| 8 | Nickel | Brown | 930 |
| 9 | Nickel | Green | 1020 |
| 10 | Nickel | Yellow | 1110 |
| 11 | Nickel | Red | 1200 |
| 12 | Nickel | Purple | 1290 |

Note: The nominal velocity applies to 3/8-inch diameter 350-grain ballistic slug fired in a test device and has no reference to actual fastener velocity developed in any specific size or type of tool.