

GGG-K-481D
July 20, 1995
SUPERSEDING
GGG-K-481C
July 30, 1963

FEDERAL SPECIFICATION

KNIVES; CRAFTSMAN'S (HAWKBILL, SHOE, CHIPPING) PUTTY AND SCRAPING

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers knives for use by tradesmen in cutting, chipping, scraping, smoothing, splitting, and insulation skinning operations.

1.1.1 Federal specification coverage. Federal specifications do not cover all varieties of the commodity indicated by the title of the specification, or which are commercially available, but are intended to cover only those generally used by the Federal Government.

1.2 Classification.

1.2.1 Types, classes, and styles. The knives shall be of the following types, classes, and styles, as specified (see 6.2):

Type I - Hawkbill (Linoleum)

Class 1 - Rigid

Style 1 - 2-1/2 inch blade

Style 2 - 1-1/2 inch blade

Class 2 - Folding blade

Type II - Shoe

Class 1 - Straight

Style 1 - Square point

Style 2 - Round point

Style 3 - Tapered point

Class 2 - Curved, right hand shoe-lip

Class 3 - Curved, left hand shoe-lip

Type III - Plumbers' chipping

Type IV - Putty

Class 1 - Flexible

Class 2 - Semiflexible

Type V - Scraping

Class 1 - Flexible

Class 2 - Semiflexible

Class 3 - Stiff

Type VI - Cable, lead-covered, chipping, and splitting

Type VII - Lineman's skinning

FSC 5120

DISTRIBUTION STATEMENT A. Approved for public distribution; distribution is unlimited.

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2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Standard:

FED-STD-123 - Marking for Domestic Shipment (Civilian Agencies)

Federal Specification:

PPP-P-40 - Preservation and Packing of Hand Tools and Tool Accessories for Power Driven, Metal and Woodworking Machinery

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and Commercial Item Descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification, and other Federal specifications and Commercial Item Descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications:

MIL-M-14 - Molding Plastics and Molded Plastics Parts, Thermosetting

Military Standards:

MIL-STD-129 - Marking for Shipment and Storage

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

American National Standards Institute (ANSI)/American Society of Quality Control (ASQC):

ANSI/ASQC Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Application for copies should be addressed to the American Society for Quality Control, P.O. Box 3005, 611 E. Wisconsin Avenue, Milwaukee, WI 53201-4606.)

American Society for Testing and Materials (ASTM):

ASTM E 18 - Methods of Test for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

3. REQUIREMENTS

3.1 Illustrations. Illustrations herein are descriptive and not restrictive and are not intended to preclude the purchase of knives otherwise conforming to this specification.

3.2 Material. Materials used in the construction of knives shall be as hereinafter specified. All materials shall be of a uniform quality and free of injurious defects.

3.3 Finish and coating.

3.3.1 Finish. The finish shall be as hereinafter specified for each particular part and shall reflect workmanship consistent with the functional requirements of the knife.

3.3.2 Coating. The coating shall be as specified for the individual part. The coating shall be properly applied and completely dry.

3.4 Marking. Each item shall be marked with the manufacturer's name or identifying symbol and the state or country of manufacture. The marking shall be engraved, etched, or stamped in such a manner that it will be permanent to the extent that it will remain clear and legible throughout the life of the item.

3.5 Blades. Blades for all knives shall be made from a good quality carbon steel. Blades for types I, II, and VII knives shall be made from cutlery steel having a carbon content of .90 to 1.1 percent. Blades for type III knives shall have a carbon content of not less than .48 percent. Blades for types IV, V, and VI knives shall have a carbon content of from .70 to .90 percent. A cutting edge shall be provided on all knives except types IV and V. The cutting edge shall be formed by bevel grinding each side of the blade to a keen edge which shall be ready for immediate use without need for further attention.

3.5.1 Maximum surface roughness of blades. Except for types III and VI, both sides of all blades shall have a surface roughness equal to or smoother than the finish produced by an abrasive belt grit No. 150 or have a maximum surface roughness of 23 microinches.

3.5.1.1 Determination of surface roughness requirement. A specimen block of equal material and hardness as that of the knife blade and of suitable size may be used for comparison to determine compliance. One side of the specimen shall be finished by using a new abrasive belt grit No. 150 running dry. By use of the specimen block for comparison purposes, the finished area of the blade need not be checked to determine the roughness height rating in microinches.

3.6 Handles. All handles shall be smoothly finished and shall have no sharp or uncomfortable edges. The shape of each handle shall conform to the configuration as shown in the applicable figure. The size of each handle shall conform to the dimensions specified for each individual type and class of knife.

3.7 Type I, hawkbill (linoleum). Type I knives shall be suitable for cutting linoleum, oilcloth, and other materials of similar nature. The knives shall have a hook-pointed blade; the hook shall be of a shape and of sufficient size to permit cutting of material when the longitudinal axis of the handle is approximately parallel with the surface of the material being cut and allow sufficient knuckle clearance between the handle and the material. The blade shall be taper ground from the back edge to the cutting edge as shown in Figure 1. This taper shall be uniform throughout the length of the blade cutting edge. The knife shall show ease in cutting and the ability of the steel to hold a keen cutting edge under normal service conditions when tested as specified in 4.4.1.

