

JAN 9 1995

INCH-POUND

MIL-A-22262B(SH)

AMENDMENT 1

30 September 1994

MILITARY SPECIFICATION

ABRASIVE BLASTING MEDIA
SHIP HULL BLAST CLEANING

This amendment forms a part of MIL-A-22262B(SH), dated 5 April 1993, and is approved for use by the Naval Sea Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 4

3.2, Line 4: Delete after "media" and substitute "equal or exceed 0.1 percent by weight of the material".

PAGE 5

3.4.7: Delete and substitute:

"3.4.7 Crystalline silica. The manufacturer shall certify that when evaluated in accordance with 4.5.9, the crystalline silica content shall not equal or exceed 0.1 percent by weight. Crystalline silica shall not be intentionally added to the abrasive media."

PAGE 6

3.4.12.1: Delete and substitute Parts of TABLE II:

Delete:

"Cobalt and/or its compounds -0.80 Maximum"

"Nickel and/or its compounds -0.10 Maximum"

Add:

"Cobalt (carcinogenic forms) and/or its carcinogenic compounds - 0.09 Maximum"

"Nickel (carcinogenic forms) and/or its carcinogenic compounds - 0.09 Maximum"

PAGE 8

3.4.12.3.2, Line 8: Delete "0.005" and substitute "equal or exceed 0.1".

Line 14: Delete after "shall not" to include the remainder of the sentence and substitute "equal or exceed 0.1 percent by weight of the abrasive media unless specifically stated lower in this document (see 6.3)."

3.4.14: Add after last sentence: "When feasible, a warning label conforming to 29 CFR 1910.1200 (OSHA Hazard Communication Standard) shall be affixed to each package."

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PAGE 14

- 4.5.11.2(b), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"
4.5.11.2(e), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"
4.5.11.3(b), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"

PAGE 16

4.6: Delete and substitute:

"4.6 Toxicological assessment of product. To determine conformance to requirements of 3.4.7 and 3.4.12.3, the manufacturer of the abrasive blasting media shall disclose the formulation of this product to the Navy Environmental Health Center, Code 34, 2510 Walmer Avenue, Norfolk, VA 23517-2617. The disclosure of proprietary information, which shall be held in confidence shall include: the name, formula, Chemical Abstract Service (CAS) No., and approximate percentage by weight of each ingredient in the product (totalling 100 percent); the results of any toxicological testing of the product; identification of its pyrolysis products; and any other information as may be needed to permit an accurate appraisal of any toxicity problem or issues associated with the handling, storage, application, use, removal, disposal, or combustion of the material. Where possible, CAS numbers should be provided for all ingredients in the formulation. A current MSDS and Hazardous Chemical Warning Label, conforming to the provisions of the OSHA Hazard Communication Standard, shall be provided for each product. In addition, the manufacturer shall provide a current MSDS for each ingredient used in the formulation. Within 30 days prior to data submission, the manufacturer shall contact the supplier of each ingredient, and confirm each MSDS submitted is current. A statement documenting this contact shall be affixed to each ingredient MSDS, and indicate: (1) the date of the contact and (2) the name of the company representative, with telephone number, who confirmed the MSDS was current. The OSHA Form 20 is obsolete, therefore all MSDS must be submitted on an OSHA Form 174, or an equivalent form containing the identical data elements. Where available, copies of the industrial hygiene reports, which address potential health hazards related to working with the material, are also to be submitted as part of the package. Information pertaining to any adverse health effects experienced by company workers during research and development and manufacture of the product, and industrial experience with the product by major commercial users, is also requested. All data provided must be clearly identified to show it is being provided in connection with qualification under MIL-A-22262B(SH)."

PAGE 18

6.8, Line 4: Delete "and Naval Medical Command Reports".

PAGE 21

30.1(a): Delete and substitute:

- "(a) Certification that the abrasive media does not contain the following metals or known or suspected carcinogenic compounds of these metals (as listed by IARC, NTP, OR OSHA) in concentrations equal to or exceeding 0.1 percent by weight (as supplied for use): lead, arsenic,

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AMENDMENT 1

beryllium, cobalt, cadmium, chromium, and nickel. The manufacturer shall also certify that the product unless specific material maximum levels are cited herein does not have as listed by OSHA, IARC, or NTP any known or suspected carcinogens intentionally added to the abrasive mix and when known or suspected carcinogens are/may be present, as a result of being a trace/impurity in another ingredient(s) the concentration of the agent in the final product must not equal or exceed 0.1 percent by weight of the abrasive media unless specifically stated lower in the document."

30.1(d): Delete and substitute:

"(d) A statement of the recommendation provided by the Navy Environmental Health Center Toxicity Assessment in 4.6."

Preparing activity:
Navy - SH
(Project 5350-N035)

JUN 10 1996

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INCH-POUND

MIL-A-22262B(SH)
AMENDMENT 2
21 March 1996
SUPERSEDING
AMENDMENT 1
30 SEPTEMBER 1994

MILITARY SPECIFICATION

ABRASIVE BLASTING MEDIA
SHIP HULL BLAST CLEANING

This amendment forms a part of MIL-A-22262B(SH), dated 5 April 1993, and is approved for use by the Naval Sea Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 3

2.1.2, Lines 22-30 Delete and Substitute:

STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES

California Administrative Code, Title 22, Division 4, Chapter 30, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste, Section 66261.24, Persistent and Bioaccumulative Toxic Substance, pages 660.3-660.5, Register 95. No. 25; 6-23-95.

"(Application for copies should be addressed to the State of California Environmental Protection Agency Department of Toxic Substances Control, Region 2, Office of External Affairs, 700 Heinz Avenue, Berkeley, CA 94710.)"

California Administrative Code, Title 17, Subchapter 6, Section 92530 (California Test Method 371-A)

"(Application for copies should be addressed to the California Environmental Protection Agency Air Resources Board, Compliance Division, 2020 L Street, Sacramento, CA 95816.)"

AMSC N/A

FSC 5350

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AMENDMENT 2

PAGE 4

3.2, Line 4: Delete after "media" and substitute "equal or exceed 0.1 percent by weight of the material".

PAGE 5

* 3.4.7, Line 2 and 3: Delete: "of the abrasive shall be 1.0 percent" and substitute: "shall not exceed 1.0 percent"

PAGE 6

3.4.12.1: Delete and substitute Parts of TABLE II:

Delete:

"Cobalt and/or its compounds -0.80 Maximum"

"Nickel and/or its compounds -0.10 Maximum"

Add:

"Cobalt (carcinogenic forms) and/or its carcinogenic compounds
- 0.09 maximum"

"Nickel (carcinogenic forms) and/or its carcinogenic compounds
- 0.09 maximum"

PAGE 8

* 3.4.12.3.2, 1st sentence: Delete "as specified in 4.6".

3.4.12.3.2, Line 8: Delete "0.005" and substitute "equal or exceed 0.1".

