

MIL-D-20550B  
8 August 1968  
SUPERSEDING  
MIL-D-20550A  
25 July 1962

## MILITARY SPECIFICATION

### DIATOMACEOUS EARTH

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers diatomaceous earth.

1.2 Classification. Diatomaceous earth shall be of the following grades, as specified (see 6.2):

Grade A - Natural.  
Grade B - Flux-Calcined.  
Grade C - Calcined.

#### 2. APPLICABLE DOCUMENTS

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

#### SPECIFICATION

Federal

UU-S-48 - Sacks, Shipping, Paper.

#### STANDARDS

Military

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

[ FSC 9390 ]

MIL-D-20550B

MIL-STD-129 - Marking for Shipment and Storage.

(Copies of specifications and standards, required by suppliers in connection with specific procurement functions, should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated the issue in effect on date of invitation for bids or request for proposal shall apply.

American Society for Testing and Materials (ASTM)

- C 430 - Fineness of Hydraulic Cement by the No. 325 Sieve.
- D 717 - Analysis of Magnesium Silicate Pigment.
- D1208 - Common Properties of Certain Pigments.
- D1483 - Oil Absorption of Pigments by Gardner-Coleman Method.
- D1895 - Apparent Density, Bulk Factor, and Pourability of Plastic Materials.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103.)

American Trucking Associations, Inc.

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., 1616 P Street, N.W., Washington, D.C. 20036.)

Uniform Classification Committee

Uniform Freight Classification

(Application for copies should be addressed to Uniform Classification Committee, 202 Union Station, Chicago, Illinois 60606.)

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

### 3. REQUIREMENTS

3.1 Material. Grade A material shall be a naturally mined diatomaceous earth which has not been calcined. Grade B material shall be a white, flux-calcined, processed diatomaceous earth. Grade C material shall be a light pink calcined diatomaceous earth.

MIL-D-20550B

3.2 Chemical and physical requirements. When tested in accordance with paragraphs 4.4.1 and 4.4.2 the material shall conform to the requirements in table I.

TABLE I. Diatomaceous earth, chemical and physical requirements

Requirements	Grade		
	A	B	C
Silicon dioxide ( $\text{SiO}_2$ ) on dry basis, percent (min.)	87.0	87.0	87.0
Fineness (retained on No. 150 U.S. std. sieve) percent (max.)	3.0	7.0	10.0
Fineness (retained on No. 325 U.S. std. sieve) percent (max.)	8.0	-	-
Apparent density (max.)	0.3	-	-
Ignition loss (corrected for moisture) percent (max.)	7.0	0.5	0.5
Moisture, percent (max.)	6.0	1.0	1.0
Oil absorption (Gardner-Coleman Linseed Oil) (GMS of oil per 100 GMS of material) (min.)	139	139	139
Oil absorption (Gardner-Coleman) (max.)	230	210	210

#### 4. QUALITY ASSURANCE PROVISIONS

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

4.1.1 Inspection of materials and components. In accordance with 4.1, the supplier is responsible for insuring that materials used were manufactured and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified.

4.2 Sampling for inspection. Sampling for inspection shall be performed in accordance with the provisions set forth in MIL-STD-105, except where otherwise indicated.

MIL-D-20550B

## 4.2.1 Inspection of the end item.

4.2.1.1 Examination of the end item. Examination of the end item shall be made in accordance with the classification of defects, inspection levels and acceptable quality levels (AQLs) set forth below. The lot size, for purpose of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of shipping containers for examination in 4.2.1.1.1, 4.2.1.1.2, and 4.2.1.1.3.

Examination paragraph	Inspection level	AQL (defects per 100 units)
4.2.1.1.1	S-4	4.0
4.2.1.1.2	S-2	-
4.2.1.1.3	S-2	4.0

4.2.1.1.1 Examination of the end item for defects in appearance and workmanship. The sample unit for this examination shall be four pounds of diatomaceous earth from each sample shipping container.

ExamineDefect

Appearance and workmanship

Not uniform in color.  
Presence of foreign material.  
Large particles of agglomerates of material.

4.2.1.1.2 Examination for defects in net weight of contents. The sample unit shall be one shipping container. The average net contents of the sampled units selected shall be not less than the specified quantity.

