

**METRIC**

MIL-PRF-907H

07 April 2020

SUPERSEDING

MIL-PRF-907G

w/INT. AMENDMENT 1

18 January 2019

MIL-PRF-907G

31 May 2018

**PERFORMANCE SPECIFICATION****ANTISEIZE THREAD COMPOUND, HIGH TEMPERATURE**

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

**1. SCOPE**

1.1 Scope. This specification covers three types of antiseize compound for use on threads of steel nuts, studs, bolts, and other mating surfaces, including those of superheated steam installations, at high temperatures up to 566 °C (1050 °F).

1.2 Classification. The types of antiseize compound covered under this specification are as follows:

- a. Type I (Copper/Graphite Formulation)
- b. Type II (Graphite/Aluminum Formulation)
- c. Type III (Marine Grade Water-Resistant Formulation)

**2. APPLICABLE DOCUMENTS**

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

**FEDERAL STANDARDS**

FED-STD-791 - Testing Method of Lubricants, Liquid Fuels, and Related Products

Comments, suggestions, or questions on this document should be addressed to Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard DC 20376-5160 or emailed to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil), with the subject line "Document Comment". Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

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### DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-680 - Degreasing Solvent

MIL-DTL-1222 - Studs, Bolts, Screws and Nuts for Applications Where a High Degree of Reliability is Required; General Specification for

### DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-1916 - DoD Preferred Methods for Acceptance of Product

(Copies of these documents are available online at <https://quicksearch.dla.mil>.)

2.2.2 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 of these documents are those cited in the solicitation or contract.

### NAVAL SEA SYSTEMS COMMAND (NAVSEA) PUBLICATIONS

S9510-AB-ATM-010 - Nuclear Powered Submarine Atmosphere Control Manual

(Copies of the chapter titled "Material Control Program" are available by email request to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil).)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

### AEROSPACE INDUSTRIES ASSOCIATION (AIA)

NAS411-1 - Hazardous Materials Target List, Standard Practice

(Copies of this document are available online at [www.aia-aerospace.org](http://www.aia-aerospace.org).)

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## ASTM INTERNATIONAL

- ASTM A109/A109M - Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
- ASTM A193/A193M - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
- ASTM A194/A194M - Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
- ASTM A515/A515M - Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service
- ASTM D92 - Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
- ASTM D217 - Standard Test Methods for Cone Penetration of Lubricating Grease
- ASTM D566 - Standard Test Method for Dropping Point of Lubricating Grease
- ASTM D4049 - Standard Test Method for Determining the Resistance of Lubricating Grease to Water Spray
- ASTM D6184 - Standard Test Method for Oil Separation from Lubricating Grease (Conical Sieve Method)

(Copies of these documents are available online at [www.astm.org](http://www.astm.org).)

## INTERNATIONAL STANDARDS ORGANIZATION

- ISO 16047 - Fasteners-Torque/Clamp Force Testing

(Copies of this document are available online at [www.iso.org](http://www.iso.org).)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 Qualification. The compound furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list (QPL) before contract award (see 4.2 and 6.3).

3.2 Material. The compound supplied under this specification shall be a smooth homogeneous mixture, uniform in appearance, free from lumps, abrasive materials, or other undesirable fillers or impurities.

3.2.1 Type I (copper/graphite formulation) material requirements. Compounds supplied as type I products shall consist of a copper/graphite solid lubricating agent dispersed in a water-resistant grease and any additives needed to meet specification requirements.

3.2.2 Type II (graphite/aluminum formulation) material requirements. Compounds supplied as type II products shall consist of a graphite/aluminum solid lubricating agent dispersed in a water-resistant grease and any additives needed to meet specification requirements.

3.2.3 Type III (marine grade water-resistant formulation) material requirements. Compounds supplied as type III products shall consist of a metallic or non-metallic (for example, graphite, calcium fluoride, or calcium sulfonate) solid lubricating agent(s) dispersed in a water-resistant grease and any additives needed to meet specification requirements.