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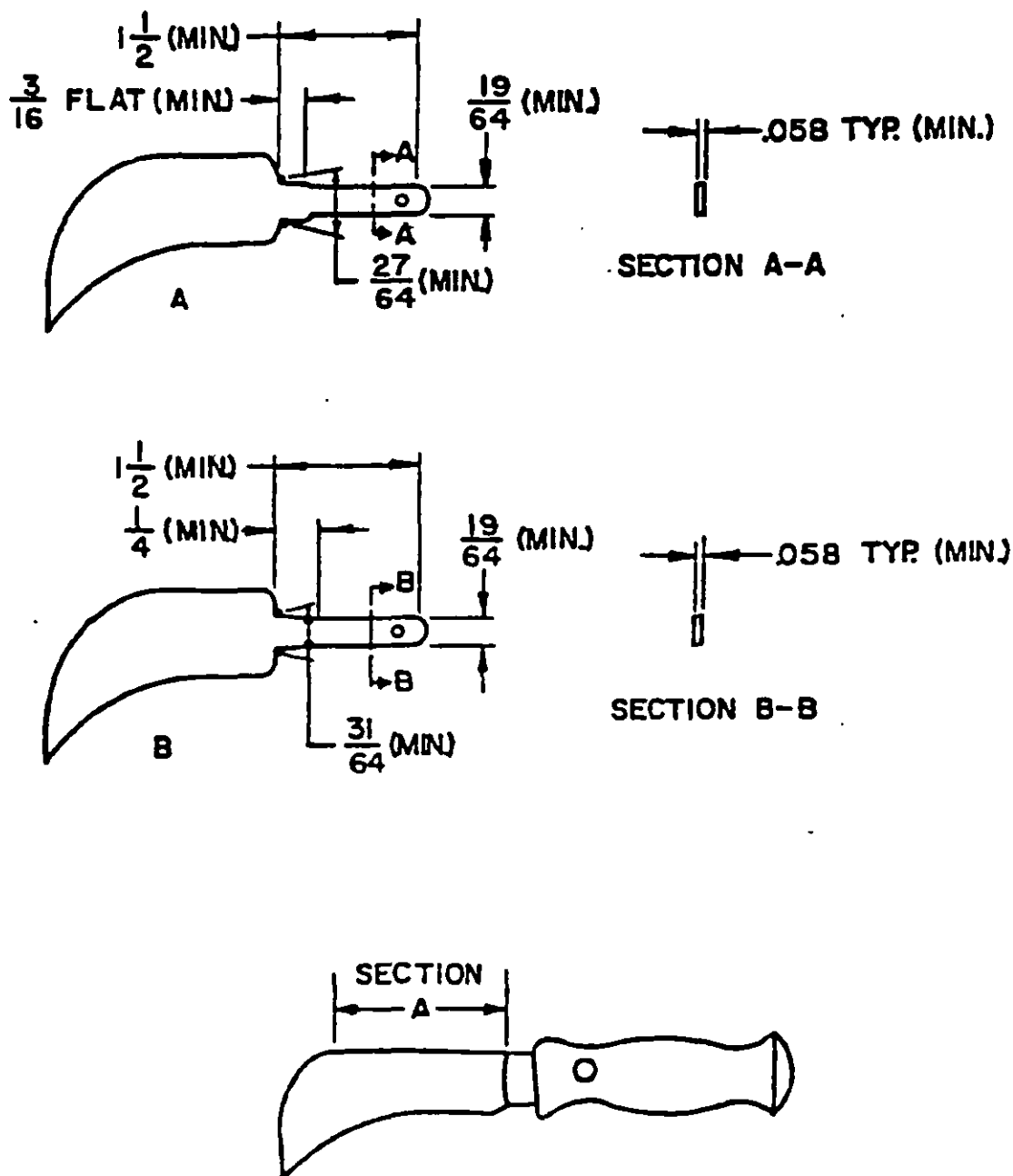


Figure 1. Type I, class 1, style 1, hawkbill (linoleum), rigid.

3.7.1 Type I, class 1, hawkbill (linoleum) rigid. Class 1 knives shall consist essentially of a blade, shank or tang, handle and a ferrule.

3.7.1.1 Blade. The blade shall conform to 3.5 and 3.7 and shall possess a Rockwell C hardness of 54-61 when tested as specified in 4.4.6. Maximum surface roughness shall conform to 3.5.1. The blade (including the shank section near the handle, shall be sufficiently flexible so as not to fracture or show visible indication of permanent deformation when tested as specified in 4.4.2.

3.7.1.1.1 Shank or tang. The shank or tang shall be inserted in the handle and secured by at least one pin or nail which shall extend through the tang and into the other side of the handle so that the pin or nail is securely imbedded in the handle on both sides of the tang. The pin or nail shall not protrude on the side opposite the head.

3.7.1.2 Handle. The handle shall conform to 3.6 and shall be of a tough hardwood. Handles shall have a durable coating of varnish or lacquer to minimize absorption of moisture. Handles shall show no visual indication of damage after completion of the test specified in 4.4.2.

3.7.1.3 Ferrule. The blade end of the handle shall be fitted with a metal ferrule which shall be tightly driven onto the tenon of the handle to prevent splitting and to support the blade.

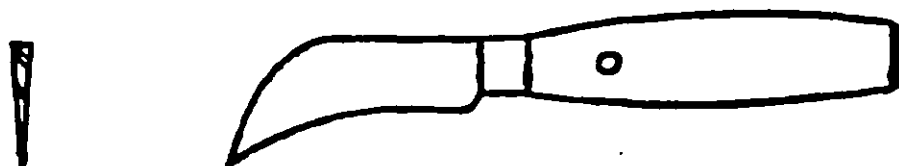
3.7.1.4 Style 1, 3-1/2 inch blade. Style 1 knives shall conform to Table I and shall be similar to Figure 1. The shank or tang shall be not less than the minimum dimensions shown in Figure 1 and shall be of either design, at the option of the manufacturer.

Table I. Type I, class 1, hawkbill (limoleum), rigid

Style	Length of blade \perp $\pm 1/4$ inches	Thickness, back of blade along section A ± 0.010 inch	Length of handle (including ferrule) $\pm 1/2$ inches
1	3-1/2	0.062	5
2	1-1/2	0.056	3-3/4

\perp / Measured parallel to longitudinal axis of handle.

3.7.1.5 Style 2, 1-1/2 inch blade. Style 2 knives shall conform to Table I and shall be similar to Figure 2. The handle shall be round and shall measure 7/8 inch $\pm 1/8$ inch at the largest diameter.



Blade cross section

Figure 2. Type I, class 1, style 2, hawkbill (limoleum), rigid.

3.7.2 Type I, class 2, hawkbill (limoleum) folding blade. Class 2 knives shall consist of a blade, handle, bolster, blade lock, and blade spring.

3.7.2.1 Blade. The blade shall conform to 3.5 and 3.7 and shall possess a Rockwell C hardness of 54 to 59. For hardness conformance, blades shall be tested as specified in 4.4.6. A groove or nail nick shall be provided in one side of the blade near the back end to facilitate opening of the blade by a thumb nail. Maximum surface roughness shall conform to 3.5.1. A suitable blade stop shall be provided which will prevent the cutting edge from contacting any part of the handle interior when the blade is closed. The blade tang shall be 0.109 inch, ± 0.005 inch thick.

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3.7.2.2 Handle. The handle shall conform to 3.6 and shall be of sheet steel or brass lined with cheeks made of either hardwood or cellulose filled phenolic thermosetting molding compound. If the molding compound is used it shall conform to type CFI-10 or equal of MIL-M-14. When molding compound is used, color should be specified. If wood is used, it shall be either rosewood, cocabolo, or kingwood. The cheeks shall be neatly fitted to the steel linings. The handle shall be fastened with not less than two neatly head pins and two internal plastic studs. A hole between 1/8 inch and 1/4 inch diameter and extending completely through the handle may be provided. If provided, the hole shall be located near the butt end so that the knife blade, when closed, will not block any portion of the hole.

3.7.2.3 Bolster. The tang end of the handle shall be neatly fitted with a steel bolster to which the blade hinge pin is secured. Outside edges of the bolster shall be rounded and the bolster shall be well polished on all exposed areas.

3.7.2.4 Blade lock. The blade lock shall be made of hard brass or steel and shall be designed so as to automatically lock the blade in its open position but permit release of the lock by finger when closing the blade. This blade lock shall be built into the handle and shall not form an obstruction to normal gripping.