Line 14: Delete after "shall not" to include the remainder of the sentence and substitute "equal or exceed 0.1 percent by weight of the abrasive media unless specifically stated lower in this document (see 6.3)."

3.4.14: Add after last sentence: "When feasible, a warning label conforming to 29 CFR 1910.1200 (OSHA Hazard Communication Standard) shall be affixed to each package."

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4.5.11.2(b), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"

4.5.11.2(e), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"

4.5.11.3(b), Line 1: Delete "Freon" and substitute "A nonozone depleting solvent"

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PAGE 16

- * 4.6: Delete in its entirety.

PAGE 18

6.8, Line 4: Delete "and Naval Medical Command Reports".

PAGE 21

- * 30.1(a): Delete paragraph 30.1(a).
- * 30.1(d): Delete paragraph 30.1(b)

The margins of this amendment are marked with an asterisk or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

Preparing activity:
Navy - SH
(Project 5350-N039)

SEP 13 1993

2/

INCH-POUND

MIL-A-22262B(SH)
5 April 1993
SUPERSEDING
MIL-A-22262A(SH)
6 February 1987

MILITARY SPECIFICATION

ABRASIVE BLASTING MEDIA
SHIP HULL BLAST CLEANING

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers nonmetallic abrasive materials used in the blast cleaning of metal surfaces and glass reinforced plastic surfaces, such as ships' hulls and tanks, for removing rust, scale, old paint and marine growth and to provide surfaces that are clean and suitable for painting. Abrasive inorganic materials are, for example, minerals and slags. Inorganic abrasives are used to remove coatings to bare metal. Inorganic abrasives have set limits for toxic metal content and radioactivity and meet Environmental Protection Agency hazardous waste requirements. In addition, Navy worker health and safety requirements and Navy corrosion control requirements have also been addressed.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

- RR-S-366 - Sieve, Test.
- UU-S-48 - Sacks, Shipping, Paper.

MILITARY

- MIL-I-45208 - Inspection System Requirements.
- MIL-E-51454 - Ethyl Alcohol (Ethanol).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, ATTN: SEA 05Q42, Naval Sea Systems Command, 2531 Jefferson Davis Hwy., Arlington, VA 22242-5160 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 5350

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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STANDARDS

FEDERAL

FED-STD-313 - Material Safety Data, Transportation Data And Disposal Data For Hazardous Materials Furnished To Government Activities.

MILITARY

MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-147 - Palletized Unit Loads.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Federal Register (FR), Volume 55, paragraph 11798, March 19, 1990 (55 FR 11798), Toxicity Characteristic Leaching Procedure (TCLP).

Federal Register (FR), Volume 55, paragraph 26986, Subparagraph 261.24, June 29, 1990, Maximum Concentration Contaminants for the Toxicity Characteristic.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

Occupational Health and Safety Administration, 29 CFR Parts 1910, 1915, 1917, 1918, 1926 and 1928 - Hazard Communication Act, Final Rule.

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

CFR, Title 49.
Part II, 49 CFR Part 107 - Performance-Oriented Packaging Standards.

(Unless otherwise indicated, copies of other Government documents are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.)

STATE OF CALIFORNIA DEPARTMENT OF HEALTH SERVICES

California Administrative Code, Title 22, Division 4, Chapter 30, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste, Section 66699, Persistent and Bioaccumulative Toxic Substance, p. 1800.77 (Register 85, No. 2)

California Administrative Code, Title 17, Subchapter 6, Section 92520 (California Test Method 371-A)

(Application for copies should be addressed to the Hazardous Materials Laboratory, State of California, Dept. of Health Services, 2151 Berkeley Way, Berkeley, CA 94704.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- C 117 - Standard Test Method for Materials Finer Than 75 μ m (No. 200 Sieve in Mineral Aggregates by Washing. (DOD adopted)
- C 136 - Standard Method for Sieve Analysis of Fine and Coarse Aggregates. (DOD adopted)
- C 188 - Standard Test Method for Density of Hydraulic Cement. (DOD adopted)
- C 702 - Standard Methods for Reducing Field Samples of Aggregate to Testing Size.
- D 75 - Standard Practice for Sampling Aggregates. (DOD adopted)
- D 1411 - Standard Test Methods for Water-Soluble Chlorides Present as Admixes in Graded Aggregate Road Mixes.
- D 3951 - Standard Practice for Commercial Packaging. (DOD adopted)
- D 4940 - Conductimetric Analysis of Water Soluble Ionic Contamination of Blasting Abrasives.
- E 1132 - Health Requirements Relating to Occupational Exposure to Quartz Dust.

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

STEEL STRUCTURE PAINTING COUNCIL

Coating and Lining Inspection Training Manual

(Application for copies should be addressed to the Steel Structure Painting Council, 4400 Fifth Avenue, Pittsburgh, PA 15213-2683.)

UNITED NATIONS (UN)

UN - Performance Oriented Packaging.

(Application for copies should be addressed to Labelmaster, 5724 North Pulaski Road, Chicago, IL 60646.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. The abrasive materials furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.4).

3.2 Material. The abrasive material shall be manufactured as required to produce a product which is uniform, homogeneous, noncaking, and free flowing, in full conformance with the requirements of this specification. Also, the abrasive material which contains specific agents such as organic matter, asbestos, and wollastonite and pectolite minerals, and actinolite and tremolite minerals, water soluble and toxic substances (except as allowed by this specification), or other extraneous materials and entirely suitable for the purpose intended shall be appropriately documented. The specific agent must not have been intentionally added

to the abrasive media. Where the agent is present in the media, as a result of being an impurity or as a trace constituent of other materials, levels of this agent shall be maintained as low as feasible and under no circumstances shall levels of the agent in the media exceed 0.001 percent by weight of the material. The abrasive may be any material meeting the requirements of this specification.

3.3 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and may be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified.

3.4 Quantitative requirements. The abrasive shall conform to the quantitative requirements and as specified herein.

3.4.1 Particle size distribution. Particle size distribution shall be specified by the contracting activity (see 6.2).

3.4.1.1 Sieve analysis. When subjected to the sieve analysis as specified in 4.5.3, the abrasive material shall conform to the particle size distribution requirements (see 6.2).

3.4.2 Friability. The spent abrasive shall meet the requirements of California Administrative Code, title 17, subchapter 6, section 92530 and shall be listed on the most recent list of abrasives approved for use in open air blasting in the state of California (see 4.5.4).

3.4.3 Moisture content. The moisture content of abrasive material shall be less than 0.5 percent by weight as specified (see 4.5.5).

3.4.3.1 Delivery in sacks. The moisture content of abrasive material delivered in bags or sacks shall be less than 0.5 percent by weight as specified (see 4.5.5).

