

QQ-S-682**3 AUGUST 1953****FEDERAL SPECIFICATION****STEEL, CORROSION-RESISTING-CLAD PLATES,
SHEETS, AND STRIPS**

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

1. CLASSIFICATION

1.1 Classes.—Corrosion-resisting-clad steel plates, sheets, and strips shall be furnished with cladding of the following classes as specified:

FS-301.
FS-302.
FS-304.
FS-321.
FS-347.
FS-430.

1.2 Finish.—Corrosion-resisting-clad steel shall have the following finishes, as specified:

1.2.1 Plates.—Plates shall be annealed and descaled by grit or sandblasting, or chemically cleaned.

1.2.2 Sheets.—Sheets shall have the following finishes on one or both surfaces, as specified:

Finish 1.—Hot rolled, annealed, and pickled.
Finish 2B.—Annealed, pickled, and bright cold-rolled.
Finish 4.—Commercial polish (ground).
Finish 6.—Commercial polish, Tampico brushed.

1.2.3 Strips.

1.2.3.1 Surfaces.—Strips shall have the following finishes on one or both surfaces, as specified:

Finish 1.—Cold-rolled, annealed, and pickled.

Finish 2.—Cold-rolled, annealed, pickled and re-rolled.

1.2.3.2 Edges.—Strips shall have the following edge finishes, as specified:

Edge 1.—Rolled edge, round or square.

Edge 3.—Square edge, produced by slitting.

Edge 5.—Square edge, produced by rolling or filing, after slitting.

1.3 Grades.—Unless alloy steel is specified, base material shall be of carbon steel of the following grades, as specified:

Grade A.—Forming quality.

Grade B.—Structural quality.

2. APPLICABLE SPECIFICATIONS AND STANDARDS

2.1 The following Federal Specification, of the issue in effect on date of invitation for bids, form a part of this specification:

QQ-M-151—Metals; General Specification for Inspection of.

(Copies of Federal Specifications and the Index of Federal Specifications and Standards may be obtained upon application accompanied by check, money order, cash, or Government Printing Office coupons, to the General Services Administration, Business Service Center, Region 3, Seventh and D Streets, SW., Washington 25, D. C. This office will also honor deposit account numbers issued by the Government Printing Office. Prices may be obtained from the Index of Federal Specifications and Standards or from the GSA Regional Offices. Single copies of this specification and other product specifications required for bidding purposes are

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available without charge at the GSA Regional Offices in Boston, New York, Atlanta, Chicago, Kansas City, Mo., Dallas, Denver, San Francisco, Los Angeles, Seattle, and Washington, D. C.)

2.2 Specifications and standards applicable only to individual departments are listed in section 7.

3. REQUIREMENTS

3.1 Manufacture.

3.1.1 *Cladding metal.*—Unless otherwise specified, corrosion-resisting steel used as cladding under this specification shall be made by the electric-furnace process or the inter-melting process.

3.1.2 *Base metal.*—The base metal shall be of carbon steel made by open-hearth or electric-furnace process or both, unless alloy or other steel is specified.

3.1.3 All material shall be uniform in quality and condition, free from blisters, pipes, laps, cracks, slag, hard spots, porosity, slivers, scabs, rolled-in scale, excessive non-metallic inclusions, injurious seams, undue segregations, or any other defects which may detrimentally affect its suitability for the service intended.

3.1.4 Chemical analysis of each heat or lot of steel, showing the percentages of the

designated elements in both base metal and cladding metal shall be furnished to the Government inspector, together with the amounts of any other elements intentionally added in excess of 0.20 percent.

3.1.5 *Bonding.*—Unless otherwise specified, cladding and base steel shall be bonded together with complete and unbroken fusion by melting, fusion welding, or by other suitable methods. In the course of fabrication if any material develops a failure of the bond between cladding and base metal the right is reserved to reject such material and to require replacement with satisfactory material at no expense to the Government, except when repair by welding is specifically authorized by the ordering activity.

3.1.6 *Temper.*—Unless otherwise specified, all material shall be annealed. The composition of the cladding material shall determine the annealing procedure. Annealing shall be the last heat treatment to which the material is subjected by the manufacturer, except when a rerolled finish is specified.