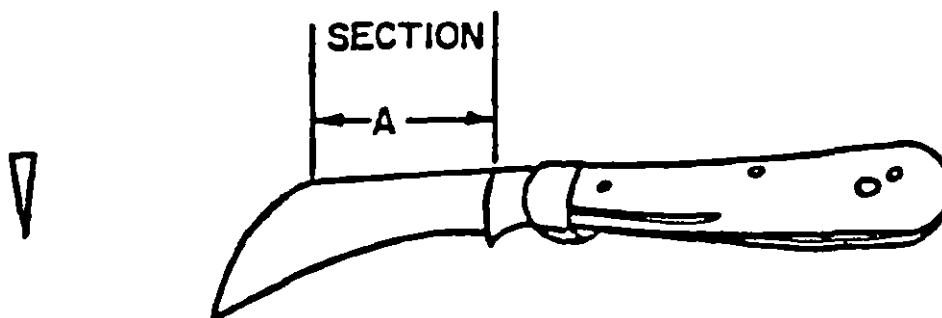
3.7.2.5 Blade spring. The blade spring shall be made of spring steel and shall be strong and durable. The blade spring shall possess a Rockwell C hardness of 45 to 51 when tested as specified in 4.4.6. The back of the spring shall be ground and polished. The inside of the spring at all points of contact with the blade shall be fine ground or glazed. The remainder of the spring surfaces shall be ground or coated with aluminum paint or plated to afford corrosion resistance. When assembled to the handle, the blade spring shall exert sufficient pressure on the tang so as to require at least 6 inch-pounds but not more than 12 inch-pounds of force to open the blade when tested as specified in 4.4.5.

3.7.2.6 Type I, class 2 knives. Type I, class 2 knives shall conform to Table II and shall be similar to Figure 3.

Table II. Type I, class 2, hawkbill (linoleum) folding blade

Length of 1/ blade from bolster $\pm 1/8$ inches	Thickness, back of blade along section A ± 0.005 inch	Overall length blade open $\pm 3/16$ inches	Length of handle $\pm 1/8$ inches	Width of blade	
				Hawkbill end $\pm 1/16$ inches	Tang end $\pm 1/16$ inch
2-15/16	0.100	7-1/8	4-1/8	1-9/16	13/16

1/ Measured parallel to longitudinal axis of handle.



Blade cross section

Figure 3. Type I, class 2, hawkbill (linoleum), folding blade.

3.8 Type II shoe knives. Type II knives shall be suitable primarily for cutting tough leather and shall consist essentially of blade, handle, and ferrule.

3.8.1 Blade. The blade shall be taper ground from the back edge to the cutting edge. This taper shall be smooth, continuous, and uniform throughout the length of the blade cutting edge. The knife shall show ease in cutting and the ability of the steel to hold a keen cutting edge under normal service conditions when tested as specified in 4.4.1. The blade shall conform to 3.5. The maximum surface roughness shall conform to 3.5.1. The blades shall possess a Rockwell C hardness of 56 to 61 when tested as specified in 4.4.6. Flexibility of class 1 knives shall be as specified in 3.7.1.1. Flexibility testing of classes 2 and 3 knives is not required.

3.8.1.1 Shank or tang. The shank or tang shall conform to 3.7.1.1.1.

3.8.2 Handle. Handles shall be of straight-grained hardwood and otherwise conform to 3.6 and 3.7.1.2.

3.8.3 Ferrule. Ferrules shall conform to 3.7.1.3.

3.8.4 Type II, class 1, straight.

3.8.4.1 Style 1, square point. Style 1 knives shall have a straight blade, a square or optional point (see Figure 4, style 1), and the dimensions shall conform to Table III.

Table III. Type II, classes 1, 2, and 3 shoe knives

Class	Style	Length of blade from ferrule (inches)	Width of blade $\pm 1/8$ (inch)	Thickness, back of blade at handle		Length of handle (including ferrule $\pm 1/4$ (inches)	Largest diameter of handle $\pm 1/8$ (inch)
				minimum (inch)	maximum (inch)		
1	1	$3-1/2 \pm 1/4$	$3/4$	0.050	0.072	$4-1/8$	$15/16$
1	1	$4-1/4 \pm 1/4$	$3/4$	0.050	0.072	$4-1/8$	$15/16$
1	1	$5 \pm 1/4$	$3/4$	0.060	0.072	$4-1/8$	$15/16$
1	1	$6-1/4 \pm 1/4$	1	0.050	0.072	$4-1/8$	$15/16$
1	2	$4 \pm 1/4$	$7/8$	0.050	0.060	$4-1/8$	$15/16$
1	3	$4 \pm 1/4$	tapered	0.050	0.060	$4-1/8$	$15/16$
2		$2-7/8 \pm 1/8$	$5/8$	0.050	0.060	$4-1/8$	$15/16$
3		$2-5/8 \pm 1/8$	$5/8$	0.050	0.060	$4-1/8$	$15/16$

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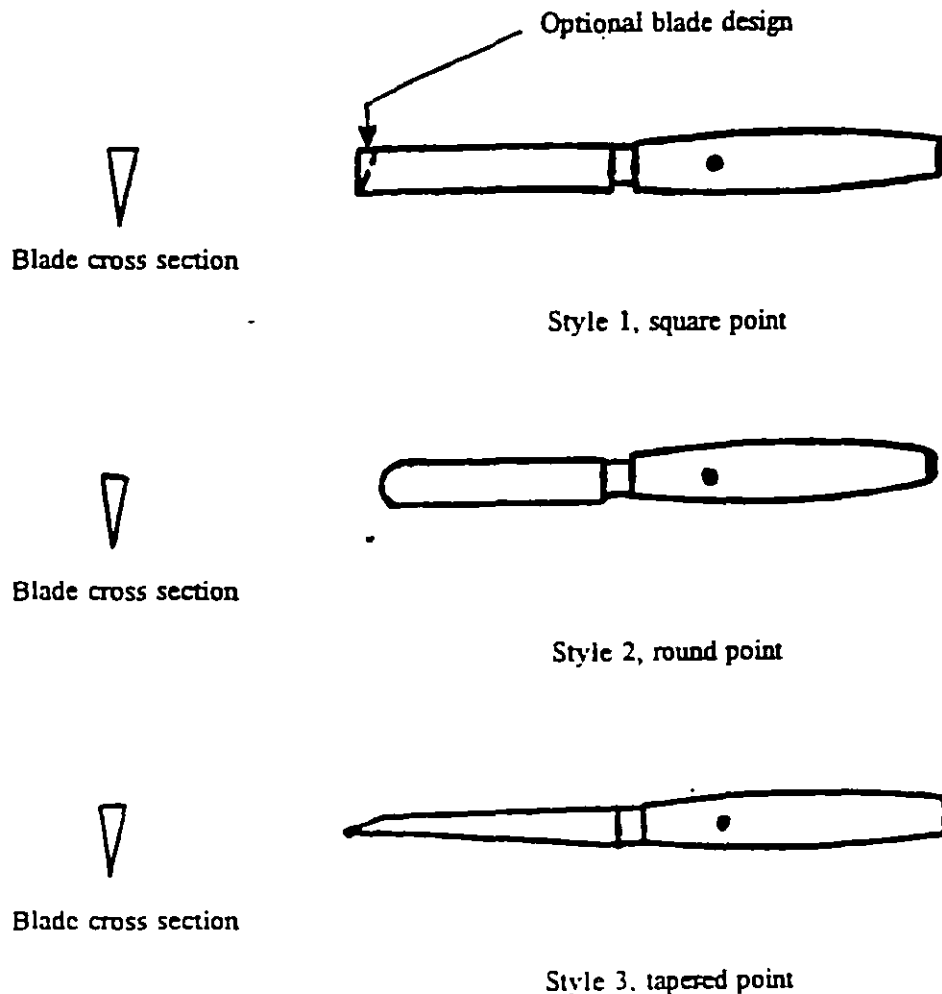


Figure 4. Type II, class 1, styles 1, 2, and 3 knives, shoe, straight.

