INTERNATIONAL STANDARD

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

Part 14:
Family U (Heat treatment)

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

Partie 14: Famille U (Traitement thermique)

Reference number
ISO 6743-14:1994(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. 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 6743-14 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 4, *Classifications and specifications*.

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 14: Family U (Heat treatment)*

— *Part 3A: Family D (Compressors)*

— *Part 3B: Family D (Gas and refrigeration compressors)*

— *Part ...: Family E (Automotive engine oils) — Classification*

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

Part 14:
Family U (Heat treatment)

1 Scope

This part of ISO 6743 establishes the detailed classification of hardening fluids of family U for use in the field of heat treatment. All the fluids listed belong to class L (lubricants, industrial oils and related products).

This part of ISO 6743 is intended to provide a standardized code for the identification of lubricants and related products used in the process of hardening metallic materials. It should be read in conjunction with ISO 6743-0.

This family is divided into several large product categories according to the different applications involved.

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 3448:1992, *Industrial liquid lubricants — ISO viscosity classification.*

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

3 Explanation of symbols used

3.1 The detailed classification of family U has been established by defining the categories of products required for the principal heat treatment operations.

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

The first letter of the code (U) identifies the product family, i.e. hardening fluids for heat treatment.

The second letter identifies the principal product category:

— H indicates a mineral oil type product;

— A indicates an aqueous fluid, such as water or a polymer solution;

— S indicates a molten salt;

— G indicates a gas;

— F indicates products used for fluidized bed hardening;

— K indicates all other cases.

The third letter indicates, within each of the principal product categories, properties or operating conditions specific to each product type.

The designation of products of the mineral oil type (UH) may be supplemented by the addition of the viscosity grade in accordance with 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 a complete form, i.e. ISO-L-UHG, or in an abbreviated form, i.e. L-UHG.

4 Detailed classification

The detailed classification is shown in table 1.

Table 1 — Classification of hardening fluids for heat treatment

Code letter	General application	Particular application	More specific application	Product type and/or performance requirements	Symbol ISO-L	Remarks
U	Heat treatment	Oils for heat treatment	Cold hardening $\theta \leqslant 80$ °C	Oil for normal hardening	UHA	Certain oils may be easily eliminated by washing with water. This characteristic is brought about by the presence of emulsifiers in the formula. The oils are then known as "washable". It is up to the supplier, at the request of the end-user, to stipulate this characteristic.
				Oil for quick hardening	UHB	
			Semi-hot hardening 80 °C $< \theta \leqslant$ 130 °C	Oil for normal hardening	UHC	
				Oil for quick hardening	UHD	
			Hot hardening 130 °C $< \theta \leqslant$ 200 °C	Oil for normal hardening	UHE	
				Oil for quick hardening	UHF	
			Very hot hardening 200 °C $< \theta \leqslant$ 310 °C	Oil for normal hardening	UHG	
				Oil for quick hardening	UHH	
			Vacuum hardening		UHV	
			Other cases		UHK	
		Aqueous fluids for heat treatment	Surface hardening	Water	UAA	
				Aqueous fluid for slow hardening	UAB	
				Aqueous fluid for quick hardening	UAC	
			Mass hardening	Water	UAA	
				Aqueous fluid for slow hardening	UAD	
				Aqueous fluid for quick hardening	UAE	
			Other cases		UAK	
		Molten salts for heat treatment	150 °C $< \theta <$ 500 °C	Molten salts 150 °C $< \theta <$ 500 °C	USA	
			500 °C $\leqslant \theta <$ 700 °C	Molten salts 500 °C $\leqslant \theta <$ 700 °C	USB	
			Other cases		USK	
		Gas for heat treatment		Air	UGA	
				Neutral gas	UGB	
				Reducing gas	UGC	
				Oxidizing gas	UGD	
		Fluidized bed			UF	
		Other cases			UK	

NOTE — θ indicates the fluid temperature at the time of hardening.