3.2 Chemical composition.

3.2.1 The chemical composition of cladding shall conform to the requirements shown in table I:

TABLE I.—*Chemical composition of cladding metal*

Classes	Carbon, maximum	Manganese, maximum	Silicon, maximum	Sulphur, maximum	Phosphorus, maximum	Chromium, minimum	Nickel, minimum	Titanium, minimum	Columbium, minimum	Molybdenum, maximum
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
FS-301	0.20	2.00	1.00	0.03	0.04	16.00	6.00			
FS-302	.20	2.00	1.00	.03	.04	17.00	8.00			
FS-304	.03	2.00	1.00	.03	.04	18.00	8.00			
FS-321	.08	2.00	1.00	.03	.04	17.00	8.00	5XC		
FS-347	.08	2.00	1.00	.03	.04	17.00	9.00		8XC ¹	
FS-430	.12	1.00	1.00	.03	.04	14.00				0.63

¹ A combination of columbium and tantalum may be used in lieu of columbium.

3.2.2 The chemical composition of the base steel shall conform to the requirements shown in table Ia, unless otherwise specified (see 3.1.2).

TABLE Ia.—*Chemical composition of base steel*

Base material	Carbon	Manga- nese	Sulphur	Phos- phorus
	In percent, maximum			
Grades A and B, carbon steel.....	0.25	0.90	0.05	0.04

3.3 Mechanical properties.—The mechanical properties of corrosion-resisting-clad steel plates, sheets and strips shall conform to table II.

3.4 Weight and dimensional requirements.

3.4.1 Plates.

3.4.1.1 *Nominal weight.*—The nominal weight per square foot shall be determined for classes FS-301, FS-302, FS-304, FS-321, and FS-347 by multiplying the thickness of material by the factor 41.11 and for class FS-430 by the factor 40.91. The factors specified are the weights per square foot,

1 inch thick, of the classes shown for either single or double clad.

3.4.1.2 *Weight variations.*—The permissible weight variations for corrosion-resisting-clad steel plates shall be as shown in table III.

TABLE II.—*Mechanical properties*

Grade	Tensile ¹ strength, minimum	Yield point, minimum	Elonga- ² tion, minimum	Bend ³ angle, minimum
	Lbs./sq.in.	Lbs./sq.in.	Percent	Degrees
Grade A (forming quality)			30	180
Grade B (structural quality)	55,000	25,000	25	180

¹ Tensile strength tests will not be required on sheets 0.020 inch or less in thickness.

² Elongation shall be measured as follows:

Thickness	Gage length
Inch	Inches
Up to 1/8, inclusive.....	2
Over 1/8 to 3/16.....	4
Over 3/16 to 1/4.....	6
Over 1/4.....	8

³ Cold bending on a diameter equal to thickness of material in accordance with 4.4.1.2.

TABLE III.—*Permissible variations in overweight of rectangular steel clad plates*

Ordered thickness		Permissible excess in weights per square foot of plates for widths given (expressed in percentages of nominal weights)								
		Under 48 inches	48 to 60 inches, exclusive	60 to 72 inches, exclusive	72 to 84 inches, exclusive	84 to 96 inches, exclusive	96 to 108 inches, exclusive	108 to 120 inches	120 to 132 inches	132 inches or over
From	To, exclusive	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Inch	Inch									
3/16	1/4	10.5	12.0	13.5	15.0	18.0				
1/4	5/16	9.0	10.5	12.0	13.5	15.0	18.0	21.0	24.0	28.5
5/16	3/8	7.5	9.0	10.5	12.0	13.5	15.0	18.0	21.0	25.5
3/8	7/16	7.0	7.5	9.0	10.5	12.0	13.5	15.0	18.0	22.5
7/16	1/2	6.0	7.0	7.5	9.0	10.5	12.0	13.5	15.0	19.5
1/2	5/8	5.5	6.0	7.0	7.5	9.0	10.5	12.0	13.5	16.5
5/8	3/4	4.5	5.5	6.0	7.0	7.5	9.0	10.5	12.0	13.5
3/4	1	4.0	4.5	5.5	6.0	7.0	7.5	9.0	10.5	12.0
1 or over		4.0	4.0	4.5	5.5	6.0	7.0	7.5	9.0	10.5

NOTE: The plates shall not be more than 0.01 inch under the thickness ordered, and the overweight of each lot (a "lot" shall consist of all the plates of each group width and each group thickness) in each shipment shall not exceed the amount shown in table III.