3.8.4.2 Style 2, round point. Style 2 knives shall have a straight or slightly tapered blade, a round point (see Figure 4, style 2) and the dimensions shall conform to those specified in Table III.

3.8.4.3 Style 3, tapered point. Style 3 knives shall have a straight blade, a tapered point (see Figure 4, style 3) and the dimensions shall conform to those specified in Table III.

3.8.5 Type II, class 2 knives. Type II, class 2 knives shall conform to Table III and shall have a slightly curved blade with a shoe-lip turned to the right at the end of the blade as shown in Figure 5.

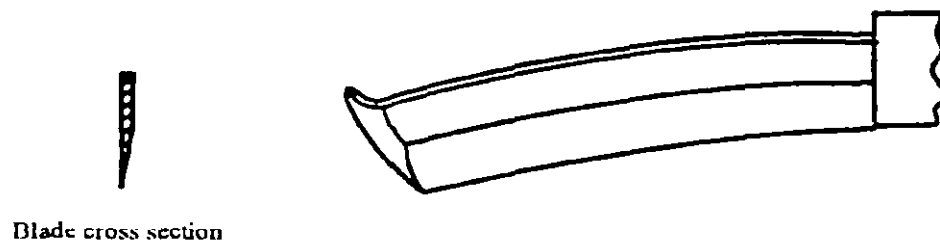


Figure 5. Type II, class 2 curved right hand shoe-lip

3.8.6 Type II, class 3 knives. Type II, class 3 knives shall conform to Table III and shall have a slightly curved blade with a shoe-lip turned to the left at the end of the blade as shown in Figure 6.

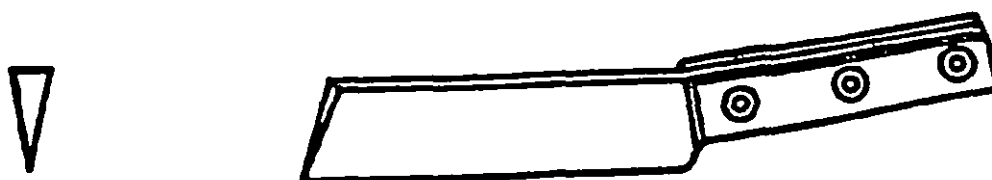


Blade cross section

Figure 6. Type II, class 3, curved, left hand shoe-lip.

3.9 Type III, plumber's chipping. Type III plumber's chipping knives shall be of such design and weight as to be suitable for cutting bars and sheets of plumber's lead and shall consist essentially of a blade, shank or tang, and a handle.

3.9.1 Blade. The blade shall conform to 3.5 and shall be rectangular in shape and shall taper from the back edge to the cutting edge as shown in Figure 7. The cutting edge shall be bevel ground on each side and shall be uniform throughout the length of the blade. The blade shall possess a Rockwell C hardness of not less than 35 nor more than 45 when tested as specified in 4.4.6. The blade shall show ease of cutting and the ability to hold a keen edge without chipping or burring when tested as specified in 4.4.1. Maximum surface roughness shall conform to 3.5.1.



Blade cross section

Figure 7. Type III, plumber's chipping.

3.9.2 Shank or tang. The shank or tang shall be integral with the blade and shall be raised to an angle of between 10 and 20 degrees with reference to the cutting edge of the blade. The shank or tang shall form a part of the handle, shall be at least as thick as the back edge of the blade adjacent to it, and shall extend the full length and width of the handle.

3.9.3 Handle. The shank or tang shall be fitted with heavy leather side pieces to form the handle. These side pieces shall be secured to the shank or tang by means of three or more securely driven, neatly headed rivets. Rivets may be headed over washers and may project above the handle surface provided no sharp edges are evident or the rivets may be finished flush with or slightly below the angle surface. The leather side pieces may be finished approximately flush with the edges of the shank or tang.

3.9.4 Type III knives. Type III knives shall conform to Table IV and shall be similar to Figure 7.

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Table IV. Type III, plumber's chipping

Length of blade $\pm 3/8$ inch (inches)	Width of blade $+ 7/16, - 5/64$ (inches)	Length of handle $+ 1/2, - 1/8$ (inches)
5	1-1/2	4

3.10 Type IV, putty. Putty knives shall be suitable for glazing work and other applications of a similar nature. Putty knives shall furnished in two degrees of flexibility designated as follows:

Class 1 - Flexible

Class 2 - Semiflexible

All putty knives shall conform to the applicable flexibility requirements as listed in Table V when tested as specified in 4.4.2. The class of putty knife furnished shall be as specified in the contract or order (see 6.2). Putty knives shall consist essentially of a blade, shank or tang, handle, and may be equipped with a bolster, at the option of the manufacturer.

Table V. Type IV, flexibility of putty knives

Class	Load at 6-1/2 inches		Deflection	
	(pounds)	(ounces)	minimum (inches)	maximum (inches)
1 (flexible)	4	2	4-1/8	4-7/8
2 (semiflexible)	4	2	2-3/4	3-1/4

3.10.1 Blade. The blade shall conform to 3.5 as applicable. The contour of the blade width may include approximately parallel edges, extending more than one-half the blade length, or have edges with an arc contour. The blade shall taper in width to blend with the handle and generally conform to Figure 8. There shall be a slight bevel on at least one side of the blade at the point end which shall extend the entire width of the blade. The point end may be blunt. The blade shall possess a Rockwell C hardness of not less than 54 nor more than 59 when tested as specified in 4.4.6. The blade shall have a ground finish with a minimum surface roughness conforming to 3.5.1.

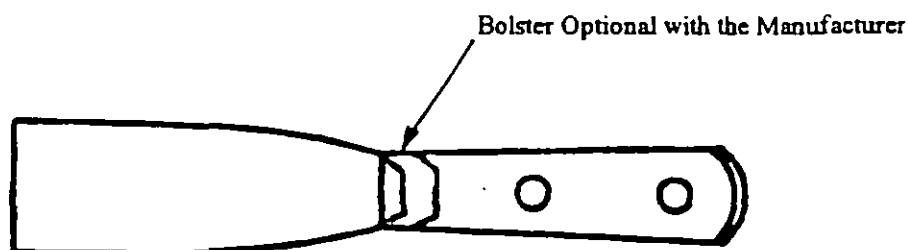


Figure 8. Type IV, putty.