4.2.1.1.3 Examination of preparation for delivery. An examination shall be made to determine that packing and markings comply with the requirements of section 5 of this specification. The sample unit for this examination shall be one shipping container, fully packed, selected just prior to the closing operation. Shipping containers fully prepared for delivery shall be examined for closure defects.

ExamineDefect

Packing

Containers not as specified, closures not accomplished by specified or required methods or materials.

Any nonconforming component, component missing, damaged or otherwise defective, affecting serviceability.

Markings

Exterior markings omitted, illegible, incorrect, incomplete, or not in accordance with contract requirements.

## MIL-D-20550B

4.3 Testing of the end item. The end item shall be tested for the applicable characteristics indicated in table I for each lot presented for inspection. The lot size shall be expressed in units of shipping containers. The inspection level for determining the sample size shall be S-2. The sample unit shall be four pounds of diatomaceous earth with only one sample unit selected from a sample container. The sample units shall be composited for testing. All tests shall be performed on the composite sample. Unless otherwise specified (see 6.2), duplicate determinations shall be performed on the composite. There shall be no evidence of failure to meet the specified requirements.

#### 4.4 Tests.

4.4.1 Moisture. Using a tared crucible, weigh to the nearest milligram a five gram sample. Dry in an oven heated to 105° C. - 110° C. to a constant weight. Calculate the loss in weight as percentage of moisture in the sample.

4.4.2 Test procedures. Each sample selected in accordance with 4.3 shall be tested as indicated in table II.

TABLE II. Test methods

Test	Reference	Method
Ignition loss	Table I	ASTM D1208
Apparent density	Table I	ASTM D1895, method A
Gardner-Coleman oil absorption	Table I	ASTM D1483
Fineness	Table I	ASTM C430
Silicon dioxide	Table I	ASTM D717

### 5. PREPARATION FOR DELIVERY

5.1 Packing. Packing shall be level A, B, or C as specified (see 6.2).

5.1.1 Level A. The diatomaceous earth shall be packed in accordance with the applicable level A requirements of UU-S-48.

5.1.2 Level B. The diatomaceous earth shall be packed in accordance with the applicable level B requirements of UU-S-48.

MIL-D-20550B

5.1.3 Level C. The diatomaceous earth shall be packed to insure carrier acceptance and safe delivery to destination at lowest rates in compliance with Uniform Freight Classification rules or National Motor Freight Classification rules.

5.2 Marking. In addition to any special marking required by the contract or order, shipping containers shall be marked in accordance with the requirements of MIL-STD-129.

## 6. NOTES

### 6.1 Intended use.

6.1.1 Diatomaceous earth is intended for use in chemical manufacturing as an inert filler and as a filter aid in filtration and purification processes.

6.1.2 Grades B and C are used in the formulations of pyrotechnic igniters as to burning rate moderators.

6.1.3 This material is not intended to be used in water purification equipment for field use.

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Grade of material (see 1.2).
- c. When duplicate determinations are required (see 4.3).
- d. Level of packing required (see 5.1).

### Custodians:

Army - ME  
Navy - YD  
Air Force - 84

### Preparing activity:

Navy - YD

(Project No. 9390-0021)

### Review activities:

Army - MU  
Air Force - 85

### User activities:

Navy - AS

## SPECIFICATION ANALYSIS SHEET

Form Approved  
Budget Bureau No 119-R004

## INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).

## SPECIFICATION

MIL-D-20550B - Diatomaceous Earth

ORGANIZATION (Of submitter)

CITY AND STATE

CONTRACT NO

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

\$

MATERIAL PROCURED UNDER A

☐

DIRECT GOVERNMENT CONTRACT

☐

SUBCONTRACT

1 HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A GIVE PARAGRAPH NUMBER AND WORDING

B RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2 COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3 IS THE SPECIFICATION RESTRICTIVE?

☐

YES

☐

NO

IF "YES", IN WHAT WAY?

4 REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity)

DATE

DD FORM 1426  
1 APR 63

REPLACES NAVSHIPS FORM 4863 WHICH IS OBSOLETE

FOLD

DEPARTMENT OF THE NAVY

POSTAGE AND FEES PAID  
NAVY DEPARTMENT

OFFICIAL BUSINESS

Commanding Officer  
U.S. Naval Construction Battalion Center  
Code 310  
Davisville, Rhode Island 02854

FOLD