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

**Part 6:
Family C (gear systems)**

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

Partie 6: Famille C (engrenages)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

This document was prepared by ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 4, *Classification and specifications*.

This second edition cancels and replaces the first edition (ISO 6743-6:1990), which has been technically revised.

The main change from the previous edition is that the table of classification now details the various types of synthetic fluids, and includes environmentally acceptable fluids and specific fluids for protection against the micro-pitting phenomenon.

A list of all the parts of ISO 6743 can be found on the ISO website.

Introduction

Recent evolutions in the area of gear lubrication have led to the necessity of an update of the classification of gear lubricants.

The former classification mentioned “synthetic lubricants”, without any precision about their chemical nature.

For some applications, environmentally acceptable lubricants are needed.

This new classification includes different types of synthetic lubricants and environmentally acceptable lubricants. It includes also a specific category of lubricant exhibiting properties for the protection against the micro-pitting phenomenon.

This completes the classification presented in the previous edition, ISO 6743-6:1990, and fulfils the needs of the industry.

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

Part 6: Family C (gear systems)

1 Scope

This document establishes the detailed classification of fluids of Family C (gear systems) which belongs to class L (lubricants, industrial oils and related products). It can be read in conjunction with ISO 6743-99.

The classification in this document concerns lubricants for industrial gears and excludes lubricants for automotive gears.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Explanation of symbols used

4.1 This detailed classification of Family C has been established by defining the categories of products required for the main applications of the family and final subdivision by reference to composition of corresponding products.

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

The first letter of the code (C) identifies the family of the product considered but any following letters taken separately have no significance of their own.

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

NOTE The first letter of the code (C) identifies the family of the product considered, but none of the second and third letters considered separately bear a proper meaning. In order to avoid any confusion with the API code of diesel engine lubricants, it has been admitted to include in second position the letter K in this ISO classification.

4.3 In this classification system, products are designated in a uniform manner. For example, a particular product may be designated in complete form, i.e. ISO-L-CKD 220, or in an abbreviated form, i.e. L-CKD 220, the number indicating the viscosity according to ISO 3448.

5 Detailed classification

The detailed classification is given in [Table 1](#).

Table 1 — Classification of gear lubricants

Letter symbol	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
C	Gears (parallel straight or helical, internal or external, bevel straight or helical, worm, planetary)	Enclosed gears	Continuous lubrication: splash, circulation or injection	Refined mineral oils with oxidation stability, corrosion protection (ferrous and non-ferrous metals), anti-foaming properties	CKB	Gears operating under low to moderate load	
				CKB type oils with additional extreme-pressure and anti-wear properties, protecting against low-speed wear	CKC	Gears the stabilized running temperature of which remains normal or average, possibly running under high loads.	See Annex A
				CKC type oils with reinforced thermal and oxidation stability, allowing a use at higher temperatures	CKD	Gears the stabilized running temperature of which is high, possibly running under high loads.	

Table 1 (continued)

Letter symbol	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
				Mineral, semi-synthetic or synthetic oils with reinforced thermal and oxidation stability, corrosion protection (ferrous and non-ferrous metals), extreme-pressure and anti-wear properties, with particular protection against micro-pitting, low speed wear	CKSMP	Gears the stabilized running temperature of which is high, possibly running under high loads.	
				CKB type oils with reduced friction coefficient	CKE	Gears running under high friction conditions (e.g. worm gears)	
			Continuous lubrication: splash, circulation or injection Applications requiring products environmentally acceptable: biodegradability and/or low eco-toxicity.	Gear oils, based on triglycerides and triglycerides derivative, with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), extreme pressure and anti-wear properties	CKTG		1) See Annex A 2) Some of these products may raise compatibility problems with mineral based products or with equipment designed to be used with mineral oils.
				Gear oils, based on synthetic esters, with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), extreme pressure and anti-wear properties	CKES		

Table 1 (continued)

Letter symbol	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
				Gear oils, based on poly-glycols with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), extreme pressure and anti-wear properties	CKPG		
				Gear oils, based on poly α -olefins related hydrocarbons, or mineral white oils as the main component, together with other types of bases (poly-glycols miscible with hydrocarbons, esters) in various proportions, with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), extreme pressure and anti-wear properties	CKPR		

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Table 1 (continued)

Letter symbol	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
			Continuous lubrication: splash, circulation or injection.	Gear oils, based on poly-glycols with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), that can be used in extreme temperature conditions (high and low)	CSPG	Gears the stabilized running temperature of which is very low, low or very high, running under low to moderate loads	CSPG oils are recommended to lubricate worm gears. Some poly-glycol types may raise miscibility problems with hydrocarbon type gear oils and compatibility problems with parts of equipment designed for use with hydrocarbon type oils
		Gear oils, based on poly α -olefins as a main base oil, with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), that can be used in extreme temperature conditions (high and low)		CSPR			
		CSPG oils with enhanced extreme pressure properties.		CTPG	Gears the stabilized running temperature of which is very low, low or very high, running under high loads		
		CSPR oils with enhanced extreme pressure properties.		CTPR			
			Splash lubrication	Soft greases, with enhanced oxidation, corrosion protection (ferrous and non-ferrous metals), extreme pressure and anti-wear properties	CKG ^a	Gears operating under moderate speed, moderate to high loads.	See Annex A

Table 1 (continued)

Letter symbol	General application	Particular application	More specific application	Composition and properties	Symbol ISO-L	Typical applications	Remarks
		Open or semi-enclosed gears	Intermittent lubrication: manual, splash or spray	Viscous products, mineral, partially synthetic or synthetic, with enhanced corrosion protection properties.	CKH	Open gears operating under moderate loads, at average temperature	1) See Annex A 2) The oils AB as per ISO 6743-1 can be used for the same applications as the oils CKJ
				CKH type products with additional extreme-pressure and anti-wear properties.	CKJ	Open gears operating under high loads, at average temperature	
				Greases, mineral, partially synthetic or synthetic based, with enhanced corrosion protection, oxidation stability, anti-wear / extreme-pressure properties. These greases may contain solid lubricants, e.g. among others molybdenum disulfide, graphite, etc.	CKL ^a	Open gears operating under high to very high loads, at medium to high temperature	See Annex A
			Intermittent lubrication: manual	Viscous products, mineral, partially synthetic or synthetic, with corrosion protection properties, and reinforced anti-seizure properties authorizing a use under extreme loads	CKM	Open gear possibly operating under extremely high loads.	

^a This application can be covered by many different types of greases. The end-user can request from the supplier the designation of the grease as per ISO 6743-9.