3.10.1.1 Taper of blade thickness. Classes 1 and 2 blades shall taper in thickness from the handle end of the blade to within a distance of 1-1/4 inches \pm 1/2 inch from the point end. The point end of class 1 and 2 blades shall be approximately parallel in thickness or have a slight reverse taper for a distance of 1-1/4 inches \pm 1/2 inch from the point end. Class 1 and 2 blades shall conform to the requirements of 3.10.

3.10.2 Shank or tang. The shank or tang shall be integral with the blade, shall extend the full length and width of the handle and shall be finished flush with the butt end and sides of the handle. As an alternate design, the shank or tang shall be integral with the blade and shall extend to within 1/8 inch of the full length and width of the angle, provided that the shank or tang is enclosed in the handle.

3.10.3 Handle. Handles shall be of wood, plastic, or any nonmetallic material suitable for the purpose intended and capable of withstanding the applicable tests specified in section 4 herein. Wood handles shall be of cocobolo, kingwood, rosewood, walnut, maple, or beechwood. The handle shall be permanently attached to the shank or tang by not less than two securely driven compression type or other type of neatly headed rivets or eyelets. Rivets shall be finished flush with or driven to withstand \pm 0.005 inch of the handle surface. Eyelets shall have a minimum body diameter of 0.225 inch and a minimum wall thickness of 0.010 inch. The eyelet heads shall have a diameter equal to or greater than the body diameter + 0.075 inch, whichever is greater. The body diameter of rivets and eyelets shall fit neatly in the holes of the tang to prevent lateral movement.

3.10.4 Type IV, classes 1 and 2. Type IV, classes 1 and 2 putty knives shall conform to Table VI and shall be similar to Figure 8.

Table VI. Type IV, class 1 and 2 putty knives

Width of blade + 1/8 - 1/16 (inches)	Length of blade \pm 3/8 (inches)	Thickness of blade at handle minimum (inch)	Length of handle + 5/8 - 1/8 (inches)	Thickness of straight handle \pm 1/8 (inch)	Thickness of tapered handle minimum (inch)	Width of handle at blade + 1/4 - 3/32 (inch)	Width of handle at widest portion + 3/16 - 1/8 (inches)
1-1/4	3-1/2	0.035	3-3/4	5/8	1/2	25/32	1

3.11 Type V, scraping. Scraping knives shall be suitable for scraping paint, applying and smoothing out soft compounds, and similar applications. Scraping knives are furnished in three degrees of flexibility designated as follows:

- Class 1 - Flexible
- Class 2 - Semiflexible
- Class 3 - Stiff

All scraping knives shall conform to the applicable flexibility requirements as listed in Table VII when tested as specified in 4.4.2. The class of scraping knife furnished shall be as specified (see 6.2). Scraping knives shall consist essentially of a blade, shank or tang, handle, and may be equipped with a bolster at the option of the manufacturer.

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Table VII. Type V, flexibility of scraping knives

Class	Load at 6-1/2 inches		Deflection	
	(pounds)	(ounces)	Minimum (inches)	Maximum (inches)
1 (Flexible)	4	2	3-1/8	4-1/2
2 (Semiflexible)	4	2	1-1/2	2-1/2
3 (stiff)	4	2	1/2	1.0

3.11.1 Blade. The blade shall conform to 3.5 and the shape shall conform to Figure 9, except that the working end shall be straight along the entire width and form an angle 84° to 86° with the longitudinal axis of the handle. A slight beveled or chamfered edge extending the entire width of the working end shall be provided, otherwise the blades including the Rockwell C hardness shall conform to 3.10.1.

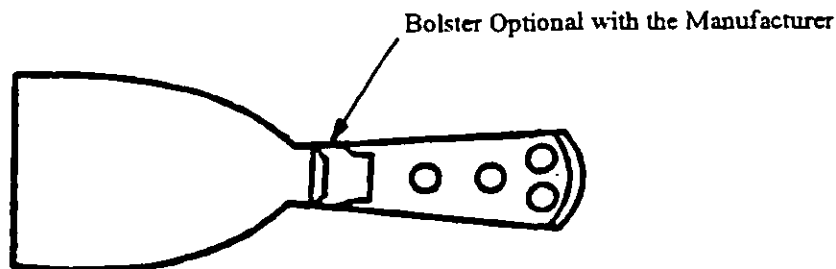


Figure 9. Type V, scraping.

3.11.2 Shank or tang. The shank or tang shall conform to 3.10.2.

3.11.3 Handle. The handle shall conform to 3.10.3.

3.11.4 Type V, classes 1, 2, and 3. Type V, classes 1, 2, and 3 scraping knives shall conform to Table VIII and shall be similar to Figure 9.

Table VIII. Type V, classes 1, 2, and 3 scraping knives

Width of blade + 1/8 - 1/16 (inches)	Length of blade (long side) ± 1/4 (inches)	Thickness of blade at handle minimum (inch)	Length of handle + 3/8 - 1/8 (inches)	Thickness of straight handle ± 1/8 (inch)	Thickness of tapered handle minimum (inch)	Width 1/ of handle at blade ± 1/4 (inch)	Width 2/ of handle ± 7/32 (inches)
3	3-1/2	0.045	4-1/4	5/8	1/2	1-1/2	1

1/ Narrowest Part

2/ Widest Part

3.12 Type VI cable, lead-covered, chipping, and splitting. Type VI cable knives shall be suitable for use in cutting the sheaths of lead-covered cables and shall consist essentially of a blade, shank, and handle.

3.12.1 Blade. The blade shall be rectangular in shape and shall taper slightly in cross section. The back edge of the blade shall be provided with a "striking saddle" which shall be integral with the blade. The beveled cutting edges of the blade shall be ground and have a maximum surface roughness conforming to 3.5.1. Blades shall possess a Rockwell C hardness of 40 to 55 when tested as specified in 4.4.6. The blade shall show ease of cutting and the ability to hold a keen edge when tested as specified in 4.4.1.