3.4.3.2 Delivery in bulk. When dry material is specified (see 6.2), the moisture content of the abrasive shall be less than 0.5 percent by weight. There is no moisture limitation on bulk abrasives not specified as dry material. The abrasive is purchased by weight, therefore the moisture content of the wet material shall be determined as specified in 4.5.5 and a correction factor derived from the formula as specified in 3.4.3.3 shall be applied to the gross weight of the wet material.

3.4.3.3 Correction of gross weight of bulk shipments for moisture content. When abrasives are acquired by net weight in bulk (see 6.2), the moisture content of the material shall be accurately determined at the time of weighing and the new weight calculated by subtracting the amount of moisture present from the gross weight, as follows:

$$\text{New weight} = \text{Gross weight} \times (1 - \text{percent moisture}/100)$$

3.4.4 Weight change on ignition. The abrasive weight change as a result of ignition shall be within the range minus 1.0 percent (weight loss) to plus 5.0 percent (weight gain) (see 4.5.6).

3.4.5 Chloride content. The chloride content of the abrasive shall be less than 0.03 percent by weight (see 4.5.7).

3.4.6 Free flow. A minimum of 99 percent of the abrasive material shall flow freely from the test cylinder, with no apparent solidification or clump formation (see 4.5.8).

3.4.7 Crystalline silica. The manufacturer shall certify that when evaluated in accordance with 4.5.9, the maximum crystalline silica content of the abrasive shall be 1.0 percent by weight. Crystalline silica shall not be intentionally added to the abrasive media.

3.4.8 Specific gravity. The minimum specific gravity of the nonmetallic abrasive material shall be 2.5 (see 4.5.2).

3.4.9 Carbonates and gypsum. Carbonates and gypsum shall not be detected (see 4.5.1).

3.4.10 Conductivity. The conductivity shall be less than 290 microsiemens per square centimeter (micromhos/cm) (see 4.5.10).

3.4.11 Oil content. The oil content shall be less than 0.030 percent by weight (see 4.5.11).

3.4.12 Hazardous waste minimization.

3.4.12.1 Soluble and total metal content. The manufacturer shall certify that when tested as specified in accordance with California Administrative Code, Title 22, the soluble metals content and total metal content of the abrasive shall not exceed the values which cause the material to be classified as a hazardous waste (see tables I and II). To ensure that the abrasive material meets the requirements of the California Administrative Code, Title 22, for the soluble metal content (table I) and the total metal content (table II) (see 6.3), the material shall be tested in accordance with 4.5.12.1.

TABLE I. Soluble metals content. 1/ 2/ 3/

Requirement	Maximum
Metals content (soluble), mg/L	
Antimony and/or its compounds	5
Arsenic and/or its compounds	5
Barium and/or its compounds (excluding barite)	100
Beryllium and/or its compounds	0.75
Cadmium and/or its compounds	1
Chromium (VI) compounds	5
Chromium and/or chromium (III) compounds	25
Cobalt and/or its compounds	80
Copper and/or its compounds	25
Fluoride salts	180
Lead and/or its compounds	1.0
Mercury and/or its compounds	0.2
Molybdenum and/or its compounds	35
Nickel and/or its compounds	10
Selenium and/or its compounds	1
Silver and/or its compounds	5
Thallium and/or its compounds	7
Vanadium and/or its compounds	24
Zinc and/or its compounds	50

1/ Some of the limits specified in this specification are lower than required by the State of California Dept. of Health Services. Users may require lower than

specified limits for toxic components as deemed necessary for local environmental and occupational safety and health requirements.

- 2/ The values listed are instantaneous values for toxic materials and are not time weighted averages. The airborne "ceiling values" are different from this table.
- 3/ Values listed for toxicological administrative review see 3.4.12.3.2 and manufacturer lot certification see 4.4.2 in some cases are lower than what is required by this table.

TABLE II. Total metals content. 1/ 2/ 3/

Requirement	Maximum
Metals content (total), weight percent	
Antimony and/or its compounds	0.05
Arsenic and/or its compounds	0.05
Barium and/or its compounds (excluding barite)	1.00
Beryllium and/or its compounds	0.0075
Cadmium and/or its compounds	0.01
Chromium (VI) compounds	0.05
Chromium and/or chromium (III) compounds	0.25
Cobalt and/or its compounds	0.80
Copper and/or its compounds	0.25
Fluoride salts	1.80
Lead and/or its compounds	0.01
Mercury and/or its compounds	0.002
Molybdenum and/or its compounds	0.35
Nickel and/or its compounds	0.10
Selenium and/or its compounds	0.01
Silver and/or its compounds	0.05
Thallium and/or its compounds	0.07
Vanadium and/or its compounds	0.24
Zinc and/or its compounds	0.50

- 1/ Some of the limits specified in this specification are lower than required by the State of California Dept. of Health Services. Users may require lower than specified limits for toxic components as deemed necessary for local environmental and occupational safety and health requirements.
- 2/ The values listed are instantaneous values for toxic materials and are not time weighted averages. The airborne "ceiling values" are different from this table.
- 3/ Values listed for toxicological administrative review see 3.4.12.3.2 and manufacturer lot certification see 4.4.2 in some cases are lower than what is required by this table.

3.4.12.2 Maximum concentration of contaminants for toxicity. The manufacturer shall certify that the toxicity characteristic content of the abrasive material shall not exceed the values listed in table III (see 4.5.12.2).

TABLE III. Toxicity characteristic. 1/ 2/

Requirements	Maximum
Toxicity content (soluble), mg/L	
Arsenic	5.0
Barium	100.0
Benzene	0.5
Cadmium	1.0
Carbon tetrachloride	0.5
Chlordane	0.03
Chlorobenzene	100.0
Chloroform	6.0
Chromium	5.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
2,4-D	10.0
1,4-Dichlorobenzene	7.50
1,2-Dichloroethane	0.50
1,1-Dichloroethylene	0.70
2,4-Dinitrotoluene	0.13
Endrin	0.02
Heptachlor (and its epoxide)	0.008
Hexachlorobutadiene	0.05
Hexachloroethane	3.0
Lead	1.0
Lindane	0.40
Mercury	0.20
Methoxychlor	10.0
Methyl ethyl ketone	200.0
Nitrobenzene	2.0
Pentachlorophenol	100.0
Pyridine	5.0
Selenium	1.0
Silver	5.0
Tetrachloroethylene	0.70
Toxaphene	0.50
Trichloroethylene	0.50
2,4,5-Trichlorophenol	400.0
2,4,6-Trichlorophenol	2.0
2,4,5,-TP (Silvex)	1.0
Vinyl Chloride	0.20

1/ The values listed are instantaneous values for toxic materials and are not time weighted averages. The airborne "ceiling values" are different from this table.

2/ Values listed for toxicological administrative review see 3.4.12.3.2 and manufacturer lot certification see 4.4.2 in some cases are lower than what is required by this table.

