

INTERNATIONAL STANDARD

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

Part 6:

Family C (Gears)
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*Lubrifiants, huiles industrielles et produits connexes (classe L) —
Classification —
Partie 6: Famille C (Engrenages)*

INTERNATIONAL

ISO



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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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 6743-6 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

ISO 6743 consists of the following parts, under the general title *Lubricants, industrial oils and related products (class L)* —

Classification:

- Part 0: *General*
- Part 1: *Family A (Total loss systems)*
- Part 2: *Family F (Spindle bearings, bearings and associated clutches)*
- Part 4: *Family H (Hydraulic systems)*
- Part 5: *Family T (Turbines)*
- Part 6: *Family C (Gears)*
- Part 7: *Family M (Metalworking)*
- Part 8: *Family R (Temporary protection against corrosion)*
- Part 9: *Family X (Greases)*
- Part 10: *Family Y (Miscellaneous)*

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- *Part 11: Family P (Pneumatic tools)*
 - *Part 12: Family Q (Heat transfer fluids)*
 - *Part 13: Family G (Slideways)*
 - *Part 3A: Family D (Compressors)*
 - *Part 3B: Family D (Gas and refrigeration compressors)*
- Annex A of this part of ISO 6743 is for information only.

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

Part 6: Family C (Gears)

1 Scope

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

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

This part of ISO 6743 is concerned only with lubricants for industrial gears. Lubricants for motor vehicle gears may be included in a future edition.

To establish this classification, two essential series of parameters have been taken into account, one including the environment and the other considering the tooth operating conditions. These parameters are explained in annex A.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6743. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6743 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3448:1975, *Industrial liquid lubricants — ISO viscosity classification.*

ISO 6743-0:1981, *Lubricants, industrial oils and related products (class L) — Classification — Part 0: General.*

ISO 6743-1:1981, *Lubricants, industrial oils and related products (class L) — Classification — Part 1: Family A (Total loss systems).*

ISO 6743-9:1987, *Lubricants, industrial oils and related products (class L) — Classification — Part 9: Family X (Greases).*

3 Explanation of symbols used

3.1 The detailed classification of family C has been established by defining the categories of products required for the primary applications of gears.

3.2 Each category is designated by a symbol consisting of a group of three letters, which together constitute a code.

NOTE 1 The first letter of the code (C) identifies the family of the product considered, but the second and third letters, taken separately, have no significance of their own. In order to prevent confusion with the API diesel engine oil code, the letter K is included as the second of the ISO category symbols.

The designation of each category shall be supplemented by the addition of viscosity grades according to ISO 3448.

3.3 In the present classification system, products are designated in a uniform manner. For example, a particular product may be designated in the complete form, i.e. ISO-L-CKS, or in an abbreviated form, i.e. L-CKS.

4 Detailed classification

The detailed classification is shown in table 1.

Table 1 — Classification of lubricants for gears

Code letter	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
C	Gears	Enclosed gears	Continuous lubrication by splash circulation or spray	Refined mineral oils with oxidation stability, anti-corrosion (ferrous and non-ferrous metal) and anti-foam properties	CKB	Gears operating under light load	
				Oils of CKB type with enhanced extreme-pressure and anti-wear properties	CKC	Gears operating at a stabilized temperature of oil that remains normal or medium and under high load	See annex A
				Oils of CKC type with enhanced thermal/oxidative stability that permits use at a higher temperature	CKD	Gears operating at a high stabilized temperature of the oil and under high load	
				Oils of CKB type ensuring low coefficient of friction	CKE	Gears operating under high friction (e.g. worm gears)	
				Lubricants with oxidation stability, anti-friction and anti-corrosion (ferrous and non-ferrous) properties usable under extreme temperature conditions (low and high)	CKS	Gears operating at a very low, low or very high stabilized temperature of the fluid and under light load	1) See annex A 2) Categories of products that require high performance may be synthetic or contain synthetic bases that risk to pose the problem of compatibility with some equipment regularly used with mineral oils
				Lubricants of type CKS usable under extreme temperature conditions (low and high) and under high load	CKT	Gears operating at a very low, low or very high stabilized temperature of the fluid and under high load	
		Continuous splash lubrication	Greases with extreme pressure and anti-wear properties	CKG ¹⁾		Gears operating under light load	See annex A

Code letter	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks	
		Open gears may be fitted with safety guards	Intermittent or dip or mechanical application	Products usually of bituminous type with anti-corrosion properties	CKH	Cylindrical or bevel gears operating at medium ambient temperatures and generally under light load	1) See annex A 2) AB oils as defined in ISO 6743-1 may be used for the same applications as CKJ lubricants 3) These products can be used with a volatile diluent for ease of application (In this case, they shall be designated as follows: CKH-DIL or CKJ-DIL)	
				Products of CKH type with enhanced extreme-pressure and anti-wear properties	CKJ			
				Intermittent application	Greases with improved extreme-pressure, anti-wear and anti-corrosion properties and improved thermal stability	CKL ^{*)}	Cylindrical or bevel gears operating at high or very high ambient temperatures and under high load	See annex A
				Intermittent application	Products with improved anti-seizing properties that permit use under extreme load conditions, and products with anti-corrosion properties	CKM	Gears operating occasionally under exceptionally high loads	Products that cannot be sprayed

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^{*)} These applications may concern several greases. The grease designation according to ISO 6743-9 shall be indicated by the supplier.

Annex A (informative)

Main parameters governing lubricant selection

To establish this classification, two essential series of parameters have been taken into account:

- the environment;
- the tooth operating conditions (load level and sliding velocity).

These parameters are not the only ones to be considered when a lubricant has to be selected. Nevertheless, due to their importance and for clarification purposes, these parameters have been quantified. The values given in table A.1 and table A.2 below have been shown to assist in making a choice. They should be considered only as guides, however.

Table A.1 — Stabilized temperature of the oil or ambient temperature

Very low	< -34 °C
Low	< -34 °C to -16 °C
Normal	-16 °C to +70 °C
Medium	+70 °C to +100 °C
High	+100 °C to +120 °C
Very high	> +120 °C

Table A.2 — Examples of tooth operating conditions

	Definition
Light load	Load level usually encountered in so-called "lightly loaded" gears with a contact stress generally below 500 MPa (500 N/mm ²) and with a maximum sliding velocity (v_g) on the tooth surface generally lower than one-third of the pitch line velocity on the working pitch cylinder (v)
High load	Load level usually encountered in so-called "heavily loaded" gears with a contact stress generally above 500 MPa (500 N/mm ²) and with a maximum sliding velocity (v_g) possibly higher than one-third of the pitch line velocity on the working pitch cylinder (v)

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