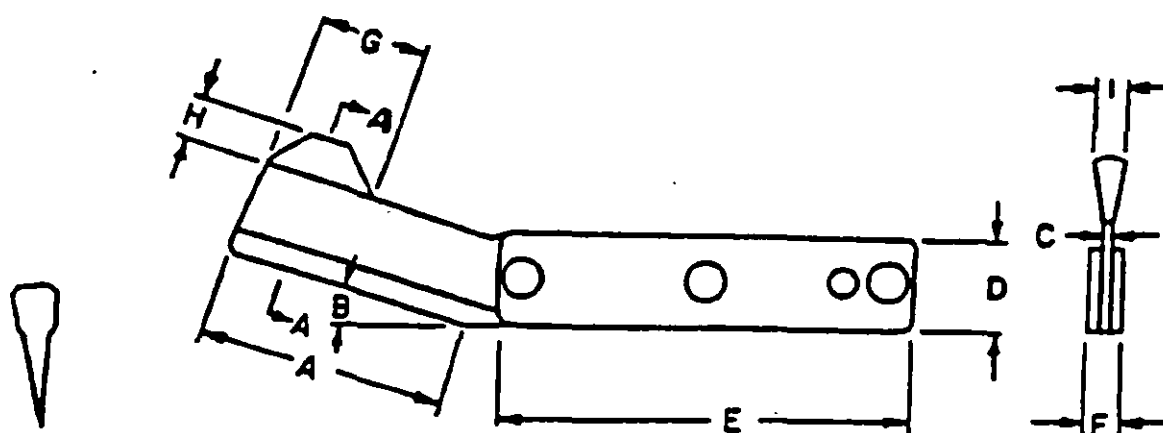
3.12.2 Shank. The shank shall be integral with the blade and shall be raised at an angle of approximately 15° (see Table IX) with reference to the cutting edge of the blade. The shank shall extend the full length and width of the handle and shall be finished approximately flush with the angle pieces. The shank shall be at least as thick as the back edge of the blade adjacent to it.

Table IX. Type VI, cable, lead-covered, chipping, and splitting

Length of cutting edge "A"	Angle of blade to handle "B"	Width of blade "C"	Height of blade and handle "D"	Length of handle "E"	Width of handle "F"	Length "G" striking head	Height "H" striking head	Width of striking head "I"
$\pm 1/6$ (inches)	± 2 (degrees)	$+ 1/32$ $- 0$ (inch)	$\pm 1/6$ (inch)	$\pm 1/16$ (inches)	$\pm 1/16$ (inch)	$\pm 1/8$ (inch)	$\pm 1/16$ (inch)	$\pm 1/16$ (inch)
2-13/32	15	1/8	1	4-7/16	3/8	1-3/16	9/16	1/4

3.12.3 Handle. The shank shall be fitted with heavy leather side pieces so as to form a handle. These side pieces shall be secured to the shank by means of three or more securely driven, neatly headed rivets. Rivets may be headed over washers and may project above the handle surface provided no sharp edges are evident or the rivets may be finished flush with or slightly below the handle surface. Handle may be covered with vinyl plastic requiring no rivets.

3.12.4 Type VI. Type VI knives shall conform to Table IX and shall be similar to Figure 10.



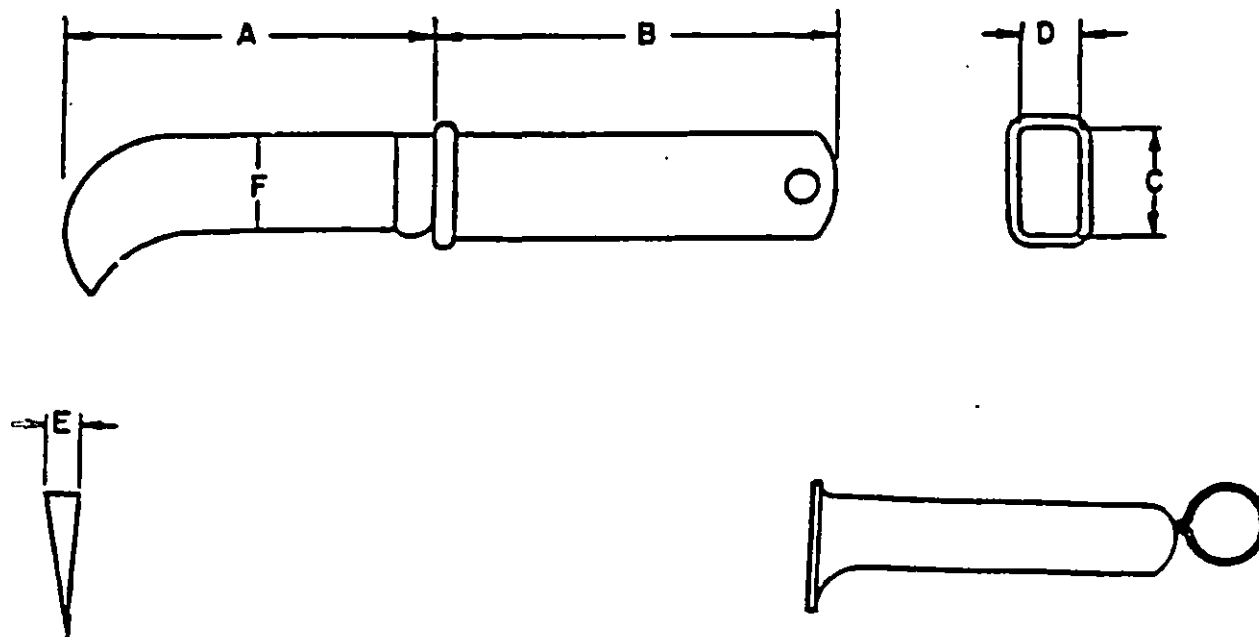
Section A-A

Figure 10. Type VI, cable, lead-covered, chipping, and splitting.

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3.13 Type VII Lineman's skinning. Lineman's skinning knives shall consist of a blade, shank, and a handle.

3.13.1 Blade. The blade shall conform to 3.5, have a hook shaped point, and be taper ground as shown in Figure 11 except the area approximately 1/4 inch long adjacent to the handle shall not be taper ground. The taper shall be uniform throughout the length of the cutting edge. The back edge of the blade shall be ground flat so as to form sharp, well defined corners suitable for scraping wires. The maximum surface roughness of the blade shall conform to 3.5.1. The blade shall possess a Rockwell C hardness of not less than 56 nor more than 60 when tested as specified in 4.4.6. The blade shall show ease in cutting and the ability of the steel to hold a keen cutting edge when tested as specified in 4.4.1.



Blade cross section

Optional handle design

Figure 11. Lineman's skinning knife.

3.13.2 Shank. The shank shall be integral with the blade and have a thickness equal to or greater than the back edge of the blade. The edges of the shank shall be of irregular shape to securely anchor the molded handle. The shank shall extend approximately 3/4 the length of the handle.

3.13.3 Handle. The handle shall be made of either plastic or half hard rubber and shall be permanently molded to the shank. The end of the rubber handle shall be provided with a hole approximately 1/4 inch diameter as shown in Figure 11, or a heavy wire ring shall be molded in the end of plastic handles for fastening to a tool belt snap. This hold shall be through the rubber handle only and shall not expose any part of the shank. The surface of the handle shall be smooth and shall be free of pits, cracks, laps, seams, or other detrimental defects. Corners of the handle shall be neatly and smoothly rounded. The perimeter of the rubber handle at the blade end shall be enlarged to help prevent accidental cutting of the user's fingers or his gloves. Plastic handles shall provide a finger guard at the blade end to minimize the chance of accidental cutting of the user's fingers or his gloves. Handles shall withstand the dielectric strength test specified in 4.4.7.