3.4.12.3 Toxicity.

3.4.12.3.1 Toxicity certification. The manufacturer shall certify that the materials shall have no adverse effect on the health of personnel engaged in handling, and using abrasive material when Occupational Safety and Health Administration (OSHA) 29 CFR 1910, 1915, 1917, 1918, 1928 and ASTM E 1132 guidelines are observed.

3.4.12.3.2 Toxicity administrative review. When evaluated as specified in 4.6, the materials used in the abrasive media unless specific material maximum levels are cited herein shall have no known carcinogenic or potentially carcinogenic materials identified by the Occupational Safety and Health Administration (OSHA) regulated carcinogens or International Agency for Research on Cancer (IARC) latest monographs, or the latest annual report of the National Toxicology Program (NTP). The manufacturer shall certify that the abrasive media does not contain the following materials in excess of 0.005 percent by weight of the dry abrasive material: lead, arsenic, beryllium, cadmium, chromium lead, nickel and thorium. The manufacturer shall also certify that the product unless specific material maximum levels are cited herein does not have known or suspected carcinogens intentionally added to the abrasive mix and when known or suspected carcinogens are/may be present, as a result of being a trace/impurity in another ingredient(s) the concentration of the agent in the final product shall not exceed the in excess of 0.005 percent by weight of the abrasive media unless specifically stated lower in this document (see 6.3). The abrasive media shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this toxic effect shall be referred by the contracting activity to the Navy Environmental Health Center (NEHC). NEHC will act as advisor to the contracting activity. NEHC will arrange for review of questions by the appropriate departmental medical service. The contracting activity shall be provided with a copy of NEHC findings. The NEHC findings shall be included with each unit of issue of material covered by this specification (see 5.7).

3.4.13 Radioactivity. The maximum gross gamma radioactivity of the abrasive shall be no greater than 20.0 picoCuries/gram (see 4.5.13). Since some states require that material containing naturally occurring radioactivity above specified concentrations be disposed of as radioactive waste, activities ordering abrasive per this military specification may require a lower gross gamma radioactivity concentration to preclude disposal of the spent abrasive as radioactive waste.

3.4.13.1 Cobalt 60. The concentration of cobalt 60 shall be less than 0.05 picoCuries/gram (see 4.5.13).

3.4.14 Material safety data sheet (MSDS). The contracting activity shall be provided a MSDS at the time of contract award. The MSDS is form OSHA 174 or equivalent which contains all of the data elements found on the form OSHA 174, found as part of FED-STD-313. MSDS shall be prepared for each abrasive using Occupational Safety and Health 29 CFR, CH XVII, Section 1910.1200. OSHA 29 CFR CH XVII, Section 1910.1200 requires reporting threshold criteria for known or suspected human carcinogens of MSDS 0.1 percent or greater. The MSDS shall be included with each shipment of the material covered by this specification.

3.4.15 Hardness. The abrasive material shall have a minimum hardness of 6 on Moh's scale (see 4.5.14).

3.4.16 Shape. The abrasive material shall be uniform and angular to subangular in shape (see 4.5.15).

3.4.17 Recycled abrasives. The recycled abrasives shall meet the acceptance requirements of the test for recirculated abrasives (section 7) in the Steel Structures Painting Council coating and lining inspection training manual formally Bechtel Coating and Lining Inspection Manual and all of the requirements in section 3 (see 4.5.16).

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 requirements (examinations and tests) as 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 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 this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) Qualification inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.3 Qualification inspection. Qualification inspection for abrasive blast material shall be conducted at a laboratory satisfactory to the Naval Sea Systems Command. Qualification tests for abrasive blast materials shall consist of all tests specified in 4.5. Detection of any nonconformance during qualification inspection shall result in rejection of the qualification samples, initiation of corrective action to remove the root cause of the nonconformance, and repetition of all qualification inspection tests on samples that incorporate the corrective action.

4.4 Quality conformance inspection. Quality conformance inspection (see 6.3 and appendix) for acceptance of individual lots shall consist of tests specified in 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.10, 4.5.11, and 4.5.16. Quality conformance testing shall be performed at either the plant or at the delivery site.

4.4.1 Sampling for conformance inspection.

4.4.1.1 Sampling for qualification inspection.

4.4.1.2 Shipment in sacks. Two or more sacks of abrasive shall be randomly selected from each inspection lot. The sacks shall be mixed and separated and an 80 kilogram (kg) composite sample prepared in accordance with ASTM C 702. From this composite sample, four 18,750 gram and two 800 gram representative samples shall be separated. The remaining abrasive in the composite sample shall be dried to a constant weight in an oven at 105 degrees Celsius (°C). From this dried material, two representative samples weighing 500 grams each shall be separated. All of the samples, dried and undried, shall be individually sealed in plastic bags and identified.

4.4.1.3 Bulk shipment. An 80 kg composite sample shall be obtained from the blended finished product as specified in ASTM D 75. The composite sample shall be mixed and separated as specified in 4.4.1.2.

4.4.1.4 Sampling at plant. Samples shall be obtained from the blended finished product during the loading of transportation vehicles, and from the entire cross section of material flow. These samples shall be thoroughly mixed and quartered to form a composite sample and test samples shall be prepared as specified in 4.4.1.2.

4.4.1.5 Sampling at delivery. Samples shall be obtained while the material is being unloaded. The sampler should be aware that size segregation may occur during transportation. Samples shall be taken at three or more times on locations during the unloading of each vehicle. These samples shall be taken from the entire cross section of material flow. Samples from a loaded vehicle may be obtained by using sampling tubes that can withdraw vertical samples of product from top to bottom of the loaded vehicle. Make not less than three insertions across the width of the vehicle at the following points along its length: (a) front end, (b) one quarter, (c) one half, (d) three quarter, and (e) back end. In the case of an enclosed gondola type railroad car, make not less than three insertions at each access hole. Thoroughly mix and quarter these samples to form a composite sample and prepare test samples as specified in 4.4.1.2.

4.4.1.6 Sampling from stockpiles. Samples shall be taken from stock piles at or near the top, at or near the base and at an intermediate point. A board shoved into the pile just above the point of sampling will aid in preventing further segregation during sampling. Thoroughly mix and quarter these samples to form a composite sample and prepare test samples as specified in 4.4.1.2.

4.4.2 Lot. For purposes of quality conformance inspection, a lot shall consist of all abrasive materials of the same type from a single, uniform batch produced and offered for delivery at one time. The addition of any substance to a batch shall constitute a new lot. Each lot of abrasive media shall be certified (see 6.3 and appendix).

4.4.3 Shipment in sacks. One sack of abrasive shall be randomly selected from each inspection lot. The sacks shall be mixed and separated and a 3 kg composite sample prepared in accordance with ASTM C 702. From this composite sample, two 800 gram representative samples shall be separated. The remaining abrasive in the composite sample shall be dried to a constant weight in an oven at 105°C. From this dried material, two representative samples weighing 500 grams each shall be separated. All of the samples, dried and undried, shall be individually sealed in plastic bags and identified.

