

INCH-POUND

A-A-50634
28 February 1995

COMMERCIAL ITEM DESCRIPTION

LUBRICATING OIL, ESTER-BASED, FOR COMPRESSORS
USING HFC-134a REFRIGERANT

The General Services Administration has authorized
the use of this commercial item description.

Abstract. This commercial item description (CID) covers polyolester-based
lubricating oils for Navy compressors using HFC-134a refrigerant.

Salient Characteristics.

1. Composition. The lubricating oil shall be a stable homogeneous
blend of polyolester base stock and additives as necessary to meet the
required characteristics.
2. Viscosity. The oil shall have a viscosity of 61.2-74.8 cSt at 40°C
and greater than or equal to 6.0 cSt at 100°C when tested in accordance with
ASTM D 445.
3. Pour Point. The pour point of the oil shall be less than or equal
to -30°C when tested in accordance with ASTM D 97.
4. Flash Point. The flash point of the oil shall be greater than or
equal to 180°C when tested in accordance with ASTM D 92.
5. Miscibility. The oil and HFC-134a shall have a critical solution
temperature of less than or equal to -35°C.

Beneficial comments (recommendations, additions, deletions) and any pertinent
data which may be of use in improving this document should be addressed to :
Commander, Naval Sea Systems Command, SEA 03R42, 2531 Jefferson Davis Hwy,
Arlington, VA, Document improvement Proposal (DD Form 1426) appearing at the
end of this document or by letter.

AMSC N/A

FSC 9150

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

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6. Stability, sealed tube. After testing in accordance with ASHRAE 97 for 14 days at 175°C in a sealed tube containing 1000 ppm distilled water, aluminum, steel, copper, and babbitt (Navy grade 2) coupons, 50% mixtures of oil plus liquid HFC-134a and oil plus liquid CFC-12 shall exhibit the following:

- (a) a colorless or light yellow, single phase oil/refrigerant mixture;
- (b) clean and bright (or only partially dull) metal coupons with no deposits; Partially dull means that although the coupon is no longer completely bright and shiny, the coupon is not 100% dulled and it shows no indication of major darkening, pitting or rust.
- (c) less than or equal to 0.01% HFC-134a decomposition; and
- (d) HCFC-22 from decomposition of CFC-12 shall be less than 2.5% or fluoride and chloride shall be less than 100 ppm each.

7. Stability, oxidative and hydrolytic. The acid number of the oil shall not exceed 10 mg KOH/g when tested for 250 hours in accordance with ASTM D943.

8. Stability, storage. The oil shall meet all salient characteristics after one year storage in its container at $75 \pm 40^\circ\text{F}$. Those oils not meeting all salient characteristics after 1 year storage shall have their approval withdrawn. Those meeting all salient characteristics after one year shall have extendible shelf lives (Type II).

9. Water content. The water content of the oil shall not exceed 100 ppm when tested in accordance with ASTM D 1744.

10. Extreme Pressure Properties. The oil, with HFC-134a bubbling through it for 10 minutes prior to and during the test, shall have an average failure load greater than 66% of the Navy reference oil (reported value of 1320 lbf) when tested on the same test machine in accordance with ASTM D 3233, method A (Falex Pin and Vee Block Method). Information on obtaining the Navy reference oil can be obtained from: COMMANDER, CODE 03V24, NAVAL SEA SYSTEMS COMMAND, 2531 JEFFERSON DAVIS HIGHWAY, ARLINGTON, VA 22242-5160, phone 703-602-9028.

11. Wear, Steel-on-Steel. The weight loss of pin and vee specimens shall be less than 150% of the Navy reference oil (reported loss of 2.0 mg) when oil, with HFC-134a bubbling through it for 10 minutes prior to and during the test, is tested on the same test machine in accordance with ASTM D 2670.

12. Acid Number. The acid number of the oil shall be less than 0.50 mg KOH/g when tested in accordance with ASTM D 664 (titrated to pH 11 endpoint).

13. Compatibility. The oil when mixed with the Navy reference oil meeting this CID shall meet all the salient characteristics.

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Quality assurance provisions.

Market acceptability. Oils procured to this CID shall have demonstrated commercial market acceptability. Suppliers will demonstrate market acceptability by showing that they have sold more than 50,000 gallons of their polyolester product to commercial markets for use in air conditioning and refrigeration equipment and have been selling the product for greater than 2 years.

Contractor certification. The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this Commercial Item Description and that the product conforms to the producer's own specifications, standards, and quality assurance practices and is the same as the product provided as a first article sample. The government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

First article inspection. When a first article inspection is required, the item should be a first article sample consisting of a 5-gallon sample packaged in accordance with the ordering data. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of the first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

First article inspection tests. When a first article inspection is required, the sample shall meet all the salient characteristics. Failure to meet any of the salient characteristics shall be cause for rejection of the test lot. Samples meeting all salient characteristics but not having completed the one year storage stability test will be considered passing the first article inspection. However, subsequent failure to pass the one year storage stability test shall be cause for withdrawal of product approval. Unless otherwise specified in the contract, the contractor is responsible for the performance of all tests 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 tests specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the tests set forth in this description where such tests are deemed necessary to assure supplies conform to prescribed requirements.

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Preservation, packaging, packing and marking.

The lubricating oil shall be packaged and packed for the level specified in accordance with MIL-STD-290. The oil shall be supplied in resealable metal containers of 1 quart or 1 gallon volume. Containers shall be marked with the following information:

Lubricating Oil, Ester-Based, for Compressors using HFC-134a Refrigerant (ISO VG 68). Manufacturer's name. Batch number. CID reference number.

A Material Safety Data Sheet (MSDS) for the lubricant shall be provided with each container.

Notes

Ordering data. Purchasers should specify the following:

- (a) Title, number, and date of this commercial item description
- (b) When first article inspection is required.

Market accepted oils. This list has been prepared for use by the Government in the acquisition of products covered by this CID and is not intended to and does not connote endorsement of the product by the Department of Defense. All products listed here have met the above market acceptability criteria. This list is subject to change without notice; revision or amendment of this list will be issued as necessary. The listing of a product does not release the contractor from compliance with the CID requirements.

Castrol Icematic SW 68: available from Castrol Inc., Specialty Products Division, 16715 Von Karman Ave., Suite 230, Irvine, CA 92714, ph 714-660-9414

Mobil Arctic EAL 68: available from Mobil Oil Corporation, 3225 Gallows Rd., Fairfax, VA 22037-0001, ph 800-662-4525

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Test Methods and Standards. ASTM methods are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103. ASHRAE Standard 97 is available from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 1791 Tullie Circle, NE, Atlanta, GA 30329. Federal standards are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

CIVIL AGENCY COORDINATING ACTIVITIES

GSA-FSS

REVIEW ACTIVITY:
DLA-GS

PREPARING ACTIVITY:
NAVY-SH
PROJECT (9150-N822)

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 A-A-50623	2. DOCUMENT DATE (YYMMDD) 28 February 1995
3. DOCUMENT TITLE LUBRICATING OIL, ESTER BASED, FOR COMPRESSORS USING HFC-134a REFRIGERANT			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
c. ADDRESS (include Zip Code)		d. TELEPHONE (include Area Code) (1) Commercial (2) AUTOVON (if applicable)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY			
a. NAME THE TECHNICAL POINT OF CONTACT IS: MR. GREG BRUNNER, SEA 03V24		b. TELEPHONE (include Area Code) (1) Commercial 703 602-9028	(2) AUTOVON 332-9028
c. ADDRESS (include Zip Code) Commander SEA 03R42 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	