A-A-51144
3 May 1985

COMMERCIAL ITEM DESCRIPTION

ANODES, COPPER

The General Services Administration has authorized the use of this commercial item description in preference to Federal Specification QQ-A-673B.

This description covers copper anodes used in electroplating baths.

Salient characteristics.

Classification. This description covers the following types, styles, sizes, and lengths of copper anodes. The type, style, size, and length required for a specific procurement shall be as specified in the contract or order. The dimensions and weights of the anodes shall be not less than the figures specified in this description.

Type I - Non-deoxidized.
Type II - Oxygen free.
Type III - Deoxidized, phosphorous bearing.

Style A - Round bar.
Size 1 - 2 inch diameter, 1.00 pound per inch of length.
Size 2 - 3 inch diameter, 2.25 pounds per inch of length.

Style B - Oval bar.
Size 1 - 3-5/8 inch large diameter by 1-5/8 inch small diameter, 1.44 pounds per inch of length.
Size 2 - 3 inch large diameter by 2 inch small diameter, 1.50 pounds per inch of length.

Style C - Flat bar.
Size 1 - 3 inch width by 1 inch height, 0.97 pound per inch of length.
Size 2 - 1-1/2 inch height by 6 inch in length, 2.90 pounds per inch of length.

Style D - Cut shapes.
Size 1 - 2 inch diameter by 3 inch length, 3 pounds total weight.
Size 2 - 2 inch diameter by 4 inch length, 4 pounds total weight.
Size 3 - 2 inch diameter by 6 inch length, 6 pounds total weight.

Size 4 - 3 inch by 6 inch by 1/2 inch rectangle, cut rolled plate 2.90 pounds total weight.
Size 5 - 1-1/2 inch by 4 inch by 1/2 inch rectangle, 4 pounds total weight.
Size 6 - 1-1/2 inch by 1-1/2 inch by 1/2 inch square, 1.05 pounds total weight.
Size 7 - 1 inch by 1 inch by 1/2 inch square, 0.35 pounds total weight.

Style E - Ball.
Size 1 - 2 inch diameter, 2.5 pounds total weight.

Style F - Hexagon.
Size 1 - 1-1/2 inch by 3 inch, 1.25 pounds per inch of length.

Style G - Nuggets, Sheared.
Size 1 - 3/4 inch diameter by 1 inch height.
Size 2 - 1 inch diameter by 1 inch height.
Size 3 - 1-3/4 inch diameter by 1-3/4 inch height.

Length for styles A, B, C, and F. Styles A, B, C, and F copper anodes are available in lengths ranging from 18 inches up to 108 inches. The length required shall be specified.

Material. Anodes shall be of solid copper and shall be cast, extruded, rolled, or forged to shape, or cut from electrolytic cathodes, sheets, castings or rolled plate.

Chemical element composition. The chemical element composition of copper anodes shall meet the chemical element composition requirements specified in table I.

TABLE I. Chemical element composition - percent 2/.

Elements	Chemical composition		
	Type I Non-deoxidized	Type II Oxygen-free	Type III Deoxidized, phosphorous bearing
Copper	99.90 min	99.95 min	99.90 min
Iron	0.003 max	0.002 max	0.003 max
Sulfur	0.003 max	0.003 max	0.003 max
Lead	0.003 max	0.002 max	0.002 max
Antimony	0.002 max	0.002 max	0.002 max
Nickel	0.003 max	0.002 max	0.002 max
Arsenic	0.001 max	0.001 max	0.001 max
Silver	------	0.01 max	0.01 max
Total, other Metallic elements 1/	0.01 max	0.01 max	0.01 max
Oxygen	0.045 max	0.001 max	0.001 max
Phosphorous	------	0.001 max	0.04 to 0.07 max

1/ Total is the sum of other elements (bismuth, cadmium, manganese, mercury, tin, selenium, tellurium, and zinc) present as impurities in the sample.

2/ Analysis shall be made only for the elements specifically mentioned in the above table. If, however, the presence of other elements is detected in the course of routine analysis, further analysis shall be made to determine that these other elements are not present in excess of the limits specified.

Measurement system. All dimensions in this commercial item description are given in the US units. These measurements may be converted to SI units through the use of conversion factors and methods specified in FED-STD-376.