4.4.3.1 Bulk shipment. A 3 kg composite sample shall be obtained from the blended finished product as specified in ASTM D 75. The composite sample shall be mixed and separated as specified in 4.4.1.2.

4.4.3.2 Sampling at plant. Obtain composite sample as specified in 4.4.1.4; prepare representative samples as specified in 4.4.3.

4.4.3.3 Sampling at delivery. Obtain composite samples as specified in 4.4.1.5; prepare representative samples as specified in 4.4.3.

4.4.4 Riffle sampler. A riffle-type sampler in accordance with ASTM C 702 is preferable to hand quartering and may be substituted for the mixing and quartering procedures specified in 4.4.1.2 and 4.4.3. When riffle sampler is used it shall be used in accordance with ASTM C 702.

4.4.5 Preliminary sample analysis. The following procedure shall be performed at the sample preparation site. A separate sieve analysis shall be performed on each of the two 500 gram samples in accordance with 4.4.1.2 (or 4.4.3), in accordance with ASTM C 117, except compose the sieve nest of sieve numbers 4, 8, 16, 30, 50, 100 and 200 and calculate the results as cumulative weight of material retained on each sieve. Cumulative weights shall be determined as follows:

- (a) Weigh the material retained on the coarsest sieve and record this weight. Do not remove the material from the scale or balance.
- (b) Add the material retained on the next finer sieve and record this weight. Do not remove the material from the scale or balance.
- (c) Continue this process of obtaining cumulative weights until the material in the sieve pan is weighed. Variation between the two

500 gram samples, of more than 4 percent in the cumulative weight of material retained on any one sieve, shall necessitate recombining and resplitting of the initial 80 kg (or 3 kg) sample. This procedure shall then be repeated until uniform samples are obtained.

4.4.6 Disposition of samples. All samples prepared in accordance with 4.4.1.2 (or 4.4.3) shall be forwarded to the test activity. The plastic sample bags shall be plainly marked with the following:

- (a) Sample for verification of acceptance tests.
- (b) Title, number and date of specification.
- (c) Type of material.
- (d) Lot number.
- (e) Name and code number of manufacturer.
- (f) Date.

4.4.7 Sampling for examination of containers (sacks). As a minimum the contractor shall select a sample quantity of containers in accordance with table IV and inspect them in accordance with 4.4.9. Detection of any nonconforming characteristic in any sample shall result in rejection of the entire lot. The contractor has the option of correcting the discrepancy, retesting, and resubmitting a conforming lot or submitting a new lot which shall be inspected and tested as specified in this specification.

TABLE IV. Sampling for examination of containers (sacks).

Lot size	Sample size
2 to 50	5
51 to 90	7
91 to 150	11
151 to 280	13
281 to 500	16
501 to 1200	19
1201 to 3200	23
3201 to 10,000	29

4.4.8 Rejection. Detection of any nonconforming characteristic in any sample shall result in rejection of the entire lot represented by the sample. The contractor has the option of screening 100 percent of the rejected lot for the defective characteristic(s) or submitting a new lot which shall be inspected and tested as specified in this specification.

4.4.9 Examination of containers (sacks). Each container filled with abrasive shall be examined for defects of construction, closure, evidence of leakage, and unsatisfactory marking. Each filled container shall be weighed to determine the amount of contents. Any container in the sample having one or more defects or under the required fill shall be rejected.

4.4.10 Quality control. The contractor shall maintain an effective and economical quality control system which shall control (a) receipt of ingredient material, (b) equipment and procedure for sampling materials, (c) storage of ingredient materials, (d) methods and routes of handling materials, (e) processing equipment and delivery points of product materials, (f) processing procedures and controls and (g) procedures and equipment for conducting the tests specified herein.

4.4.11 Verification tests. Verification tests shall consist of any test determined by the Naval Sea Systems Command to be necessary to determine conformance to this specification.

4.5 Tests. Laboratory workers using test procedures contained herein may be exposed to potentially toxic materials. The local cognizant industrial hygienist should be requested to review operations and prescribe health hazard control measures which may be required for test procedures to be performed safely. This may include use of engineering controls and personal protective equipment, as well as other controls.

4.5.1 Carbonates and gypsum. The presence of carbonates and gypsum shall be tested as specified herein.

4.5.1.1 Reagents.

- (a) Hydrochloric acid - Mix 200 milliliters (mL) of concentrated hydrochloric acid (specific gravity 1.192) with 200 mL of distilled water.
- (b) Barium chloride - Dissolve 11.7 grams of reagent grade barium chloride in 88 mL of distilled water.
- (c) Lead acetate test paper - Dissolve 19.0 grams of lead acetate in 100 mL of distilled water. Wet filter paper with the solution and allow to dry. Cut paper into strips approximately 6 millimeters (mm) by 50 mm and store in a dry, sealed vial until used.

4.5.1.2 Procedure. Place approximately 5 grams of the abrasive material in a 400 mL beaker and add 100 mL of hydrochloric acid reagent. The evolution of gas indicates the presence of carbonates or sulfides. Moisten the lead acetate test paper with distilled water and test the gas evolved. If the paper turns brown or black the gas evolved is hydrogen sulfide. If the gas evolved is not hydrogen sulfide it is carbon dioxide. Evolution of carbon dioxide is sufficient cause for rejection of the sample. Gently boil the hydrochloric acid and abrasive for 10 minutes. Remove from heat source, add 150 mL of distilled water and stir. Filter a 25 mL portion through number 40 Whatman paper. Add 10 mL of barium chloride solution to filtrate; the formation of a white precipitate indicates the presence of gypsum and is sufficient cause for rejection.

4.5.2 Specific gravity. Specific gravity of the abrasive material shall be determined in accordance with ASTM C 188, except the following deviations and precautions shall apply:

- (a) A representative sample of the fine aggregate (passing a number 4 sieve) shall be prepared weighing approximately 100 grams (0.22 pound), drying to constant weight at 105 to 110°C, and cooling in a desiccator to room temperature. A 60 gram portion of this abrasive material shall be taken to determine the specific gravity.
- (b) The water bath temperature shall be observed and recorded at the beginning and at the end of the test, if a temperature deviation is noted, a correction factor shall be applied to the displaced volume by subtracting 0.1 mL for every 0.56°C increase in temperature or by adding 0.1 mL for every 0.56°C decrease in temperature.
- (c) Caution shall be exercised to ensure that the abrasive material is free of air bubbles before volume readings are taken.

4.5.3 Sieve analysis. The sieve analysis shall be performed in accordance with ASTM C 136, except sieve numbers shall be used for each type of material as specified (see 6.2), and only sieves in accordance with RR-S-336 shall be used.