3.13.4 Type VII. Type VII lineman's skinning knives shall conform to Table X and be similar to Figure 11.

Table X. Type VII, lineman's skinning

Blade length "A" $\pm 1/8$ (inches)	Handle length "B" $\pm 1/8$ (inches)	Handle width "C" $\pm 1/16$ (inches)	Handle thickness "D" $\pm 1/16$	Blade thickness (at back) "E" ± 0.010 (inch)	Blade width "F" $\pm 1/16$ (inches)
3	5	1-3/16	9/16	0.85	1-1/8

3.14 Workmanship. Details of workmanship shall be in accordance with the best commercial standards and practices. Paints, coatings, platings, and finishes shall be smooth, dry, adherent, continuous, and not stained or discolored. Fasteners shall be firmly secured and show no evidence of deformation, cross threading, or hazardous burrs. Adhesives and lubricants adequate for their intended purpose shall be properly and neatly applied. Adhesives shall be adequately cured. Wire and cables shall be neatly dressed and shall not be frayed or in contact with sharp edges. Wire and cable insulation shall show no evidence of burns, abrading, or pinch marks. There shall be no interference, binding, or galling of parts. External and bearing surfaces shall be free of tool and gouge marks, nicks, or other surface imperfections. The item shall be clean and free of corrosion and debris (e.g., chips, shavings, slivers) or other foreign material. The item shall be free from manufacturing workmanship defects (e.g., loose, missing, binding, misaligned parts, sharp or rough external edges, corners, or surfaces) and material workmanship defects (e.g., pits, rips, fins, burrs, tears, nodules, cracks, blisters) which may adversely impact the item's serviceability, durability, safety, or appearance.

3.15 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the tolerances specified and all other requirements of this document are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch-pound units, a request should be made to the specification preparing activity for change to this document.

4. QUALITY ASSURANCE PROCEDURES

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Component and material inspection. In accordance with 4.1 above, the supplier is responsible for insuring that components and materials used were manufactured, tested, and inspected in accordance with the requirements of referenced subsidiary specification and standards to the extent specified, or, if none, in accordance with this specification.

4.2 Sampling procedures. Unless otherwise specified, sampling for inspection shall be performed in accordance with ANSI/ASQC Z1.4.

4.3 Examination

4.3.1 Visual examination. The end items shall be examined for the defects listed in Table XI. The lot size shall be expressed in terms of knives. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major and 6.5 for total (major and minor combined) defects.

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4.3.2 Dimensional examination. The end items shall be examined for defects listed in Table XI. The lot size shall be expressed in terms of knives. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major and 6.5 for total (major and minor combined) defects.

Table XI. Classification of defects

Examine	Defect	Classification		
		Critical	Major	Minor
Construction and workmanship	Safety lock not provided or action not positive; blade fails to lock in open position (type I, class 2 only)	001		
	Type and class (when applicable), not as specified		101	
	Material for blade not as specified; not free from seams, cracks, soft or hard spots, nonmetallic inclusions, segregations, checks, laminations or splits; not finished and polished as required		102	
	Handle not of authorized material, loose, not smoothly finished and shaped as required, not free from cracks, splits, burrs, slivers, sharp edges or corners; rivets or pins nonconforming, not securely headed, or finished smooth and free from burrs; or not finished and polished as required		103	
	Blade shape and weight not as required; not properly secured, broken, cracked, chipped; edge turned, nicked or dulled, not ground to a sharp keen edge as required; not tapered and beveled as specified		104	
	Blade not provided with nail nick; spring broken or inoperable; finger release fails to function as required (type I class 2 only)		105	
	Shank or tang less than the required minimum length, not secured in handle as specified, rivet(s) or pins not securely headed, or finished smooth and free from burrs (except types IV and V)		106	
	Ferrule or bolster missing, cracked, improperly fitted or fails to afford proper support for handle (when applicable) (except types IV and V)		107	
	Bolster missing, cracked, improperly fitted and positioned; not of approved material (types IV and V only)		108	
	Position of cutting edge (or working portion) with reference to handle (and shank) not as specified (except types IV and V)		109	
	Hole through end of handle missing or diameter not as specified (type I, class 2 and type VI only)		110	
	Width and length of blade (or cutting edge), length of handle, and thickness of blade (back of blade) or width, as applicable		111	
	Thickness of back of blade at handle not within requirements		112	
	All parts, as applicable, not free of rust or corrosion		113	

Table XI. Classification of defects (cont'd)

Examine	Defect	Classification		
		Critical	Major	Minor
Construction and and workmanship (cont'd)	Width of blade at hook-bill and tang ends and over-all length with blade open not within requirements (type I, class 2 only)			201
	Length, height, or width of striking head not in accordance with specified limits (type VI only)			202
	Length, height, width, or thickness of handle not within requirements			203
	Marking; manufacturer's name or trademark missing, incorrect, illegible, or not permanently marked			204

4.4 Testing. The end items shall be tested in accordance with the applicable paragraphs of 4.5. The sample unit for the dielectric test shall be two knives. The inspection level shall be S-2 and the acceptable quality level, expressed in terms of defect per hundred units, shall be 4.0.

4.4.1 Cutting tests.

4.4.1.1 Types I and II knives. The type I and II knives shall be subjected to a cutting test of sufficient duration to determine conformance with 3.7 and 3.8.1. Type I knives shall cut linoleum and type II knives shall cut tough leather.

4.4.1.2 Type III knives. The type III knives shall be held by hand and not less than 20 hard cutting blows shall be struck on a 1 pound bar of plumber's lead from a height over the bar of approximately 18 inches. The plumbers' lead shall have a content of approximately 60 percent lead and 40 percent tin. Failure shall have occurred if the cutting edge shows any nicks, chipping, or deformation of any sort.

4.4.1.3 Type VI knives. The type VI knives shall be held by hand with the cutting edge resting on a 1 pound bar of plumbers' lead as specified in 4.4.1.2. The bar shall be supported by a solid block of wood. A 1 pound machinist hammer shall be used to strike not less than 20 medium hard blows on the "striking saddle" of the blade from a height over the "striking saddle" of approximately 15 inches. After each blow the blade shall be moved to a different location of the test bar in preparation of the next blow. Failure shall have occurred if the cutting edge shows any nicks, chipping, or deformation of any sort.

4.4.1.4 Type VII knives. The type VII knives shall show ease in cutting and skinning electrical insulation from general purpose wires. In addition, the cutting edge of the blade shall be tested by producing several shavings from the body of an ordinary stove bolt or a common nail. Failure shall have occurred if the knife does not cut insulation easily or if the cutting edge nicks, chips, or deforms in any manner as the result of shaving a bolt or nail.