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TABLE IV.—Permissible variations in thickness for steel clad sheets with finish 1 or finish 2B

Thickness		Permissible variation, plus or minus	Thickness		Permissible variation, plus or minus
Over	Up to, inclusive		Over	Up to, inclusive	
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
	0.005	0.001	0.072	0.083	0.007
0.005	.007	.0015	.083	.098	.008
.007	.016	.002	.098	.114	.009
.016	.026	.003	.114	.130	.010
.026	.040	.004	.130	.145	.012
.040	.058	.005	.145	.176	.014
.058	.072	.006			

3.4.2 Sheets.

3.4.2.1 *Thickness*.—The thickness of steel clad sheets with finish 1 or finish 2B shall not vary from that ordered by more than the permissible variations shown in table IV.

3.4.2.2 *Weight*.—Sheets with finishes 4, 6, 7, and 8 may vary 5 percent under theoretical weight, but shall not exceed the permissible variations for maximum thickness specified in table IV. One square foot of chromium nickel corrosion-resisting steel clad sheet is assumed to weigh 41.86 pounds per inch thickness and 1 square foot of straight chromium corrosion-resisting steel clad sheet is assumed to weigh 41.68 pounds per inch thickness.

3.4.2.3 *Width*.—Steel clad sheets shall be not less than the widths ordered, and shall not exceed the ordered width by more than the permissible variations shown in table V.

3.4.2.4 *Length*.—Steel clad sheets shall be not less than the length ordered and shall not

TABLE V.—Permissible variations in width (plus only)

Ordered width	Ordered thickness	Permissible variation
<i>Inches</i>	<i>Inches</i>	<i>Inches</i>
Under 48.....	Less than 3/16	1/16
48 and over....	Less than 3/16	1/8

exceed the ordered length by more than the permissible variations shown in table VI.

TABLE VI.—Permissible variations in length (plus only)

Ordered length	Permissible variation
<i>Inches</i>	<i>Inches</i>
120 and under.....	1/4
Over 120 to 240, inclusive.....	1/2
Over 240 to 300, inclusive.....	3/4
Over 300.....	1

3.4.2.5 *Edge curvature*.—Maximum edge curvature (depth of chord) of sheets shall not exceed the amounts shown in table VII.

TABLE VII.—Edge curvature of sheets

Specified width	Variation per unit length of 8 feet
<i>Inches</i>	<i>Inches</i>
Under 36.....	1/8
36 and over.....	3/32

3.4.2.5.1 Sheets required to be to closer tolerances than those shown in table VII shall be ordered resquared. Resquared sheets shall not exceed the ordered width and length by more than $\frac{1}{16}$ inch and shall not have a maximum edge curvature or be out of square by more than $\frac{1}{16}$ inch if not more than 48 inches wide and 120 inches long. For wider and longer sizes, resquared sheets shall not

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exceed the ordered length or width by more than $\frac{1}{8}$ inch. Resquared sheets shall not be less than the ordered length and width.

3.4.3 Strips.

3.4.3.1 Dimensional tolerances.—The maximum permissible variations for clad steel strips shall be as shown in tables VIII, IX, and X.

TABLE VIII.—Permissible variations for thickness of cold-rolled clad steel strip (plus-minus)

Ordered thickness		Permissible variations in thickness, plus or minus							
		Width range							
From	To and including	3/16 to 1 inch, inclusive	Over 1 to 3 inches, inclusive	Over 3 to 6 inches, inclusive	Over 6 to 9 inches, inclusive	Over 9 to 12 inches, inclusive	Over 12 to 16 inches, inclusive	Over 16 to 20 inches, inclusive	Over 20 to 23-15/16 inches, inclusive
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
0.249	0.161	0.002	0.003	0.004	0.004	0.004	0.005	0.006	0.006
.160	.100	.002	.002	.003	.004	.004	.004	.005	.005
.099	.069	.002	.002	.003	.003	.003	.004	.004	.004
.068	.050	.002	.002	.003	.003	.003	.003	.004	.004
.049	.040	.002	.002	.0025	.003	.003	.003	.004	.004
.039	.035	.002	.002	.0025	.003	.003	.003	.003	.003
.034	.029	.0015	.0015	.002	.0025	.0025	.0025	.003	.003
.028	.026	.001	.0015	.0015	.002	.002	.002	.0025	.003
.025	.020	.001	.001	.0015	.002	.002	.002	.0025	.0025
.019	.017	.001	.001	.001	.0015	.0015	.002	.002	.002
.016	.013	.001	.001	.001	.0015	.0015	.0015	.002	.002
.012	.....	.001	.001	.001	.001	.0015	.0015	.0015	.0015
.011	.....	.001	.001	.001	.001	.001	.0015	.0015	.0015
.010	.....	.001	.001	.001	.001	.001	.001	.0015	.0015

NOTE: Thickness shall be measured not over $\frac{3}{8}$ inch from edge on strip 1 inch or wider, and on narrower than 1 inch at any place on the strip.

