A-A-51173
October 30, 1987

COMMERCIAL ITEM DESCRIPTION

RODS AND ELECTRODES, WELDING, BARE, NICKEL AND NICKEL ALLOY

The General Services Administration has authorized the use of this commercial item description in preference to the type II of Federal Specification QQ-R-571c

1. SCOPE

1.1 Scope. This description covers nickel and nickel alloy bare welding rods and electrodes for plasma arc, gas metal arc, gas tungsten arc, and submerged arc welding. It includes compositions in which the nickel content exceeds that of any other element. A description and intended use of each class can be found in ANSI/AWS A5.14.

1.2 Classification. Welding rods and electrodes shall be of the following types, sizes, classes, and the nominal net weights specified in 1.2.1. The type, size, class, and nominal net weight to be furnished shall be as specified (see 6.1).

Type I - Rods, straight length.
Type II - Electrode coils with support.
Type III - Electrode coils without support.

Size - 1/16 (0.062) inch diameter.
Size - 3/32 (0.093) inch diameter.
Size - 1/8 (0.125) inch diameter.
Size - 5/32 (0.156) inch diameter.
Size - 3/16 (0.187) inch diameter.
Size - 1/4 (0.250) inch diameter.

Type IV - Electrodes wound on spool.

Size - 0.020 inch diameter.
Size - 0.030 inch diameter.
Size - 0.035 inch diameter.
Size - 0.045 inch diameter.
Size - 0.062 inch diameter.

Class ERNi-1 - Nickel.
Class ERNiCu-7 - Nickel-copper.
Class ERNiCr-3 - Nickel-chromium.
Class ERNiCrFe-5 - Nickel-chromium-iron.

Class ERNiCrFe-6 - Nickel-chromium-iron
Class ERNiFeCr-1 - Nickel-iron-chromium.
Class ERNiMo-1 - Nickel-molybdenum.
Class ERNiMo-2 - Nickel-molybdenum.
Class ERNiMo-3 - Nickel-molybdenum.
Class ERNiMo-7 - Nickel-molybdenum.
Class ERNiCrMo-1 - Nickel-chromium-molybdenum.
Class ERNiCrMo-2 - Nickel-chromium-molybdenum.
Class ERNiCrMo-3 - Nickel-chromium-molybdenum.
Class ERNiCrMo-4 - Nickel-chromium-molybdenum.
Class ERNiCrMo-7 - Nickel-chromium-molybdenum.
Class ERNiCrMo-8 - Nickel-chromium-molybdenum.
Class ERNiCrMo-9 - Nickel-chromium-molybdenum.

1.2.1 Net weight and standard package sizes of rods and electrodes to be furnished. Welding rods and electrodes shall be furnished in accordance with paragraphs 1.2.1.1 thru 1.2.1.4 and as specified. Net weight may vary from the nominal in accordance with ANSI/A5.14.

1.2.1.1 Type I welding rods. The type I welding rods shall be furnished in lengths of 36 inches and standard package sizes of 5, 10, and 25 pounds net weight as specified.

1.2.1.2 Type II welding electrodes. The type II welding electrodes shall be furnished in liner supported coils of 25, 50, or 60 pounds net weight as specified.

1.2.1.3 Type III welding electrodes. The type III welding electrodes shall be furnished in unsupported coils of 25, 50, or 100 pounds net weight as specified.

1.2.1.4 Type IV welding electrodes . The type IV welding electrodes shall be furnished on 4 inch wide spools of 2 pounds nominal net weight or 12 inch wide spools of 25 pounds nominal net weight as specified.

2. APPLICABLE DOCUMENTS

2.1 Documents. The following documents of the issue in effect on date of invitation for bids or request for proposals form a part of this description to the extent specified herein.

Federal Specification, FED-STD-376	- Preferred Metric Units for General Use by the Federal Government.
Military Specifications, MIL-W-10430	- Welding Rods and Electrodes; Packaging of.
American National Standard Institute, ANSI/AWS A5.14	- Specifications for Nickel and Nickel Alloy Bare Welding Rods and Electrodes.

American Society for Testing and Material, ASTM D 3951	- Standard Practice for Commercial Packaging.
American Society for Testing and Materials, ASTM E 38	- Standard Methods for Chemical Analysis of Nickel-Chromium and Nickel-Chromium-Iron Alloys.
American Society for Testing and Materials, ASTM E 76	- Standards Methods for Chemical Analysis of Nickel-Copper Alloys.

2.2 Order of Precedence. In the event of conflict between the text of this document and the references cited herein, the text of this document shall take precedence.

3. SALIENT CHARACTERISTICS

3.1 Design. The welding rods and electrodes shall be new and of the manufacturers commercial design in effect on the date of the solicitation. The welding rods and electrodes shall meet the requirements specified herein and shall conform to ANSI/AWS A5.14 and to current commercial industrial practices.

3.2 Materials. The welding rods and electrodes chemical composition shall conform to table 1, Chemical Composition Requirement, Weight Percent, of ANSI/AWS A5.14.

3.3 Cast and helix. The cast and helix for the type IV welding electrodes shall conform to ANSI/AWS A5.14.

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

3.5 Regulatory requirements. The offeror/contractor is encouraged to use recovered material to the maximum extent practical.