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3.2.4 Prohibited materials. The product shall not contain any 2,6 di-tert-butylphenol, chlorinated compounds, hydrolyzable chlorine derivatives, or molybdenum disulfide. All derivatives, salts, or powders of barium, strontium, lead, and chromium, including chromates or dichromates, are also prohibited.

3.2.5 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.2.6 Hazardous materials. In addition to the materials prohibited in section 3.2.4, [table I](#) lists the National Aerospace Standard (NAS) 411-1 prohibited and restricted hazardous materials. Use of restricted materials should be minimized or eliminated unless needed to meet the requirements specified herein. Items listed as prohibited in section 3.2.4 shall not be used in any products regardless of the classification of those items in [table I](#).

TABLE I. NAS411-1 prohibited and restricted materials.

Asbestos (Friable) (Prohibited)
Hexavalent Chromium Compounds (Prohibited)
Mercury and Mercury Compounds (Prohibited)
Ozone Depleting Substances Class I & II (Prohibited)
Persistent Organic Pollutants (Prohibited)
Polychlorinated Biphenyls (Prohibited)
Antimony and Antimony Compounds (Restricted)
Arsenic and Arsenic Compounds (Restricted)
Beryllium and Beryllium Compounds (Restricted)
Cadmium and Cadmium Compounds (Restricted)
Cobalt and Cobalt Compounds (Restricted)
Copper Compounds (Restricted)
Cyanide Compounds (Restricted)
Isocyanate Compounds (Restricted)
Lead and Lead Compounds (Restricted)
Lithium Compounds (Restricted)
Nickel Compounds (Restricted)
Phthalate Esters (Restricted)
Selenium and Selenium Compounds (Restricted)
Silver Compounds (Restricted)
Tin Compounds (Restricted)
Zinc Compounds (Restricted)

3.3 Worked penetration. When evaluated in accordance with the requirements of [table II](#), the product shall have a worked penetration range of 265–340 at 25±0.5 °C (77±1.0 °F).

3.4 Flash point. When evaluated in accordance with the requirements of [table II](#), the product shall have a minimum flash point of 90 °C (194 °F).

3.5 Dropping point. When evaluated in accordance with the requirements of [table II](#), the dropping point shall be recorded for information only.

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3.6 Corrosion on copper. When evaluated in accordance with the requirements of [table II](#), the compound shall show no green color, no pitting or etching on the copper, nor shall a dark brown or black stain remain on the copper strip after washing with N-hexane, after 24 hours of exposure. A slight brown stain shall not be cause for rejection.

3.7 Homogeneity. The compound shall be completely homogeneous at the time of inspection or during storage awaiting completion of the qualification tests. It shall possess a smooth greasy consistency without lumps, crusts, or granular/crystalline particles when examined.

3.8 Oil separation. When evaluated in accordance with the requirements of [table II](#), the vehicle of the compound shall separate not more than 10 percent of the compound's weight in 30 hours when tested at  $66\pm 3$  °C ( $150\pm 5$  °F).

3.9 Storage stability. When evaluated in accordance with the requirements of [table II](#), after the compound has been stored for 6 months at a temperature of  $66\pm 3$  °C ( $150\pm 5$  °F), it shall be examined. The compound shall be a smooth homogeneous mixture free from lumps and granular/crystalline particles.

3.10 Torque coefficient. When tested in accordance with the requirements of [table II](#), the product shall demonstrate a torque coefficient (K) of 0.18 maximum when tested on metric M10X1.5 (3/8 X 16) steel grade 8.8 bolts with steel nuts of grade 2H, grade 4, or grade 7.

3.11 Water washout resistance (type III only). When tested in accordance with the requirements of [table II](#), the product shall have not more than 40 percent material washout when sprayed under the specified test conditions.

3.12 Performance. When evaluated in accordance with the requirements of [table II](#), there shall be no galling of the stud threads, nut threads, nut contacting surface, and the corresponding plate contacting surface when the test apparatus is disassembled following the performance test. The average breakaway torque for loosening of the nuts from the studs shall be as specified in 4.4.9.1.4.

