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Lubricants, industrial oils and related products (class L) — Classification —

Part 9: Family X (Greases)

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Lubrifiants, huiles industrielles et produits connexes (classe L) — Classification —

Partie 9: Famille X (graisses)

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Reference number
ISO 6743-9: 1987 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6743-9 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Lubricants, industrial oils and related products (class L) — Classification —

Part 9: Family X (Greases)

1 Scope and field of application

This part of ISO 6743 establishes the detailed classification of family X (Greases) which belongs to class L (Lubricants, industrial oils and related products).

It should be read in conjunction with ISO 6743-0.

This classification applies to categories of greases used for lubrication of equipment, components of machines, vehicles, etc.

The greases have been classified according to the operating conditions under which they are used, because the versatile nature of greases makes it impracticable 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 2). In addition, the classification cannot be used to indicate the suitability of greases for special applications such as food contact, radiation, hard vacuum, etc. This will be specified in the requirements for the particular grease.

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.

2 References

ISO 6743-0, *Lubricants, industrial oils and related products (class L) — Classification — Part 0: General*.

ISO 8681, *Petroleum products and lubricants — Methods of classification — Definition of classes*.

3 Explanation of symbols used

3.1 The detailed classification of family X is based on the operating conditions of grease use.

3.2 In accordance with ISO 8681, the complete designation of a grease includes:

- the initials ISO;
- the letter L for the class lubricants, industrial oils and related products;
- the category of grease constituted by a group of five letters where each letter and the order in which it is written has a particular significance:
 - the letter X for the family grease,
 - the lower operating temperature (symbol 1),
 - the upper operating temperature (symbol 2),
 - the ability of the grease to provide satisfactory lubrication in water contamination conditions, and to provide the level of anti-rust protection described in table 3 (symbol 3),
 - the ability of the grease to lubricate in the presence of high or low loads (symbol 4),
 - the NLGI consistency number¹⁾ (see table 4) of the grease corresponding to the measured penetration level according to ISO 2137.

1) For the definition of the NLGI consistency number, see ISO 6743-0.
NLGI: National Lubricating Grease Institute.

3.3 In this classification system, products are designated in a uniform manner, each letter having a significance of its own. It is therefore imperative that the order of writing shown in table 1 be used.

For instance, a grease for use under the following operating conditions:

- lower operating temperature: –20 °C
- upper operating temperature: +160 °C
- water wash
- no anti-rust protection required

- high loads
- NLGI consistency number 00

will have the ISO designation: ISO-L-XBEGB 00.

NOTE — A particular product may be designated in this complete form or in the abbreviated form: L-XBEGB 00.

4 Detailed classification

The detailed classification is shown in table 2.

Table 1 — Order of letters for designation of greases

ISO	L	X	Symbol 1	Symbol 2	Symbol 3	Symbol 4	NLGI number
ISO initials	Class of lubricants	Family grease	Lower operating temperature	Upper operating temperature	Water contamination	EP	Consistency

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Table 2 — Classification of greases

Code letter	General application	Range of operating temperature							Application requirements					Designation ISO-L	Remarks	
		Lower temperature °C		Upper temperature °C		Symbol 1	Symbol 2	Water contamination	Symbol 3	Load (EP)	Symbol 4	Consistency				
		0	A	60	90								120			140
X	Lubrication requiring grease	0	A	60	A	Ability of the grease to provide satisfactory lubrication in water contamination conditions, and to provide the level of anti-rust protection described in table 3	A	A	Ability of the grease to lubricate in the presence of high or low loads. Symbol A for applications not requiring EP grease and symbol B for applications requiring EP grade	A	Associate the appropriate NLGI consistency number, as shown in table 4, with the other symbols	The designation of a grease is made by associating symbol X with other symbols 1, 2, 3 and 4 and with the NLGI consistency number as illustrated in 3.3	Warning: It should not be assumed that greases falling within this classification are mutually compatible. Since lack of compatibility could result in a severe reduction in the performance level of greases, the grease suppliers should be consulted before allowing contact between different products			
				90	B		B	B								
				120	C		C	C								
				140	D		D	D								
				160	E		E	E								
				180	F		F	F								
				> 180	G		G	G								
		-20	B	60	A		A	A	A	A						
				90	B		B	B	B	B						
				120	C		C	C	C	C						
		140	D	D	D	D	D									
		160	E	E	E	E	E									
		180	F	F	F	F	F									
		> 180	G	G	G	G	G									
		-40	D	60	A	A	A	A								
				90	B	B	B	B								
				120	C	C	C	C								
				140	D	D	D	D								
				160	E	E	E	E								
				180	F	F	F	F								
				> 180	G	G	G	G								
		< -40	E	60	A	A	A	A								
				90	B	B	B	B								
				120	C	C	C	C								
				140	D	D	D	D								
				160	E	E	E	E								
				180	F	F	F	F								
				> 180	G	G	G	G								

1) The lowest temperature experienced while starting or running the equipment or while pumping the grease.
 2) The highest temperature of the lubricated component when in service.

Table 3 – Level of anti-rust protection

Environmental conditions ¹⁾	Anti-rust protection ²⁾	Symbol 3
L	L	A
L	M	B
L	H	C
M	L	D
M	M	E
M	H	F
H	L	G
H	M	H
H	H	I

1) L dry

M static moisture

H water wash

2) L no protection

M protect in the presence of fresh-water

H protect in the presence of salt water

Table 4 – NLGI consistency number

000
00
0
1
2
3
4
5
6

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