Workmanship. Anodes shall be clean and substantially free of cracks, fins, sprues, inclusions, porosity, ragged edges, surface film or other defects which will adversely affect uniform corrosion in service.

Suspension. The method of suspension shall be in accordance with the manufacturer's standard practice.

Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified in the contract or purchase order, 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 inspections set forth in this description where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

Acceptance inspection. The supplier shall randomly select the number of samples specified in table II that is applicable to the quantity of items being purchased. Each sample shall be visually inspected and measured by the supplier to determine conformance with all requirements specified herein. Any sample failing to meet all requirements specified herein shall be considered a defective item. If the number of defective items equals or is less than the quantity specified under "Acceptance, number defective" column in table II, the supplier shall replace the defective samples with items that meet all the requirements specified herein and the entire lot shall be considered acceptable for shipment. If the number of defective samples exceeds the quantity specified in the "Rejection, number defective" column of table II, the entire lot shall be considered defective and unsuitable for acceptance.

TABLE II. Sampling plan.

Lot Size	Sample Size	Acceptance, number defective	Rejection, number defective
2 - 8	2	1	2
9 - 15	5	1	2
16 - 25	8	2	3
26 - 50	13	3	4
51 - 90	20	5	6
91 - 150	32	7	8
151 - 280	50	10	11
281 - 500	80	14	15

Chemical composition test. One anode of each type being furnished shall be tested and analyzed to determine conformance with the chemical element composition in table I. Chemical element composition of the copper anodes shall be determined by standard methods of chemical analysis for copper and copper alloys. If the anode does not conform to the required chemical element composition in table I, the entire lot shall be rejected. Type II and type III copper anodes shall be further tested for the presence of cuprous oxide. Copper anodes selected for cuprous oxide examination shall be microscopically examined at not less than 75 diameters magnification and there shall be no cuprous oxide present. If any sample is found to contain cuprous oxide, the entire lot shall be rejected.

Preservation, packaging, packing, labeling, and marking. Unless otherwise specified in the contract or order, preservation, packaging, packing, and labeling or marking shall be in accordance with ASTM D 3951. When specified in the contract or order, preservation, packaging, packing, and labeling or marking shall be in accordance with Federal Specification PPP-B-585, PPP-B-601 or PPP-B-621, level as specified.

NOTES: Acquisition documents should specify the following:

a. Title, number, and date of this commercial item description.
b. Type, style, size, length when applicable, and quantity of anodes required.
c. If packaging in accordance with PPP-B-585, PPP-B-601 or PPP-B-621 is required, specify level.

FED-STD-376, "Preferred Metric Units for General Use by the Federal Government" and Federal Specifications PPP-B-585, PPP-B-601 and PPP-B-621, Packaging and Packing, should be obtained as directed by the contracting officer.

American Society for Testing and Materials Standard ASTM D 3951 is available from American Society for Testing and Materials Standard, 1917 Race St., Philadelphia, PA 19103.

Specification cross reference. Items covered by Federal specification QQ-A-673B are cross referenced to items covered by this CID as follows:

QQ-A-673B	A-A-51144
Type I, round bar	Type I, style A
Type I, oval bar	Type I, style B
Type I, flat bar	Type I, style C
Type I, cut shapes	Type I, style D
Type I, ball	Type I, style E
	Type I, style F (new style)
	Type I, style G (new style)
Type II, round bar	Type II, style A
Type II, oval bar	Type II, style B
Type II, flat bar	Type II, style C
Type II, cut shapes	Type II, style D
Type II, ball	Type II, style E
	Type II, style F (new style)
	Type II, style G (new style)
Type III, round bar	Type III, style A
Type III, oval bar	Type III, style B
Type III, flat bar	Type III, style C
Type III, cut shapes	Type III, style D
Type III, ball	Type III, style E
	Type III, style F (new style)
	Type III, style G (new style)

MILITARY INTEREST:

Custodians

Army - AL
Air Force - 99

Review activities

Air Force - 84
DLA - GS

User Activities

Navy - OS, SH

CIVIL AGENCY COORDINATION ACTIVITY

GSA - FSS

Preparing Activity

DLA - IP

Project 3426-0036

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A-A-51144	

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
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b. ADDRESS *(Street, City, State, ZIP Code)*	

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
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