3.13 Toxicity. When evaluated in accordance with 4.4.10, the compound shall pose no serious or high risk to the health of personnel or the environment when used for its intended purpose (see 4.4.10 and 6.5).

3.14 Off-gassing. The compound shall be evaluated for off-gassing in accordance with the requirements of 4.4.11. Based on the circumstances of use and the chemical nature of the compound, the Navy will determine whether off-gas testing is required or if an administrative assessment is acceptable. In order to be considered acceptable for use in submarines, the compound shall be assigned to either the "Permitted" or "Limited" category (see 4.4.11 and 6.6).

3.15 Odor. When evaluated in accordance with the requirements of [table II](#), the compound shall have no odor of rancidity or perfume.

#### 4. VERIFICATION

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

- a. Qualification inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 Qualification inspection. Qualification inspection shall include all testing as required by [table II](#).

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TABLE II. Chemical and physical requirements and test methods for types I, II, and III antiseize compounds.

Test Requirement	Requirement Paragraph	Verification Paragraph	Applicable FED-STD-791 Test Method	Non-Government Method	Qualification	Conformance
Examination	3.2, 3.7	4.5, 4.6	-----	-----	X	X
Penetration, worked	3.3	4.4.1	-----	ASTM D217	X	X
Flash point, min.	3.4	4.4.2	-----	ASTM D92	X	
Dropping point	3.5	4.4.3	-----	ASTM D566	X	X
Corrosion on copper	3.6	4.4.4	5309	-----	X	
Oil separation at 65 °C (150 °F)	3.8	4.4.5	-----	ASTM D6184	X	
Storage stability	3.9	4.4.6	3467	-----	X	
Torque coefficient K (M10X1.5 [3/8 X 16] steel nuts & bolts), min.	3.10	4.4.7	-----	ISO 16047	X	
Water washout resistance (type III only), volume %	3.11	4.4.8	-----	ASTM D4049	X	
Performance	3.12	4.4.9	-----	-----	X	
Toxicity	3.13	4.4.10	-----	-----	X	
Off-gassing	3.14	4.4.11	-----	-----	X	
Odor	3.15	4.6	-----	-----	X	X

4.2.1 Sample material for qualification testing. A 2.27-kilogram (5-pound) container shall be selected, sealed, and marked.

4.3 Conformance inspection. Conformance inspection shall include all testing as required by [table II](#).

4.3.1 Lot. For the purposes of sampling, a lot shall consist of all compounds manufactured as one batch.

4.3.2 Sampling for conformance testing. Unless otherwise specified (see 6.2), each lot produced on a contract or order and thereafter at such intervals as may be considered necessary by the command or agency concerned to verify the consistency of production quality, one 0.91-kilogram (2-pound) sample and two 0.45-kilogram (1-pound) samples of compound shall be retained by the manufacturer or contractor for conformance testing and forwarded to a laboratory acceptable to the command or agency concerned. These samples shall meet the requirements of [table II](#) and any other specification tests deemed necessary by the command or agency concerned to determine conformance of the product.

4.4 Tests. The following tests shall be performed in accordance with [table II](#).

4.4.1 Worked penetration. Worked penetration shall be determined in accordance with ASTM D217.

4.4.2 Flash point. Flash point shall be determined in accordance with ASTM D92.

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4.4.3 Dropping point. Dropping point shall be determined in accordance with ASTM D566.

4.4.4 Corrosion on copper. Corrosion on copper shall be determined in accordance with Method 5309 of FED-STD-791.

4.4.5 Oil separation. Oil separation shall be determined in accordance with ASTM D6184.

4.4.6 Storage stability. Storage stability shall be determined in accordance with Method 3467 of FED-STD-791 with the modifications specified herein. Two 0.45-kilogram (1-pound) cans shall be stored covered in an oven at a temperature of  $66 \pm 3$  °C ( $150 \pm 5$  °F) for 6 months. The sample shall then be examined for the presence of granular/crystalline particles and lumps using the visual test delineated in 4.4.9.1.4. Evidence of granular/crystalline particles or lumps is not acceptable and indicates unsatisfactory performance of the test.