4.5.4 Friability. The friability test shall be performed in accordance with California Test Method 371-A.

4.5.5 Moisture content. Approximately 200 grams of the sample shall be weighed to the nearest 0.1 gram in a tared weighing dish and dried at 105 to 110°C for 3 hours, or until successive weighings after additional 1 hour heating periods show a weight change of not more than 0.1 gram. The percentage of moisture shall be calculated as follows:

$$\text{Percent moisture} = \frac{(\text{Original weight} - \text{final weight})}{\text{Original weight of sample}} \times 100$$

4.5.6 Weight change on ignition. Weight change on ignition shall be determined as follows: A representative portion of the sample shall be ground in an agate mortar and thoroughly dried at 105 to 110°C. Transfer approximately 1.0 gram of the dried sample to a tared crucible with cover and weigh to the nearest milligram (mg). Cautiously heat the crucible with contents, at first partially covered, and then at approximately 1000°C covered. Cool in a desiccator and reweigh. The percent weight change shall be computed as follows:

$$\text{Percentage weight change} = \frac{(\text{Final weight} - \text{original weight})}{\text{Original weight}} \times 100$$

4.5.7 Chloride content. The test for chloride content shall be in accordance with ASTM D 1411, except that 400 grams of dried, well mixed, abrasive shall be used as the sample.

4.5.8 Free flow. The free flow properties of the abrasive material shall be determined as specified herein.

4.5.8.1 Apparatus. Apparatus for determining free flow properties of abrasive material shall be as follows:

4.5.8.1.1 Bronze cylinder. A bronze cylinder having an inside diameter of 3.175 centimeter (cm) and a length of 15.24 cm shall be used. The interior surface of the cylinder shall be smooth so as not to impede the free flow of the abrasive. Both ends of the cylinder shall be fitted with screw caps, one of these caps having a number of holes approximately 1/8-inch (0.3175 cm) in diameter.

4.5.8.1.2 Balance. A balance that yields accurate weight measures from 0.1 to 100 grams.

4.5.8.1.3 Oven. A thermostatically controlled oven that maintains a temperature of $120 \pm 1^\circ\text{C}$.

4.5.8.2 Procedure. Weigh a 50 ± 1 gram sample of abrasive into the bronze cylinder with the solid cap on the bottom end. Fill the cylinder with water and allow the abrasive to soak for 1 hour. Screw the hole bearing cap onto the top end of the cylinder, invert, remove the solid cap and allow the water to drain through the holes. Place the cylinder in a horizontal position in an oven at 120°C for 3 hours to dry the abrasive. The cylinder shall then be cautiously removed from the oven taking care not to spill any of the abrasive, cooled to room temperature and inclined to an angle of 75 degrees below horizontal so that the abrasive can flow freely by gravity. The abrasive emanating from the cylinder shall be collected and weighed to determine compliance with requirements of 3.4.6.

4.5.9 Crystalline silica. The crystalline silica contents shall be determined by the use of infrared spectroscopy (as specified herein) or by other analytical procedures such as wet chemical or X-ray diffraction analysis if prior approval of Naval Sea Systems Command (NAVSEA) is obtained.

4.5.9.1 Apparatus. Apparatus for determining crystalline silica content shall be as follows:

- (a) Automatic grinder with a mullite mortar and pestle. (Fisher Scientific Company or equal.)
- (b) Vacuum-pressure die shall be 12.5 mm in diameter and shall apply a pressure of 15 tons while evacuated.
- (c) Spectrophotometer shall measure and record absorbance in the infrared region.

4.5.9.2 Materials. Materials for determining crystalline silica content shall be as follows:

- (a) Ethyl alcohol. Ethyl alcohol shall be in accordance with MIL-E-51454.
- (b) Potassium bromide. Infrared grade.

4.5.9.3 Procedure. Grind approximately 5 grams of a representative sample of abrasive with a mortar and pestle until it passes through a 200 mesh screen. Place 20 mg of the ground abrasive into the mullite mortar, add 2.25 mL of ethyl alcohol, and grind with the automatic grinder for 15 minutes. Scrape down the entire grinding area. Weigh 2.5 mg of the dry material and add it to 1.0 gram of potassium bromide. Blend the sample and potassium bromide thoroughly. Prepare sample disks for infrared spectroscopic examination by weighing the appropriate amount of the blended mixture into the die (505 mg will yield a disk 1.4 mm thick). Evacuate the die and maintain vacuum for 5 minutes, then while still evacuated, apply a pressure of 14 tons (70 tons per square inch) for 1 minute. Adjust the sample disk thickness to provide the best balance between detail in stronger and weaker absorption regions. Place the sample disk into the spectrophotometer and record the infrared spectra for wavelengths between 2 and 15 microns. Compare the strength of the absorption band at 12.5 microns with a calibration curve (absorbance at 12.5 microns versus percent crystalline silica) obtained by repeating the above procedure using sample disks containing known quantities of crystalline silica.

4.5.10 Conductivity. Glassware used in this test must be rinsed with deionized water. Test for conductivity shall be in accordance with ASTM D 4940.

4.5.11 Oil content. Oil content shall be tested as follows:

4.5.11.1 Test preparation.

- (a) Clean three platinum dishes and rinse with distilled water.
- (b) Heat dishes in oven at 95°C for 4 hours prior to weighing to remove water. From this point on do not touch dishes with bare hands.
- (c) Remove dishes from oven and place them in a desiccator to cool to room temperature.
- (d) Weigh the three dishes to 0.0001 gram.
- (e) After sitting in the desiccator an additional 15 minutes, reweigh the dishes to 0.0001 gram. If the second weight is not within plus or minus 0.0005 gram of the first weight, repeat steps (a) to (e).

4.5.11.2 Oil extraction. The procedure for oil extraction shall be as follows:

- (a) Weigh out two 500 gram samples of abrasive and add to two 500 mL beakers labeled sample 1 and sample 2.
- (b) Add to sample 1 and sample 2 125 mL of Freon. Stir with a glass rod.
- (c) Filter off the solvent of each sample into 250 mL beakers labeled sample 1 and sample 2.
- (d) Rinse the abrasive a second time repeating steps (b) and (c).
- (e) Add 250 mL of Freon to a third beaker labeled sample 3.

4.5.11.3 Distillation. The procedure for distillation shall be as follows:

- (a) Place the three dishes weighed in 4.5.11.1 on the steam bath.
- (b) Slowly add samples 1, 2, and 3 to the dish, boiling off the Freon.

- (c) After the boiling contents of each beaker, place dish in oven at 95°C for 4 hours to remove water.
- (d) Record results 4.5.11.1 steps (c) and (d).

