

APPENDIX 4-A

STORAGE OF FERROTUNGSTEN

1. *Description.* Ferrotungsten is a very heavy, steel gray alloy, crushed to a size of one inch and less. When acquired, ferrotungsten shall meet Purchase Specification P-57a-R5 (Current Edition).

2. *Packaging*

a. Ferrotungsten presently in storage is packed in hardwood boxes weighing approximately 110 pounds each, or steel drums (some galvanized) of 15 or 30-gallon capacity, weighing approximately 900 pounds and 1,800 pounds respectively. All containers in a lot are the same nominal size and shape. Material currently in storage shall remain in present containers until otherwise authorized by the DNSC-OL.

b. New receipts of ferrotungsten will be packed in either 15 or 30-gallon capacity, 16-gauge, steel drums, hot dipped galvanized after fabrication, conforming to the requirements of National Stockpile Container Specification C-1 (latest revision), Drums: Steel, Hot-Dip, Galvanized.

3. *Marking*

a. Prior to receipt, each container will be marked with the following information: -

- (1) Ferrotungsten
- (2) Name of Producer
- (3) Gross and Net Weights
- (4) Tungsten (W) (To 0.01 Percent)
- (5) Government Contract Number
- (6) Lot Number
- (7) Drum Serial Number (e.g., 1/20, 2/20, etc.)

b. Steel drums shall be marked by means of metal tags attached to the clamp ring bolt, embossed with the above information, or by stenciling the information on the side and top of the drum. If tags are used, a duplicate tag shall be placed inside the drum.

c. Each container, other than steel drums, shall have the above information marked on the container or on an appropriate tag securely attached to the container.

d. Identification of material shall be obtained from information shown on the documents accompanying each shipment, and on shipping instructions issued by the DNSC-OL. The DNSC-OL shall be notified immediately if shipments are received prior to receipt of identifying documents, if shipments are received

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without identifying marks, or if the markings are not in agreement with those shown on the documents and/or shipping instructions.

4. *Storage*

a. Material in other than approved type galvanized steel drums shall be stored in a warehouse, shed or other structure so as to protect the containers from the weather. Material received in hot-dipped galvanized drums conforming to National Stockpile Container Specification C-1 (latest revision), may be stored in the open on concrete runners or blocks when specifically authorized by the DNSC-OL. Hotdipped galvanized drums may be recognized by a one-inch letter "S" in the gauge date line which is embossed on the bottom of the drum by the drum manufacturer. Drums made from electrolytically galvanized steel sheet do not carry the letter "S" and must be stored in a warehouse, shed or other suitable structure.

b. Storage identity shall be maintained by material identification cards (DNSC FORM 41) reflecting contract number and lot number as indicated on each container and receiving report.

c. When material is to be stored in a warehouse, shed or other structure, the first tier of drums shall be placed on floor pallets in an upright position after which one-inch thick random length and width hardwood dunnage lumber shall be used between each succeeding tier. If the use of dunnage lumber between tiers is not practical because of weight of containers, or difficulty in handling, pallets between tiers may be used. Boxes shall be stored in the same manner, except that pallets will be used between tiers. Main transportation aisles relative to drums stored in a warehouse, shed or other structure, shall not exceed that required for the efficient operation of local material handling equipment. Complete description of each lot stored shall be indicated on a card which shall be prominently displayed and securely attached to the front of each row. DNSC 41 forms, which are specially designed for use with stockpile material, will be furnished to military depots upon request.

d. Ferrotungsten in combustible type containers (boxes) will be stored in sprinklered warehouse space. Clearance of at least thirty-six inches must be maintained below automatic sprinkler heads. Main transportation aisles will be minimum of ten feet in width and a minimum clearance of twenty-four inches will be maintained between stacks and exterior walls, fire walls, fire doors and fire door openings. A clearance of eighteen inches will be maintained between stacks and heating appliances, piping, electrical wiring and fixtures, etc. Individual block stacks will be limited to 3,000 square feet of floor area. Clearance between stacks will be at least four feet, except as specified for main transportation aisles.

e. When material in galvanized drums is designated for storage in the open, drums shall be stored on their side and stacked in cordwood fashion on concrete runners or blocks. The space utilized shall be equivalent to Type B or better, as described in Chapter 4, and capable of sustaining a load of not less than 2,000 pounds per square foot. Drum storage areas should be laid out with emphasis on maximum occupancy since no rotation handling is expected. When stored in the open, the joint of the locking ring that holds the head on the drum should always be at the bottom. Storage aids to keep drums stable shall

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be concrete. Use of cinder blocks for this purpose is prohibited. Arrangements for concrete runners, or concrete blocks, and other storage aids, will be made by the DNSC-OL and established as a Special Project.

f. Maximum stacking height of drums stored in open space will be four drums for the 15-gallon size and two drums for the 30-gallon size, and the maximum width of a storage block will be four drums, unless otherwise directed by the DNSC-OL. Inspection aisles of not more than three feet shall be provided between storage blocks, and main transportation aisles shall not exceed that required for the operation of local handling equipment. Each lot should be stored so that it is readily accessible for outshipment. Lots may be stored in adjacent rows, within the block, and a row may contain parts of two lots provided each lot is readily accessible by use of overhead handling equipment.

g. Whether stored in a warehouse, shed, etc., or in the open, drums and boxes shall be stored in uniform rows and tiers so as to facilitate the taking of an inventory at any time by counting the rows and tiers and computing the total quantity. In doing this, however, economical use of space must be given full consideration, and all segregation and fire prevention requirements must be met. When pallets are used, a uniform number of containers shall be placed on each pallet, except when an odd number on the top pallet of a stack of uniform height completes the lot.

h. Drums may sometimes be marked only on their side. In order to identify contents of drums stored horizontally in open space, it may be necessary for the depot to mark the required identity data on the top cover of such drums, or to attach an appropriate identification tag to the clamp ring bolt, whichever is deemed most appropriate under the conditions involved and authorized under the project. Special Projects will be established by the DNSC-OL for extra work involved at the depot in marking or otherwise identifying the material.

5. *Precautions To Be Taken*

a. *Health.* Potential radioactivity of ferrotungsten ordinarily is negligible. However, if any dust should be generated in handling this material during any repackaging operation, simple precautions should be taken, such as requiring personnel to wear gloves and approved respirators. There should be adequate ventilation in the work area.

b. *General.* Rough handling may cause extensive damage to the galvanized coating on the drums. When discovered, all abrasions and/or scratches shall be coated with a zinc base paint prior to placement of drums in permanent storage. Proper care shall be exercised in handling drums in order to avoid damage. Upon receipt, drums should be carefully checked to insure that the lids are securely fastened.

6. *Average Storage Factor.* 3.5 square feet per short ton.

FOR ADDITIONAL INFORMATION ON THIS COMMODITY REFER TO THE MATERIAL SAFETY DATA SHEET OR THE MOST RECENT PURCHASE SPECIFICATION.