4.4.7 Torque coefficient. The torque coefficient shall be determined in accordance with ISO 16047.

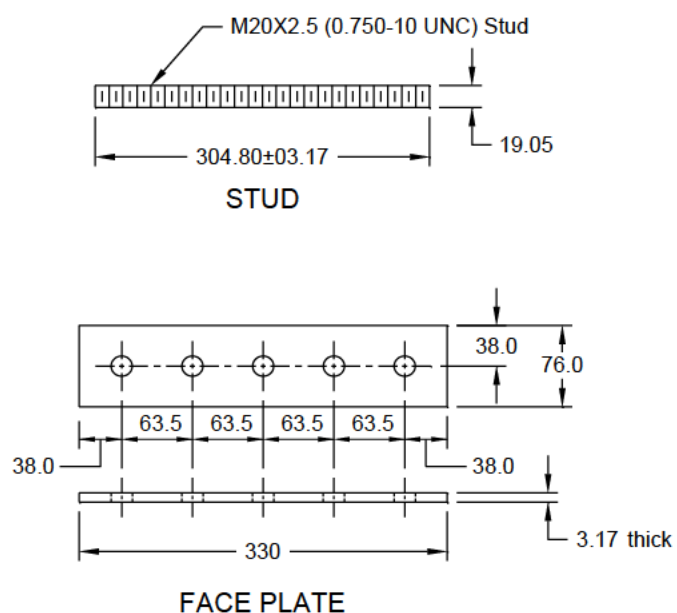
4.4.8 Water washout resistance (type III only). Water washout resistance shall be determined in accordance with ASTM D4049.

4.4.9 Performance tests.

4.4.9.1 Torque, galling, and seizing test.

4.4.9.1.1 Apparatus. The test apparatus shall consist of a fixture made of carbon steel, using material in accordance with ASTM A515/A515M, grade 70, 330 by 76 millimeters (13 by 3 inches) by approximately 38.1 millimeters (1.5 inches) thick for the end blocks that have five equally spaced holes, 20.6 millimeters ( $\frac{13}{16}$  inch) in diameter, with surface finish of 250 roughness height rating (RHR), to allow for insertion of (M20X2.5) ( $\frac{3}{4}$  inch-10 UNC) studs (see [figure 1](#)). The top and bottom faces of the steel end blocks shall have a surface finish of 250 RHR and be parallel within  $\pm 0.50$  millimeter ( $\pm 0.002$  inch). Five unused coarse thread studs, in accordance with grade B16 of MIL-DTL-1222, ASTM A193/A193M, or equal, cut from the same length of a continuously threaded stud stock and ten unused nuts, in accordance with grade 4 of MIL-DTL-1222, ASTM A194/A194M, or equal, shall be used for this test. Each stud shall be  $304.80 \pm 0.17$  millimeters ( $12.000 \pm 0.125$  inches) long and shall have end surfaces that are perpendicular to the axis of the stud to a degree that shall allow stud length measurements of the required accuracy. Two carbon steel face plates in accordance with ASTM A109/A109M, 330 by 76 millimeters (13 by 3 inches) and 3.17 millimeters (0.125 inch) thick with a surface finish of 62 RHR or smoother and five equally spaced holes to match those of the above described end blocks, shall be furnished for this test. Components for this test shall be as shown on [figure 1](#). A torque wrench shall be used that is easily readable, graduated in newton meters (Nm), and has a degree of accuracy of  $\pm 5$  percent. The overall length of each stud shall be measured with a dial indicator type device, or equal, graduated in 0.003-millimeter (0.0001-inch) divisions, having an overall accuracy of  $\pm 0.003$  millimeter ( $\pm 0.0001$  inch).

