

APPENDIX 4-A

STORAGE OF ABRASIVE GRAIN

1. *Description.* Abrasive grains are made by crushing crude abrasive grain into small particles. The particles are then sifted through various size sieves and otherwise treated so that they are suitable for the manufacture of bonded abrasives, such as grinding wheels, and coated abrasives, which usually have a paper or cloth base. The particles range from a maximum size of about one eighth of an inch down to dust-like material so small that 200 (or more) particles could be placed side by side in a lineal inch. Two types of abrasive grain will be received for storage, namely, aluminum oxide and silicon carbide. For additional descriptions of the crude abrasives see the aluminum oxide and silicon carbide storage pages of this manual.

2. *Packaging.* Abrasive grains shall be packed in polyethylene bags which have been inserted in 55 gallon capacity, 16 gauge, steel drums, galvanized after fabrication, conforming to the requirements of National Stockpile Specification C-1 (latest revision), Drums: Steel, Hot-Dip, Galvanized, weighing approximately 1,000 pounds net for aluminum oxide and 650 to 750 pounds net for silicon carbide. The grit (or grain) size accounts for variations in packed weights.

3. *Marking*

a. Prior to receipt, each drum will have an aluminum tag attached to the clamp ring bolt embossed with the following information:

- (1) Name of Product
- (2) Name of Producer
- (3) Gross and Net Weights
- (4) Grain Size
- (5) Government Contract Number
- (6) Lot Number
- (7) Drum Serial Number
- (8) The notice "Duplicate Tag Inside of Drum."

b. A duplicate tag will be inside of the drum. In addition, the grit size will be displayed in prominent numerals on the head and/or sides of the drums with a zinc base paint. All drums at the storage depot without this painted number must be identified by depot personnel and marked with standard zinc base paint before placed in permanent storage.

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4. *Storage*

a. Abrasive grains received in hot-dipped, galvanized (C-1, latest revision) steel drums may be stored in a warehouse, shed or other structure unless storage in the open is specifically authorized by the DNSC-OL. When storage in the open is authorized, the space utilized shall be equivalent to Type B or better, and capable of sustaining a load of not less than 2,000 pounds per square foot.

b. Storage identity must be maintained by type of material and by grit size as shown on the identification tag. For storage planning, the following table indicates the percentage of grain sizes.

<u>Grit Number</u>	<u>Percent Aluminum Oxide</u>	<u>Silicon Carbide</u>	<u>Grit Number</u>	<u>Percent Aluminum Oxide</u>	<u>Silicon Carbide</u>
8	2	2	54	8	6
10	2	2	60	8	6
12	4	2	70	4	6
14	6	4	80	6	4
16	8	6	90	2	4
20	8	8	100	2	4
24	8	8	120	2	4
30	8	8	150	2	4
36	8	8	180	2	4
46	8	6	220	2	4

c. When material in hot-dipped galvanized (C-1, latest revision) steel drums is authorized for storage in the open, drums shall be stored on their side and stacked in cordwood fashion on concrete runners or concrete blocks. When stored in this manner, the joint of the locking ring holding the head on the drum should always be at the bottom. All drums must be handled carefully to minimize damage to the galvanized coating. Storage aids used to keep drums stable shall be of concrete. Use of cinder blocks for this purpose is prohibited. Maximum stacking height of drums stored in open space will be four (4) drums unless otherwise directed by the DNSC-OL. Each grit (or grain) size should be stored so that it is readily accessible for outshipment. Drum storage areas should be laid out with emphasis on maximum occupancy since no rotation handling is expected. Arrangements for concrete runners, or concrete blocks, and other storage aids will be made by the DNSC-OL and established as a Special Project.

d. 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 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 practicable because of weight of containers, or difficulty in handling, pallets between tiers may be used.

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e. Whether stored in a warehouse, shed, etc., or in the open, the drums 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 other requirements must be met. When pallets are used, a uniform number of drums shall be placed on each pallet, except when an odd number on the top pallet of a stack of uniform height will complete the lot.

f. Stack identification markers will show name of material, type, grit size, and number of drums. For material stored in warehouse space, depots will use the Warehouse Material Identification Card (DNSC Form 41). For drums stored in the open, aluminum signs will show the above data.

5. Precautions To Be Taken

a. *Health.* None, if drums are intact. In case of rupture, care should be exercised in repackaging not to raise dust. Dust is irritating and considered a nuisance dust.

b. *General.*

(1) Although the abrasive grain is sealed in a polyethylene bag inside the drum, as a routing precaution, spot checks of the tightness of the ring bolts should be made on all heavy drums that are subject to distortion.

(2) 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 in permanent storage. Proper care shall be exercised in handling and shipping in order to avoid damage.

6. *Average Storage Factor.* 30 to 40 cubic feet per short ton depending on grit size.

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