TABLE IX.—Permissible variations for width of cold-rolled clad steel strip with No. 1 and No. 5 edges (plus only)

Edge number	Width	Thickness	Permissible variations
	<i>Inches</i>	<i>Inch</i>	<i>Inch</i>
1 ¹	Up to 5, inclusive	Up to 1/8, inclusive	0.010
5 ²	Up to 5, inclusive	Up to 1/8, inclusive	.010
5 ²	Over 5 to 9, inclusive	Over 0.008 to 0.125, inclusive	.020
5 ²	Over 9 to 20, inclusive	0.105 to 0.015	.020
5 ²	Over 20 to 23-15/16, inclusive	0.023 to 0.080	.030

¹ No. 1 edge, round or square, edges rolled.

² No. 5 edge, square, produced by rolling or filing, after slitting.

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TABLE X.—Permissible variations for width of cold-rolled clad steel strip with No. 3 edge¹ (plus only)

Ordered thickness		Permissible variations in width Width range					
From	To and including	Under 1/2 to 3/16 inch, inclusive	1/2 to 6 inches, inclusive	Over 6 to 9 inches, inclusive	Over 9 to 12 inches, inclusive	Over 12 to 20 inches, inclusive	Over 20 to 23-15/16 inches, inclusive
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
0.249	0.161	0.032	0.032	0.040	0.040	0.062	0.062
.160	.100	0.020	.020	.032	.032	.040	.040
.099	.069	.016	.016	.020	.020	.032	.040
0.068 and under		.010	.010	.010	.020	.032	.040

¹ No. 3 edge is square, produced by slitting, not filed.

TABLE XI.—Permissible variations for lengths of cold-rolled clad steel strip (plus only)

Length of strip		Permissible variations
Over	Up-to, including	
<i>Feet</i>	<i>Feet</i>	<i>Inches</i>
5	5	3/8
10	10	1/2
20	20	5/8
30	30	3/4
40	40	1
60	60	1-1/2
90	90	2
	200	2-1/2

3.4.3.2 Edge curvature (depth of chord).—Unless otherwise specified, the permissible edge curvature shall not be greater than as follows:

For strips 1½ inches and less in width the maximum edge curvature shall not exceed ½ inch in any 8-foot length.

For strips in widths greater than 1½ inches and not over 24 inches, the maximum edge curvature shall not exceed ¼ inch in any 8-foot length.

3.4.3.3 Cladding thickness.—The minimum allowable thickness of cladding shall be

15 percent of the total thickness for single clad, or 15 percent on each side for double-clad material, unless a minimum thickness of cladding of 10 percent is specified. In no case shall the cladding be less than 0.002 inch.

3.5 Workmanship.—All material shall be uniform in quality and condition, free from blisters, pipes, seams, laps, cracks, slag, hard spots, porosity, slivers, scabs, rolled-in scale, excessive nonmetallic inclusions, undue segregations, or any other defects that may detrimentally affect its suitability for the service intended (see 6.1). Plates, sheets, and strips shall be reasonably flat. Cladding shall show no separation from base materials.

4. SAMPLING, INSPECTION AND TEST PROCEDURES

4.1 Lot.—A lot shall consist of all plates, sheets, or strips of the same nominal thickness, rolled from the same clad ingot or clad slab and submitted for inspection at the same time.

4.2 Sampling.

4.2.1 Sampling for mechanical tests.—The Government inspector shall select from each lot of plates, sheets or coils of strip, the test specimens of the form and dimensions as

specified in Federal Specification QQ-M-151 for testing plates, sheets, and strips.

4.2.1.1 Single clad.—One tension specimen and two bend test specimens with the long dimensions parallel to the direction of rolling. Two bend-test specimens with the long dimensions transverse to the direction of rolling.

4.2.1.2 Double clad.—One tension and one bend test specimen (double bend type) with the long dimensions parallel to direction of rolling. One bend-test specimen (double bend type) with the long dimension transverse to direction of rolling.

4.2.2 Sampling for chemical analysis.—One sample for chemical analysis shall be selected by the Government inspector to represent each heat of base steel and each heat of cladding. The samples shall be of sufficient size to contain a minimum weight of 2 ounces of base material and a minimum weight of 2 ounces of cladding. The sample selected to represent the cladding in the case of material bonded by the intermelting process shall be taken from the semi-finished slab by drilling into the cladding.