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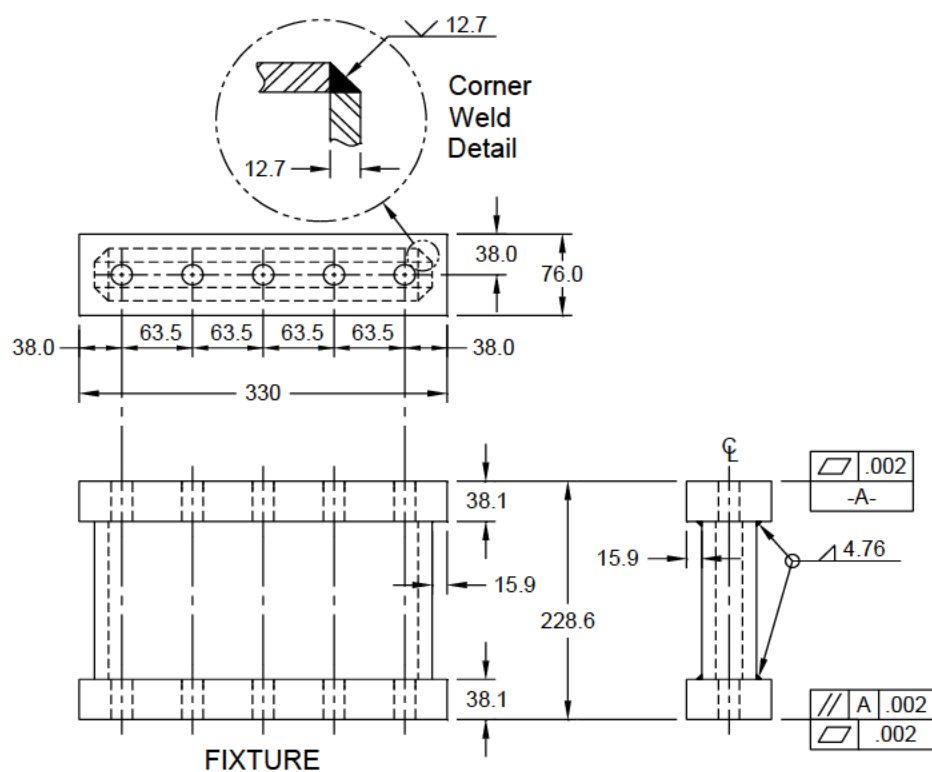
**NOTES:**

All dimensions are in millimeters.

Tolerances are ±0.50 except as otherwise specified.

The welded fixture shall be stress relieved before finish machining.

See 4.4.10.1.1 for materials, number of parts required, and other instructions.

FIGURE 1. Test fixture.



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4.4.9.1.2 Preparation. Degreasing solvent shall be in accordance with type I of MIL-PRF-680. Each component shall be cleaned in the degreasing solvent and dried just prior to lubrication. The test equipment shall be assembled using the two plates as specified in 4.4.9.1.1. The threads of the studs and nuts shall be evenly coated with the antiseize compound as follows:

- a. A liberal quantity of compound shall be applied to the studs and nuts.
- b. The nuts shall then be run to the ends of the studs (prior to assembly with the block).
- c. The excess compound shall be removed from the ends of nut travel on the studs and from the edges of the nuts after removal from the studs.

The block and plate shall be assembled with a stud in each of the five holes. The surface of the plates and the mating surfaces of the nuts shall be coated with a light coating of the antiseize compound. The nuts shall be run on to the studs, hand tight, against the plates. The overall length of each stud shall be measured to  $\pm 0.003$  millimeter ( $\pm 0.0001$  inch) and recorded.