3.6 Length tolerance. The length tolerance for the type I welding rod shall be + 0 inch to - 1/2 inch.

3.7 Diameter tolerance. The diameter tolerance shall be not greater than +0.002 inch for types I, II, and III welding rods and electrodes and +0.001 inch to - 0.002 inch for type IV electrodes.

3.8 Liner support and spool dimensions. The type II welding electrode inside diameter of the liner and the type IV welding electrode spool dimensions shall conform to ANSI/AWS A5.14.

3.9 Welding electrode winding. The types II, III, and IV welding electrodes winding shall contain one continuous length of welding electrode made

from a single heat or lot of material. Weld joints, when used, shall be properly made so as not to interfere with the uniform, uninterrupted feeding of the welding electrodes on automatic and semiautomatic machines.

3.10 Workmanship. Workmanship of the welding rods and electrodes shall be of a quality equal to that of comparable products furnished to the commercial market. The welding rods and electrodes shall have a smooth finish, free from slivers, depressions, scratches, scale, or other foreign matter that would adversely effect welding characteristics and operation of the welding equipment. Welding rods, furnished in cut length shall be straight, and electrodes furnished in coils shall be free of waves and kinks.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection, examination, and test 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 inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections, examinations, or tests set forth in this description where such inspections, examinations, and tests are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Certification. Unless otherwise specified, the manufacturer may furnish certification in accordance with ANSI/AWS A5.14 certifying that all material furnished under this description has passed the chemical analysis test required for classification and that the rods and electrodes meet all other requirements of this description.

4.3 Sample inspection. When specified (see 6.1), a sample welding rod or electrode coil shall be selected from the same production run as the lot offered for acceptance to determine conformance with the examination requirements in 4.3.1, the inspection in 4.3.2 and the chemical analysis test in 4.3.3. If the sample welding rod or electrode fails to pass all requirements specified, two additional sample rods or electrodes shall be selected from the same production run. The two additional samples shall be subjected to the same examination and inspection that the failed welding rod or electrode was subjected to. If both additional sample welding rods or electrodes pass all requirements specified, the supplier shall replace the defective rod or electrode with a rod or electrode that meets all requirements specified herein and the total lot shall be considered to have passed the sample inspection and suitable for shipment. If either of the two additional sample welding rods or electrodes fail to pass all requirements specified, the entire lot shall be rejected and considered unsuitable for acceptance. A lot is defined as all welding rods or electrodes of the same type, size, and class presented at one time for acceptance.

4.3.1 Examination. Each welding rod or electrode submitted for sample inspection shall be visually examined to determine conformance with the requirements of this description.

4.3.2 Dimensional and tolerence Inspection. Each welding rod and electrode submitted for sample inspection shall be inspected to assure conformance with all dimensional and tolerance requirements specified herein.

4.3.3 Chemical analysis test. The sample submitted for chemical analysis test may be from the welding rod or electrode coil itself or it may be selected from the stock from which it is made. The sample rod or electrode shall conform to the chemical analysis test specified in either ASTM E 38 or ASTM E 76 as applicable. The results of the analysis shall meet the requirements of ANSI/AWS A5.14 table I.

4.4 Packaging inspection. Packaging shall be inspected for conformance with section 5.

5. PACKAGING

5.1 Preservation, packing, and marking. Unless otherwise specified in the contract or purchase order preservation, packing, and marking shall be in accordance with ASTM D 3951 and ANSI/AWS A5.14. When specified (see 6.1), preservation, packing, and marking shall be in accordance with Military Specification MIL-W-10430, level as specified.

6. NOTES

6.1 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

a. Title, number, and date of this commercial item description.
b. Type, size, class, and quantity of standard packages and nominal net weight required (see 1.2).
c. Sample inspection, if required (see 4.3.) Due to the cost of an actual chemical analysis test it is recommended that certification be accepted on all orders that could be covered by the small purchase acquisition limits.
d. Packaging in accordance with MIL-W-10430, if required, specified level (see 5.1).

6.2 Cross reference data. Items covered by Federal Specification QQ-R-571c are cross referenced to items covered by this description as follows:

QQ-R-571c	A-A-51173
Type II	Types I, II, and III
Class RNi-2	Class ERNi-1
Class RNiCu-5	Class ERNiCu-7
Class RNiCu-6	Class ERNiCu-7
	Class ERNiCr-3
Class RNiCrFe-4	Class ERNiCrFe-5
	Class ERNiCrFe-6 (new class)
	Class ERNiFeCr-1 (new class)
	Class ERNiMo-1 (new class)

Class ERNiMo-2 (new class)
Class ERNiMo-3 (new class)
Class NRNiMo-7 (new class)
Class ERNiCrMo-1 (new class)
Class ERNiCrMo-2 (new class)
Class ERNiCrMo-3 (new class)
Class ERNiCrMo-4 (new class)
Class ERNiCrMo-7 (new class)
Class ERNiCrMo-8 (new class)
Class ERNiCrMo-9 (new class)

All sizes conform to ANSI/AWS A5.14.

MILITARY INTERESTS:

Custodians

Army - AL
Air Force - 99

Review Activities

Navy - AS
Air Force - 84, 20
DLA - GS

User Activities

Army - MD, AT
Navy - MC

CIVIL AGENCY COORDINATION ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:
DLA-IP

Project 3439-0647

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
A-A-51173	Rods, Electrodes, Welding, Nickel and Nickel Alloy

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)*: _____

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
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426

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NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document*(s)* or to amend contractual requirements.

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