4.3 Inspection.—Each plate, sheet, and strip shall be surface inspected to determine compliance with 3.5. The Government inspector shall make a sufficient number of measurements to ascertain that the material is within the specified dimensional tolerances. Each plate which does not conform to the requirements of this specification shall be rejected.

4.4 Tests.

4.4.1 Mechanical properties tests.

4.4.1.1 Tension tests.—Tension tests shall be conducted in accordance with Federal Specification QQ-M-151.

4.4.1.2 Bend test.—Full thickness specimens shall withstand cold bending through an angle of 180 degrees on a diameter equal to thickness of specimen, as follows:

4.4.1.2.1 Single clad.—One longitudinal specimen shall be tested with cladding on *outside* of bend. One longitudinal and one transverse specimen shall be tested with cladding on *inside* of bend.

4.4.1.2.2 Double clad.—One longitudinal and one transverse specimen shall each be subjected to a double bend test. In making this test, one end of the specimen shall be bent in such a manner as to place a particular surface on the outside of the bend and the other end of the specimen shall be bent in such a way as to place the same surface on the inside of the bend, (see fig. 1). Separation of cladding from base material, cracking or checking of either cladding or base material shall constitute a bend-test failure.

4.4.2 Test of cladding thickness.—The side or the end of the grip portion of each tension test specimen shall be ground smooth and examined for thickness of cladding to determine compliance with 3.4.3.3. A low-power microscope or binocular shall be used to facilitate measurement if deemed necessary by the Government inspector.

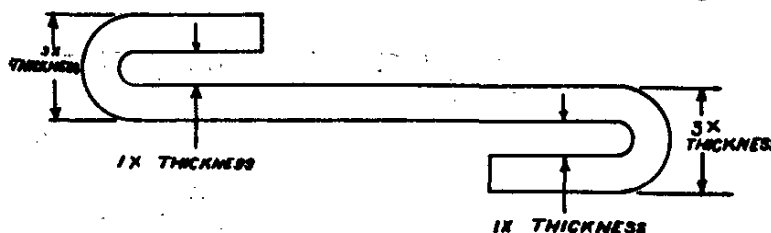


FIGURE 1.—Double bend test for double clad material.

NOTE.—Provided that a particular surface is on the outside of one bend, and on the inside of a second bend, the double bend test specimen may be divided in two, and each half bent separately.

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4.5 Rejection and retest.—In case of failure of any specimen to conform to the requirements and the tests prescribed in this specification, the rejection and retest of the submitted material shall be based and conducted in accordance with applicable rules specified in Federal Specification QQ-M-151.

5. PREPARATION FOR DELIVERY

5.1 General.—All material shall be properly separated by class, shape, finish and size when packed for shipment. Not more than one kind or size of material shall be packed in a single container or bundle. Highly polished surfaces shall be protected by wrapping with paper or other suitable material, and polished sheets shall have a sheet of paper placed between surfaces when packed.

5.2 Packing.—The crating, boxing, or bundling shall be such as to permit acceptance by common carriers for transportation to the point of delivery at the lowest applicable rate and afford maximum protection from the normal hazards of transportation. Except as specified herein, containers and bundles shall conform to the requirements of the Consolidated Freight Classification Rules or Motor Freight Classification Rules which ever may be applicable.

5.2.1 Unless otherwise specified, the gross weight of containers or bundles of plate and sheet when packed for shipment shall not exceed 2000 pounds. For strip the gross weight of containers or bundles shall not exceed 250 pounds.

5.3 Marking.—Each container, box or bundle shall be marked as follows:

- (a) The name of material.
- (b) The class, finish, and grade.
- (c) The form: Plate, sheet or strip.
- (d) The number of this specification.
- (e) The quantity contained therein.
- (f) The number of the contract or order.
- (g) Stock number.
- (h) Manufacturer's name or trade-mark.

- (i) The name of contractor if not the same as the manufacturer's.
- (j) Gross weight.

6. NOTES

6.1 Ordering data.—Purchasers should specify the title, number and date of this specification, the class, grade, the form—plate, sheet or strip; the cladding—single or double; the finish required on clad surfaces and whether one or both sides shall have the specified finish; the dimensional measurements including type of edge; the net weight for each kind of material, and should exercise any desired option offered herein (see 1.1, 1.2, 1.3, 3.4.3.2, and 3.4.3.3).