4.4.9.1.3 Procedure. The nuts shall be tightened until an elongation of  $0.41 \pm 0.003$  millimeter ( $0.0162 \pm 0.0001$  inch) is obtained, which corresponds to a stress of approximately 3,515 kilograms per square centimeter (kg/sq cm) (50,000 pounds per square inch [psi]) at the root area of the stud thread. The torque required for each nut and stud tightening shall be recorded. The test block assembly shall be placed in an electrically heated oven and subjected to  $566 \pm 5.6/-0$  °C ( $1050 \pm 10/-0$  °F) for 6 hours. The assembly shall then be removed from the oven and allowed to cool to room temperature. The breakaway torque to loosen the nuts shall be measured and recorded. The length of the studs shall be measured. The nuts shall be tightened to re-establish the elongation of the stud length (that is,  $0.41 \pm 0.003$  millimeter [ $0.0162 \pm 0.0001$  inch]) and the torque required recorded. The heating, cooling, torque measurements, and stud length measurements shall be repeated. Then for the third time, the assembly shall be heated, cooled, and subjected to a spray of 20 percent aqueous solution of sodium chloride for 7 days. At the end of this period, the assembly shall be removed and allowed to dry at room temperature for 24 hours. The torque required to loosen the nuts shall be determined and recorded. The condition of the threads and other contact surfaces, seizing of the nuts, and shearing of the studs shall be noted and properly recorded. A five-point check of the torque wrench calibration at 68 Nm (50 ft-lb), 136 Nm (100 ft-lb), 203 Nm (150 ft-lb), 271 Nm (200 ft-lb), and 339 Nm (250 ft-lb) shall be made at the beginning of the test sequence and upon its completion. A one-point check of the torque wrench calibration against another calibrated wrench at 203.3 Nm (150 ft-lb) shall be made prior to torquing and untorquing each assembly. If the torque wrench is dropped or otherwise damaged during its use, its calibration shall be completely rechecked (five points) before further usage. The torque wrench calibration shall be considered acceptable if the torque reading is within 5 percent of the actual torque.

4.4.9.1.4 Acceptance criteria.

- a. No nuts shall seize during this test.
- b. There shall be no galling evident on the threads of the nuts or studs, the nut surfaces, and the plate surfaces (under the nut faces). Only one nut per stud needs to be removed to inspect for galling on threads. Mating surfaces of each nut and plate shall be inspected after disassembly. No galling is defined as no raised metal on any contacting surfaces as can be observed with 20/20 vision at 1X magnification within the distance range of 0.15 to 0.61 meter.
- c. The average breakaway torque for the loosening of the nuts from the five studs shall not exceed 339 Nm (250 ft-lb).

4.4.10 Toxicity. A Health Hazard Assessment (HHA) will be conducted to ensure conformance to 3.13 as required by the qualifying activity. The Navy and Marine Corps Public Health Center (NMCPHC) will evaluate the compound using data provided by the manufacturer/distributor to the NMCPHC (see 3.13 and 6.5).

4.4.11 Off-gassing. The compound shall be evaluated for off-gassing in accordance with S9510-AB-ATM-010 chapter titled "Material Control Program" (see 3.14 and 6.6). If the Navy determines that off-gas testing is required, testing shall be conducted at a NAVSEA-approved test facility (see 3.14). The Navy will review the off-gas test results and assign a usage category. Additionally, the Navy will assign a usage category if an administrative review is conducted in lieu of off-gas testing (see 3.14).

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4.5 Examination of filled containers. A sample of filled containers selected from each lot in accordance with MIL-STD-1916 as specified (see 6.2) shall be examined to verify compliance with all stipulations of this specification regarding fill, closure, marking, and other requirements not involving tests. Containers shall be examined for defects of the container and the closure, for evidence of leakage, and for unacceptable markings. Each sample-filled container shall also be weighed to determine the amount of the contents. Any container in the sample having one or more defects or containing less product than stated on the container (under required fill) shall be cause for rejection of the container. If the number of defective containers in any sample exceeds the acceptable number for the appropriate sampling plan specified (see 6.2), this shall be cause for rejection of the lot represented by the sample.