4.5.11.4 Results. Results shall be determined as follows:

(a) Oil in sample:

$$\text{weight of oil in sample} = \text{weight of dish after boiling} - \text{weight of dish before boiling}$$

(b) Oil in abrasive:

$$\text{weight of oil in abrasive} = \text{weight of oil in sample 1 (or) 2} - \text{weight of oil in sample 3}$$

(c) Average oil in abrasive:

$$\text{Average} = \frac{\begin{array}{l} \text{weight of oil} \\ \text{in abrasive} \\ \text{sample 1} \end{array} + \begin{array}{l} \text{weight of oil} \\ \text{in abrasive} \\ \text{sample 2} \end{array}}{2}$$

(d) Oil content (weight percent):

$$\text{Oil content} = (\text{average oil in abrasive}) / (\text{average sample weight}) \times 100$$

4.5.11.5 Alternate methods. Other analytical procedures, such as solvent extraction and infrared spectroscopic analysis, may be substituted for the procedure specified in 4.5.11.1 if prior approval of the Naval Sea Systems Command is obtained.

4.5.12 Hazardous waste minimization.

4.5.12.1 Soluble and total metal content. Soluble and total metal content shall be determined on the abrasive blasting material in accordance with the California Administrative Code, Title 22, Division 4, Chapter 30, Minimum Standards for Management of Hazardous and Extremely Hazardous Waste, Section 66699, Persistent and Bioaccumulative Toxic Substance.

4.5.12.2 Maximum concentration of contaminants for toxicity. Maximum concentration of contaminants for toxicity shall be determined on the abrasive blasting material in accordance with the Federal Register (FR), Volume 55, paragraph 11798, March 19, 1990 (55 FR 11798), Toxicity Characteristic Leaching Procedure (TCLP).

4.5.13 Radioactivity. Gross Cobalt-60 gamma equivalent shall be determined by summing the net gamma photons of energies from 0.1 Million electron volts (MeV) to 2.1 MeV and determining the activity as if the net gamma photon were produced by Cobalt-60. The specific Cobalt-60 activity shall be based on the photo peak produced by the 1.332 MeV gamma photon. Limits of detectability, for example, minimum detectable activity, and so forth, shall be determined at the 90 percent confidence level.

4.5.14 Hardness. Hardness shall be determined by examining the abrasive material under a low-power microscope (10X), and if grains of different color or characteristics are present, select ten grains of each. Place each grain between two glass microscope slides. While applying pressure, slowly move one slide over the other with a reciprocating motion for 10 seconds. Examine the glass slide surface and, if scratched, the material shall be considered to have a minimum hardness of 6 on Moh's scale. If three or more grains fail to scratch the glass, the lot represented by that sample shall be rejected.

4.5.15 Shape. Shape shall be determined by examining the abrasive material under a low-power microscope (10X). A minimum of eighty percent of grains shall be angular in shape demonstrating the ability to cut the surface rather than peen.

4.5.16 Recycled abrasives. The recycled abrasive test shall be performed in accordance with the test for recirculated abrasives in the Steel Structures Painting Council coating and lining inspection manual.

4.6 Toxicity. To determine conformance to requirements of 3.4.12 and 3.4.13, the manufacturer of the material shall disclose the material content of his product to the Navy Environmental Health Center, Code 34, 2510 Walmer Avenue, Norfolk, VA 23513-2617. The disclosure of proprietary information, which will be held in confidence by the Naval Medical Command, shall include: the name, material, and approximate percentage by weight and volume of each ingredient in the product; the results of any toxicological testing of the product; identification of its pyrolysis products; and any such other information as may be needed to permit an accurate appraisal of any toxicity problem associated with the handling, storage, application, use, disposal, or combustion of the material. Information submitted shall be clearly marked or identified to show it is being provided in connection with qualification under MIL-A-22262.

4.7 Inspection of packaging. Sample packages and the inspection of the packaging, packing and marking for shipment, stowage, and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition.)

5.1 General.

5.1.1 Performance oriented packaging (POP). Hazardous materials shall be packaged in accordance with Department of Transportation, 49 CFR Part 107.

5.2 Packing. Packing shall be level A, B or commercial as specified (see 6.2).

5.2.1 Levels A and B. Abrasive blasting media in the quantity specified (see 6.2) shall be furnished in paper shipping sacks conforming to UU-S-48, type I, II or III with style optional as follows and the appendix thereto for levels A and B as follows:

<u>Level</u>	<u>Weight-pounds</u>	<u>Sack number</u>	<u>Moisture barrier required</u>
A	50 - 60	8 - 8X	MB-1
	61 - 80	13 - 13X	MB-1
	81 - 110	15 - 15X	MB-1
B	50 - 60	4 - 4X	----
	61 - 80	6 - 6X	----
	81 - 110	9 - 9X	----

For level A, packed abrasive material shall be overpacked in a UU-S-48 3X sack and end dipping of the sack is not required.

5.2.1.1 Commercial. Abrasive blasting media in the quantity per sack specified (see 6.2) shall be packed in multiwall paper sacks in accordance with ASTM D 3951.

5.3 Palletized unit loads. Sacks of abrasive material shall be palletized in accordance with MIL-STD-147 with not less than 20 sacks per pallet.

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5.4 Bulk shipment. Abrasive blasting media to be shipped in bulk by hopper railroad cars, pneumatic trailers or dump truck shall be provided with covers to prevent loss in transit by wind blow and to protect the abrasive material from rain, water spray and moisture when dry material is specified (see 3.4.3.2 and 6.2).

5.5 Marking. In addition to any special marking required (see 6.2) herein, shipping sacks and palletized unit loads for levels A and B shall be marked in accordance with MIL-STD-129. Commercial shipping sacks, palletized unit loads and bulk shipments shall be marked in accordance with ASTM D 3951. Containers shall be affixed with a hazardous chemical warning label, which conforms to OSHA 29 CFR 1910.1200 (OSHA Hazard Communication Standard).

5.5.1 Special marking. For levels A, B, and commercial each sack and bulk shipment shall include the following marking:

NOTE: This container contains abrasive material that is inorganic or mineral composition that can be used in dry, enclosed blast or unconfined blast cleaning operations where dust limiting air pollution regulations apply.

5.6 Material safety data sheet. A copy of the material safety data sheet (MSDS) shall be attached to the shipping document for each destination (see 3.4.14).

5.7 Toxicity. A copy of the Navy Environmental Health Center (NEHC) findings shall be attached to the shipping document for each destination.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Abrasives covered by this specification are intended primarily for use in the dry, enclosed blast or unconfined blast cleaning of ship's hulls, tanks and components prior to painting. When these products are used in dry unconfined blast cleaning operations, local environmental and health regulations must be followed. These materials also address Navy corrosion control and worker safety and health requirements.

6.1.1 Inorganic. Inorganic materials are not classified as hazardous waste by the Environmental Protection Agency (EPA) toxicity test or by the State of California's Waste Extraction Test and may be disposed of as conventional waste unless they are contaminated as part of the abrasive blasting operation. Recycling techniques or other methods can be used to restore the abrasive material to be used again or disposed of so long as the recycled materials meet the requirements of this document.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- (a) Title, number, and date of the specification.
- (b) Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (c) Particle size distribution specified by contracting activity (see 3.4.1 and 3.4.1.1).
- (d) Total size of shipment.
- (e) If shipment is in bulk, whether dry material is required, whether the unit of measure is net weight or volume (see 3.4.3.2 and 3.4.3.3).
- (f) Type of shipment (bulk or sacks, rail or truck) (see 5.2 and 5.4).
- (g) Level of packing required (see 5.2.1).
- (h) Quantity per sack required (see 5.2.1 and 5.2.1.1).