6.1.1 Steel clad material with a carbon-steel base should be specified grade A (forming quality) in cases where structural strength is of minor importance and it is known that the material will be deep drawn or severely formed in the course of fabrication. In such cases a detailed description of the drawing or forming operations should be shown on the invitation to bid, or on the contract or order. Grade A (forming quality) will be furnished unless grade B is specified.

6.2 Transportation description.—Transportation description applicable to these items is:

Plates and sheets, not otherwise indexed by name, iron or steel, plain, not corrugated.

Loose or in packages. *In packages or loose if weighing each 15 pounds or over.

Carload weight 36,000 pounds.

Loose, weight each less than 15 pounds.

Truckload weight 36,000 pounds.

Strips, strip steel, not otherwise indexed by name.

Loose or in packages.

Carload weight 36,000 pounds.

Truckload weight 36,000 pounds.

* Preferred method of shipment to obtain lowest applicable transportation charge.

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Patent notice.—When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may be in any way related thereto.

7. DEPARTMENTAL REQUIREMENTS

7.1 The following specifications and standards of the issues in effect on date of invitation for bids, and special requirements, form a part of this specification for purchases made under this specification by the respective departments.

7.2 Army, Navy and Air Force.

7.2.1 Applicable specifications and standards.

Navy Department Specification:

Appendix II, Metals, General Specifications for Inspection of Material.¹

Military Standards:

MIL-STD-129—Marking of Shipments.

MIL-STD-163—Preparation of Steel Products for Overseas Shipment, or Domestic Shipment Involving Extended Storage.

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

7.2.2 Preparation for delivery.

7.2.2.1 Packing.

7.2.2.1.1 For domestic shipment—immediate use.—The subject commodity shall be prepared for shipment in accordance with commercial practice to insure carrier ac-

¹ Applicable to Navy purchases only.

ceptance and safe delivery at destination and shall meet, as a minimum, the requirements of carrier rules and regulations applicable to the mode of transportation.

7.2.2.2 For domestic shipment and storage and overseas shipment.—The subject commodity shall be prepared for shipment in accordance with Military Standard MIL-STD-163.

7.2.2.3 Marking.—In addition to any special marking required by the contract or order, shipments shall be marked in accordance with Military Standard MIL-STD-129. The nomenclature shall be as follows: Steel, Corrosion-Resisting Clad, (*Plate, Sheet or Strip), (*Class No. _____ and Finish of Cladding), (*Grade A (forming quality) or Grade B (Structural Quality of Base Material)), (*Length, Width, Thickness) Fed. Spec. QQ-S-682.

* Applicable data to be entered by the contractor.

7.2.2.4 Air Force and Navy, Bureau of Aeronautics item marking.—All sheet and plate shall be legibly and indelibly marked with the following information:

- a. Manufacturers name or trade-mark.
- b. Specification number and/or AISI number (when the AISI number is used it shall be suffixed with the letter "A" to denote aircraft quality).
- c. Composition, finish and grade.
- d. Thickness.

The above information shall appear in rows of constantly recurring symbols from one edge to the opposite edge. The marking shall be such that no piece larger than 6 inches square could be cut from the sheet or plate without bearing the specification number and/or AISI number and composition, finish and grade. The manufacturer's name or trade-mark and thickness shall appear in rows not more than 20 inches apart.

All strips shall be suitably tagged with the information listed above, using an oil-proof tag.

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7.2.3 Ordering data.—Procurement documents should specify whether domestic or overseas shipment, or both, is/are required (see 7.2.2).

7.2.4 Navy.—For Naval purchases the general inspection procedures shall be in ac-

cordance with Appendix II, Metals, General Specifications for Inspection of Material.

7.2.5 Cancelled specifications.—This specification replaces Navy Department Specification 47S30 for Navy Department purchases.

NAVY INTEREST: A MC Or Sh S Y

This specification is a part of Section IV, Part 5, of the Federal Standard Stock Catalog.

★ U. S. GOVERNMENT PRINTING OFFICE: 1953

Copies of this specification may be purchased for 10 cents.

SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No. 119-R004
INSTRUCTIONS		
This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).		
SPECIFICATION		
ORGANIZATION (Of submitter)		CITY AND STATE
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$
MATERIAL PROCURED UNDER A		
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?		
A. GIVE PARAGRAPH NUMBER AND WORDING.		
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.		
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3. IS THE SPECIFICATION RESTRICTIVE?		
<input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?		
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity)		DATE