

APPENDIX 4-A**STORAGE OF MANGANESE ORE
(Battery Grade)***1. Description*

a. Battery grade manganese ore, frequently referred to as manganese dioxide, is a black material in the form of small lumps and fines. It may be received for storage in any of the following three grades:

(1) Synthetic Grade A

(2) Natural Grade A

(3) Natural Grade B

b. This type of manganese differs from the metallurgical grade in that it has a higher manganese-dioxide content and lower impurities. It is an important constituent of dry cell batteries. When acquired, battery grade manganese ore shall meet Purchase Specification P-29-R (Current Edition).

2. Packaging

a. Synthetic grade ore will be received in polyethylene bags inside 55-gallon, 16-gauge steel drums weighing 700 to 1,000 pounds net each, conforming to the requirements of the National Stockpile Container Specification C-1 (latest revision). All containers comprising a shipment lot will be of the same general size and shape. Some material presently in storage is in fiberboard drums weighing 125 pounds net each. Any future repackaging authorized by the DNSC will replace these fiberboard drums with the painted C-1 (latest revision) drums.

b. Natural Grades A and B will be shipped in bulk. Due to the fineness of the material, it is susceptible to wind losses in transit. Accordingly, the DNSC-OL will issue advance instructions for the protection of shipments when necessary.

3. Marking

a. Drums are to be identified with three metal tags. One tag to be attached to the outside of the lid, one on the inside of the lid, and one attached to the drum side. Information on the tags will be as instructed on the purchase contract and purchase specification.

b. Two metal embossed pile signs with the pile number, material name, country of origin and major elements as specified by the DNSC-OL shall be placed at each end of the pile.

4. Storage

a. Natural Grades A and B are to be stored in the open on an improved surface equivalent to Type C, as described in Chapter 4 of this Manual. Material will be segregated into piles by country of origin and

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grade, or in the case of domestic material, by grade and producer. To prevent losses by action or wind, or rain, piles of fines shall be covered according to specifications provided by the DNSC-OL.

5. Precautions To Be Taken

a. *Health.* Dust should be minimized during receipt and/or outloading this material.

b. *General.* Drummed material must be kept free of contamination and moisture. Drums have waterproof paper liners or polyethylene liners to prevent ores from touching metal. Drum covers must be drawn up tight to prevent air moisture from causing deterioration of paper liners or oxidation of the inside metal face of the drums.

6. Average Storage Factor

a. *Volume.*

(1) *Bulk.* 12 cubic feet per short ton.

(2) *In Container.* 16 cubic feet per short ton.

b. *National Stockpile Average Square Foot Occupancy.*

(1) *Open Storage.* 2.1 gross square feet per short ton.

(2) *Warehouse.* 5.4 gross square feet per short ton.

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