4.4.2 Flexibility tests.

4.4.2.1 Type I, class 1, and type II, class 1 knives. Approximately 1/4 inch of the cutter end of the knife blade shall be held in the jaws of an ordinary bench vise with the handle of the knife set in the vertical position. The butt end of the handle shall then be moved slowly to each side of the perpendicular, gradually increasing the included angle increments of approximately 10 degrees, allowing the blade to return to the vertical position before reversing the motion, until an included angle of at least 60° has been reached by any section of the handle which is nearest to the sides of the angle. The apex of the included angle shall be located at the top of the bench vise jaws. Failure shall have occurred should the blade or tang break or show any visible indication of permanent deformation, or should the handle show any visible indication of damage.

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4.4.2.2 Types IV and V knives. Approximately 1/4 inch of the outer end of the knife blade shall be securely clamped between two flat surfaces in such a manner that the handle extends horizontally and the remainder of the knife will be free to flex downward. A load of 4 pounds and 2 ounces shall be applied as a dead weight suspended from a wire, clamped, or otherwise attached to the handle of the knife at a distance of 6-1/2 inches from the outer end of the blade. The amount of deflection due to the application of the load shall then be measured. The amount of deflection shall be the difference between the two heights of the handle at the point of load application measured vertically before and after applying the load. Failure shall have occurred if the amount of deflection is not within the range specified in table V or VII as applicable for the type and class of knife under test or should the blade show any visible indication of permanent deformation.

4.4.3 Flammability test. Types IV, V, and VII knives, having handles of any material except wood, shall be subjected to this test. The knife blade shall be clamped in a support with the handle extended outward in a horizontal position. Under the handle there shall be clamped a piece of 10-mesh Bunsen gauze approximately 5 inches square in a horizontal position, 1/4 inch below the bottom of the handle, and with about 1/2 inch of the handle extending beyond the edge of the gauze. A bunsen burner with an efficient flame 1/2 to 3/4 inch in height, shall be adjusted so that the flame tip will just contact the specimen when placed under the free end of the handle. At the end of 30 seconds the flame shall be removed and the specimen allowed to burn. The rate of travel of the flame shall be determined from the time required for the flame to travel the length of the handle. In case the handle does not continue to burn after the first ignition, the burner shall be placed under the free end for a period of 30 seconds immediately following execution of the flame. If the handle does not continue to burn until the flame has reached the blade end of the handle after the second ignition, the sample shall be considered self-extinguishing. When tested as specified, the handle shall not burn at a rate exceeding 3.3 inches per minute.

4.4.4 Solubility test. Types IV, V, and VII knives of any material except wood shall be subjected to this test. The handles shall be completely immersed for a period of not less than one minute in each of the following commercial fluids: lacquer thinner, turpentine, mineral spirits, paint remover, alcohol, and gasoline. After each separate immersion, the handle shall be thoroughly wiped with a dry, clean, white cloth and examined. Any handle showing evidence of softening, discoloration left on the wiping cloth, or other definite indication of solubility shall be rejected. Plastic handles shall also pass the following test: immerse the handles in boiled linseed oil for 4 hours; remove and let stand for 24 hours; immerse in kerosene for 4 hours; remove and let stand for 24 hours. Any handle showing evidence of softening or other definite indication of solubility shall be rejected.

4.4.4.1 Impact test. Type IV, V, and VII knives having handles of any material except solid wood shall be subjected to the following test. Knives shall be dropped from a height of 10 feet so that the handle first strikes on a concrete floor. After impact there shall be no flaking off, cracking, breakage, or buckling of the handle.

4.4.5 Blade opening test. Type I, class 2 knives shall be securely clamped in a position so the blade may be readily opened. A wire shall be looped around the blade and attached to an accurately calibrated spring scale. The force required to open the blade approximately 90° shall be not less than 6 inch-pounds nor more than 12 inch-pounds.

4.4.6 Hardness test. Testing shall be accomplished in accordance with ASTM E 118 for compliance with 3.7.1.1, 3.7.2.1, 3.7.2.5, 3.9.1, 3.10.1, 3.11.2, 3.12.1, and 3.13.1.

4.4.7 Dielectric strength test. The handles of type VII knives shall withstand this test. One specimen of the sample shall be immersed in transformer oil for a period of 5 hours and the other specimen immersed in water for a like period. After wiping the handle surfaces dry, each handle shall be wrapped in a metal foil to a distance of 7/8 inch \pm 1/16 inch from the nearest exposed part of the blade. Two voltage leads shall be connected to the sample, one to the blade, and one to the metal foil. Each sample knife shall then be subjected to a voltage of not less than 2,200 volts, 60 cycle, AC, for a period of 1 minute and shall withstand this voltage without failure.

4.5 Inspection of preparation for delivery requirements. An inspection shall be made to determine that the preservation, packaging, packing, and marking comply with the requirements in section 5 of this specification. Defects shall be scored in accordance with Table XI. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking shall be in accordance with PPP-P-40. The level of preservation, packaging, and packing shall be A, B, or Commercial, as specified (see 6.1).

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful but is not mandatory.)

6.1 Intended use.

6.1.1 Type I, hawkbill (linoleum). Type I, hawkbill (linoleum) knives are normally used for cutting linoleum and floor tile made of rubber, plastic, vinyl, and asphalt.

6.1.2 Type II, shoe. Type II, shoe knives are normally used for cutting and trimming leather goods.

6.1.3 Type III, plumber's chipping. Type III, plumber's chipping knives are normally used for cutting sheet lead.

6.1.4 Type IV, putty. Type IV, putty knives are normally used for glazing, scraping, smoothing, and filling operations.

6.1.5 Type V, classes 1 and 2 scraping. Type V, classes 1 and 2 scraping knives are normally used for removing wallpaper, whereas class 3 is more suitable for scraping paint and varnish from wood or metal surfaces.

6.1.6 Type VI, cable, lead-covered, chipping and splitting. Type VI, cable, lead-covered, chipping and splitting knives are normally used for cutting the sheaths of lead-cover cables.

6.1.6 Type VII, lineman skinning. Type VII, lineman skinning knives are normally used for cutting, skinning, and scraping insulation from electric wires.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Type and class, if applicable, of item required (see 1.2).
- c. Blade length for type II, class 1 knives.
- d. Level of preservation, packaging, and packing required (see 5.1).
- e. Marking, if other than specified.

6.3 Transportation description. Transportation descriptions and minimum weights applicable to this commodity are:

Type IV:

Rail

Knives, putty

Carload minimum weight 30,000 pounds.

Motor

Knives, putty

Motor volume minimum weight 30,000 pounds.

Types I, II, III, V, VI, and VII:

Rail

Tools, not otherwise indexed by name. Carload minimum weight 30,000 pounds

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Motor

Tools, hand, not otherwise indexed. Truckload minimum weight 30,000 pounds, subject to Rule 115,
National Motor Freight Classification.

MILITARY INTERESTS:

Custodians

Army - QM

Navy - SH

Air Force - MOA

PREPARING ACTIVITY:

GSA - FSS