(i) Special marking required (see 5.5 and 5.5.1).

6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DIDs) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DIDs are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
3.4.12.1 3.4.12.2	DI-NDTI-80809	Test, Inspection Reports	-----
4.4.2 and appendix	DI-MISC-80678	Certification/data report	10.3.2 does not apply

The above DIDs were those cleared as of the date of this specification. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DIDs are cited on the DD Form 1423.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No. 22262 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Sea Systems Command, SEA 05Q22, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160 and information pertaining to qualification of products may be obtained from that activity.

6.5 Evaluation of bids. Some abrasive blast materials have been found to contain concentrations of metals which classify the unused abrasives as hazardous wastes. This means that the used abrasive will have to be disposed of as a hazardous waste even if the blast cleaning operation would not otherwise cause an abrasive to be considered a hazardous waste. Disposal costs for abrasives which are hazardous wastes are typically two to four times the purchase cost of the abrasive. The contracting/acquisition activity should include the disposal cost of the unused abrasive as part of their evaluation of bids. Materials with the lowest total cost per ton (material cost and disposal cost) should be purchased.

6.6 Unit of purchase. Purchase the abrasive material under this specification by weight, the unit being one short ton (2,000 pounds).

6.7 Manufacturer's trade names. The manufacturer's trade name or designation which identifies the finished product is regarded as a permanent and unique identification of the materials tested and cannot be applied to any other material submitted under this specification. Therefore, it is advisable to identify the compound by a code number rather than by the trade name which may be desired for permanent identification of the material. The use of the specification number in the trade name or designation is prohibited.

6.8 Material Safety Data Sheets and Naval Medical Command Reports. Contracting officer will identify those activities requiring copies of completed Material Safety Data Sheets (MSDS) prepared in accordance with FED-STD-313 and Occupational Safety and Safety Health 29 CFR, CH XVII, Section 1910, and Naval

Medical Command Reports. The pertinent Government mailing addresses for submission of data are listed in FED-STD-313. In order to obtain the MSDS, federal acquisition regulation (FAR) clause 52.223-3 must be in the contract.

6.9 Inspection system requirements. The nature of this commodity requires the contractor or abrasive material supplier to have an established inspection system in his facility prior to and during production of commodities procured to this specification. The contracting officer shall state in the body of the contract or purchase order a requirement that the contractor shall have established and continue to maintain an inspection system in accordance with MIL-I-45208 prior to contract award.

6.10 Navy Environmental Health Center (NEHC):

6.10.1 Administrative assessments. Administrative health hazard assessments performed by NEHC are for the purpose of identifying any potential occupational health hazards related to material usage. As such, they should not be regarded as providing an assessment as to the actual/probable environmental impact of product usage, or conformance with environmental pollution control criteria, limits and regulations. These latter areas of responsibility should be referred to the local cognizant facilities engineers for review, and promulgation of additional guidance and recommendations, as deemed appropriate.

6.10.2 Guide lines for use of administrative assessments. To follow NEHC guidance, local cognizant industrial hygienists should be required to review operations, in order to identify specific health hazard control measures, which may be necessary, for operations involving this media to be performed safely. Personnel performing operations involving potential occupational exposure to this media should receive preassignment as well as periodic updating training. This training should address the composition of the material, symptoms/effects of over-exposure, proper work-practices, use of engineering controls and personal protective equipment, as well as first aid and spill clean-up and disposal criteria. The Material Safety Data Sheet and Product Label should serve as a nucleus for this training. Questions pertaining to the environmental regulations should be referred to the local cognizant facilities engineers.

6.11 Supersession data. This specification includes the requirements of MIL-A-22262A(SH) dated 6 February 1987 (see table V).

TABLE V. Supersession data.

MIL-A-22262B(SH)	MIL-A-22262A(SH)
----- -----	Type I -----

6.12 Subject term (key word) listing.

Abrasive
Blast cleaning
Blast media
Inorganic material
Organic material

6.13 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing activity:
Navy - SH
(Project 5350-N032)

APPENDIX

CERTIFICATION/DATA REPORT TECHNICAL CONTENT REQUIREMENTS

10. SCOPE

10.1 Scope. This appendix covers information that shall be included in the certification/data report when specified in the contract or purchase order. This appendix is mandatory only when data item description DI-MISC-80678 is cited on the DD Form 1423.

20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

30. CERTIFICATION CONTENT

30.1 Additional data requirements. In addition to the requirements specified in 4.4, the certification/data report shall include the following information.

- (a) Certification that the abrasive media does not contain the following materials in excess of 0.005 percent by weight of the dry abrasive material: lead, arsenic, beryllium, cadmium, chromium lead, nickel, and thorium. The manufacturer shall also certify that the product unless specific material maximum levels are cited herein does not have known or suspected carcinogens intentionally added to the abrasive mix and when known or suspected carcinogens are/may be present, as a result of being a trace/impurity in another ingredient(s) the concentration of the agent in the final product must not exceed the in excess of 0.005 percent by weight of the abrasive media unless specifically stated lower in this document.
- (b) Material safety data sheet as specified in 3.4.14, 5.6 and 6.8.
- (c) Test report showing that the submitted material conforms to all requirements of this specification as specified in 4.5.
- (d) A copy of the Navy Environmental Health Center findings in 4.6.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of 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.

1. RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-A-22262B(SH)	2. DOCUMENT DATE (YYMMDD) 93/04/05
3. DOCUMENT TITLE ABRASIVE BLASTING MEDIA SHIP HULL BLAST CLEANING		
4. NATURE OF CHANGE <i>(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)</i>		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME <i>(Last, First, Middle Initial)</i>	b. ORGANIZATION	
c. ADDRESS <i>(Include Zip Code)</i>	d. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (2) AUTOVON <i>(If applicable)</i>	7. DATE SUBMITTED (YYMMDD)
	8. PREPARING ACTIVITY	
a. NAME TECHNICAL POINT OF CONTACT TPOC: MR. DALE SOWELL (05M12.4) PLEASE ADDRESS ALL CORRESPONDENCE TO:	b. TELEPHONE <i>(Include Area Code)</i> (1) Commercial (703) 602-0213 (2) AUTOVON 8-332-0213	
c. ADDRESS <i>(Include Zip Code)</i> COMMANDER, SEA 05042 NAVAL SEA SYSTEMS COMMAND 2531 JEFFERSON DAVIS HWY ARLINGTON, VA 22242-5160	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	