



INDUSTRIAL LUBRICANT STANDARD

MS1011™

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Lubricants, Industrial Oils, and Related Products - Type X (Greases) - Specification

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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FOREWORD

The Society of Automotive Engineers (SAE) Industrial Lubricants Committee has developed a number of industrial, non-production, lubricant performance specifications.

The purpose of these voluntary SAE documents is to:

- a. Define minimum performance requirements for industrial lubricants, where tests are available.
- b. Provide lubricant suppliers with performance targets for key industrial lubricants.
- c. Promote the availability of these lubricants to member companies and others that may wish to use these specifications.
- d. Provide a user friendly classification system using common test standards and properties.

ISO Standard 6743 - Lubricants, industrial oils and related products (class L) - Classification is the foundation for these documents.

- a. Performance properties, requirements, and test procedures are specified.
- b. For information, equivalent ISO, DIN, CEN, BSI, ASTM, AFNOR, CETOP, VDMA, and EI/IP test methods are referenced.¹

See References, Section 2

¹International Standards Organization (ISO)Deutsches Institut für Normung e. V. (DIN)European Committee for Standardization (CEN)American Society for Testing and Materials (ASTM)Association Française de Normalisation (AFNOR) The Energy Institute (EI), formerly The Institute of Petroleum (IP) Note: Now combined with BSI British Standards Institution (BSI), BS 2000: XXX where XXX is the corresponding IP number
European Committee on Oil Hydraulic Pneumatic Committee (CETOP)German Association of Machine and Plant Construction (VDMA)

Industrial lubricant classifications targeted:

- a. Lubricants, Industrial Oils and Related Products - Classification (SAE MS1000)
- b. General purpose and total loss lubricants (SAE MS1001)
- c. Gear oils (SAE MS1002)
- d. Compressor oils (MS1003)
- e. Hydraulic fluids (SAE MS1004)
- f. Fire resistant hydraulic fluids (SAE MS1005)
- g. Lubricants for spindle bearings and associated clutches (SAE MS1006)
- h. Slideway Lubricants – Specification (SAE MS1007)
- i. Metal removal fluids (SAE MS1008)
- j. Pneumatic Tool Oils (SAE MS1009)
- k. Turbine Oils (SAE MS1010)
- l. Lubricating greases (SAE MS1011)

NOTE: Environmental and/or health and safety regulations will present additional specifications to these standards. Contact individual end users regarding requirements in these areas.

NOTE: There can be issues related to the quality of industrial lubricants that fall outside of the scope of this specification.

1. SCOPE

The greases have been classified according to the operating conditions under which they are used, because the versatile nature of greases makes it impractical to classify them according to end use. It will therefore be necessary to consult the supplier to be certain that the grease can be used in; for example, rolling bearings or pumped supply systems, and also concerning the compatibility of products (see Remarks in Table 1).

NOTE: In this classification, a grease cannot have more than one symbol. This symbol should correspond to the most severe conditions of temperature, water contamination and load in which the grease can be used.

TABLE 1 - RECOMMENDATIONS FOR THE CHOICE OF LUBRICANTS
FOR MACHINE TOOLS (FROM ISO TR3498)

Symbol	General application	Particular application	Product type and/or performance requirements	Category symbol	Examples of applications	Remarks
X	Applications requiring grease	Multi-purpose grease	Greases with improved anti-oxidation and anti-corrosion properties	XBCEA 00 XBCEA 0 XBCEA 1 ² XBCEA 2 ⁽¹⁾ XBCEA 3 ⁽¹⁾	Plain rolling bearings, open gears and general greasing of miscellaneous parts	Grease XBCEA 1 is used in centralized systems, while greases XBCEA 2 and XBCEA 3 are dispensed preferably by cup or hand gun. The equipment manufacturer should identify the grease used for the initial filling of each item to ensure that the grease subsequently introduced is compatible with it.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 Referenced AFNOR, BS, CEN, DIN, IP, and VDMA Standard hardcopies are available from the SAI Global Website (<http://www.saiglobal.com>) SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE MS1000	Lubricants, Industrial Oils and Related Products - Classification
SAE MS1002	Lubricants, Industrial Oils, and Related Products Type C (Gears) Specification
SAE MS1003	Lubricants, Industrial Oils and Related Products Type D (Compressor Oils) Specification
SAE MS1004	Lubricants, Industrial Oils and Related Products Type H (Hydraulic Fluids) - Specification
SAE MS1005	Lubricants, Industrial Oils and Related Products Type HF Fire-Resistant Hydraulic Fluids - Specification
SAE MS1006	Lubricants, Industrial Oils, and Related Products Type F Lubricant for Spindle Bearings, and Associated Clutches - Specification
SAE MS1007	Lubricants, Industrial Oils, and Related Products Type G Slideway Lubricants –Specification
SAE MS1008	Lubricants, Industrial Oils and Related Products Type M (Metal Removal Fluids) - Specification
SAE MS1009	Lubricants, Industrial Oils, and Related Products Type P Pneumatic Tool Oils – Specification
SAE MS1010	Lubricants, Industrial Oils, and Related Products Type T Turbine Oils - Specification
SAE MS1011	Lubricants, Industrial Oils and Related Products Type X (Greases) - Specification

²This designated grease in Grades 1, 2, and 3 is exclusively recommended.

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

ASTM D 92	Test Method for Flash and Fire Points by Cleveland Open Cup
ASTM D 95	Test Method for Water in Petroleum Products and Bituminous Materials by Distillation
ASTM D 128	Standard Test Methods for Analysis of Lubricating Grease
ASTM D 217	Test Methods for Cone Penetration of Lubricating Grease
ASTM D 566	Test Method for Dropping Point of Lubricating Grease
ASTM D 611	Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents
ASTM D 942	Test Method for Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method
ASTM D 1264	Test Method for Water Washout Characteristics of Lubricating Greases
ASTM D 1742	Test Method for Oil Separation from Lubricating Grease during Storage
ASTM D 1743	Test Method for Corrosion Preventive Properties of Lubricating Greases
ASTM D 1744	Test Method for Determination of Water in Liquid Petroleum Products by Karl Fischer Reagent
ASTM D 2140	Test Method for Carbon-Type Composition of Insulating Oils of Petroleum Origin
ASTM D 2265	Test Method for Dropping Point of Lubricating Grease Over Wide- Temperature Range
ASTM D 2266	Test Method for Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method)
ASTM D 2422	Classification of Industrial Fluid Lubricants by Viscosity System
ASTM D 2509	Standard Test Method for Measurement of Load-Carrying Capacity of Lubricating Grease (Timken Method)
ASTM D 2595	Test Method for Evaporation Loss of Lubricating Greases over Wide-Temperature Range
ASTM D 2596	Test Method for Measurement of Extreme-Pressure Properties of Lubricating Grease (Four-Ball Method)
ASTM D 3238	Method for Calculation of Carbon Distribution and Structural Group Analysis of Petroleum Oils by the N-D-M Method
ASTM D 3527	Test Method for Life Performance of Automotive Wheel Bearing Grease
ASTM D 4048	Test Method for Detection of Copper Corrosion from Lubricating Grease
ASTM D 4290	Test Method for Determining the Leakage Tendencies of Automotive Wheel Bearing Grease under Accelerated Conditions