4.6 Examination of compound material. Portions of the compound material shall be taken from the top, bottom, and intermediate parts of the sample of containers and examined visually to determine that there is no apparent difference in appearance or consistency. The material shall be homogeneous and show a smooth greasy consistency without lumps, crusts, or granular/crystalline particles. It shall not have an odor of rancidity or perfume.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

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

6.1 Intended use. The antiseize compound covered by this specification is intended for use on carbon steel materials. Specifically, it is to be used on threads of nuts, studs, bolts, and other mating surfaces at temperatures up to 566 °C (1050 °F). Type III (marine grade water-resistant formulation) antiseize compound is intended for use in applications where superior water washout resistance is required. The off-gas testing for submarine applications and restrictions on hazardous materials covered by this specification causes the compound to be military unique. Existing stock of antiseize compound manufactured to MIL-PRF-907F dated 17 November 2004 is not acceptable for use unless it meets the requirements of MIL-PRF-907G. If existing stock of antiseize compound meets the requirements of MIL-PRF-907G, it is acceptable for use until depleted.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Conformance inspection sample size, if other than specified (see 4.3.2).
- c. Sampling plan for the examination of filled containers and acceptable number of defective containers (see 4.5).
- d. Packaging requirements (see 5.1).
- e. Safety Data Sheet (SDS), when required (see 6.4).
- f. Shelf-life requirements, when required (see 6.7).

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6.3 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. 907 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 orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard, DC 20376-5160 or emailed to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil). An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.dla.mil>.

6.4 Safety data sheets (SDS). When required (see 6.2), contracting officers will identify those activities requiring copies of completed SDSs prepared in accordance with FED-STD-313. In order to obtain the SDS, FAR clause 52.223-3 must be in the contract.

6.5 Toxicity evaluation. The NMCPHC requires sufficient information to permit an HHA of the product. Upon completion of the HHA, a copy will be provided by the NMCPHC to the Government for evaluation. The HHA process is described on the NMCPHC's website, <http://www.med.navy.mil/sites/nmcpHC/industrial-hygiene/Pages/health-hazard-assessment.aspx>.

6.6 Material certification. Materials to be installed in submarines are to be controlled to prevent off-gassing, which contaminates the submarine's atmosphere and can result in health hazards to personnel or deleterious effects on machinery. These controls are administered through the Submarine Material Control Program, which is described in the Nuclear Powered Submarine Atmosphere Control Manual, S9510-AB-ATM-010 chapter titled "Material Control Program". Under the Submarine Material Control Program, all materials considered for use on submarines require certification and assignment of a usage category. Under the certification process, candidate materials are selected by Navy activities or contractors, and a request for certification is submitted to Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard, DC 20376-5160 or emailed to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil). The certification request is accompanied by detailed information, including descriptions of the material, method of application, usage, and storage. A chemical analysis is conducted, which can be accomplished through off-gas testing. If off-gas testing is required, it must be conducted in a Government-approved laboratory. Information pertaining to this test requirement may be obtained from Commander, Naval Sea Systems Command, ATTN: SEA 05S, 1333 Isaac Hull Avenue, SE, Stop 5160, Washington Navy Yard, DC 20376-5160 or emailed to [CommandStandards@navy.mil](mailto:CommandStandards@navy.mil). Based on the chemical analysis results, a usage category is assigned to the material defining whether, and to what extent, the material may be used on submarines.

6.7 Shelf-life. This specification covers items where the assignment of a Federal shelf-life code is a consideration. Specific shelf-life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf-life code, shelf-life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a materiel quality storage standard for type II (extendible) shelf-life items, and a minimum of 85 percent shelf-life remaining at time of receipt by the Government. These and other requirements, if necessary, are in DoDM 4140.27, DoD Shelf-Life Management Program. The shelf-life codes are in the Federal Logistics Information System Total Item Record. Additive information for shelf-life management may be obtained from DoDM 4140.27, or the designated shelf-life Points of Contact (POC). The POC should be contacted in the following order: (1) the Inventory Control Points that manage the item and (2) the DoD Service and Agency administrators for the DoD Shelf-Life Program. Appropriate POCs for the DoD Shelf-Life Program can be contacted through the DoD Shelf-Life Management website: <https://www.shelflife.dla.mil>.

#### 6.8 Subject term (key word) listing.

Thread lubricant

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

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CONCLUDING MATERIAL

Custodians:

Army – MR  
Navy – SH

Preparing activity:

Navy – SH  
(Project 8030-2020-001)

Review activities:

Army – AR, AT, EA, GL, MI  
Navy – AS, MC, OS, YD

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.