BRITISH STANDARD

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6743-5:2006

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

Part 5: Family T (Turbines)

ICS 75.100

BSI
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National foreword

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A list of organizations represented on PTI/7 can be obtained on request to its secretary.

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

Part 5: Family T (Turbines)

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

Partie 5: Famille T (Turbines)

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ISO 6743-5:2006(E)

Foreword

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The main task of technical committees is to prepare International Standards. 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.

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.

ISO 6743-5 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, Subcommittee SC 4, *Classifications and specifications*.

This second edition cancels and replaces the first edition (ISO 6743-5:1988), Table 1 of which has been technically revised.

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

— *Part 1: Family A (Total loss systems)*

— *Part 2: Family F (Spindle bearings, bearings and associated clutches)*

— *Part 3: Family D (Compressors)*

— *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)*

— *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 15: Family E (Internal combustion engine oils)*

— *Part 99: General*

Introduction

The recent evolution in the electricity production area, with the use of more potent gas turbines and single shaft combined cycle gas turbines has made necessary the update of the classification of fluids for turbines. In addition, regulations in some countries are requiring the use of environmentally acceptable lubricants for the lubrication of hydro-turbines.

The new classification includes

a) new types of gas turbine oils, including synthetic products;

b) new types of oils for single-shaft combined-cycle gas turbines (i.e. turbines where the same lubricant lubricates both the gas and the steam turbine);

c) new types of synthetic oils for aircraft turbines with land application;

d) detailed classification for hydro-turbines, including environmentally acceptable products.

This completes the classification described in ISO 6743-5:1988 and fits the industrial needs.

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

Part 5: Family T (Turbines)

1 Scope

This part of ISO 6743 establishes the detailed classification of fluids of family T (Turbines) that belong to class L (Lubricants, industrials oils and related products).

It is intended to be read in conjunction with ISO 6743-99[2].

This classification excludes the products intended for aircraft turbines. However, some aircraft turbines can find land application for power generation. For the lubrication of such turbines, it is recommended that the manufacturer's recommendation be followed. Depending on the service, either TGA, TGB, TGCH, TGCE or more specific aircraft-turbine lubricants can be used.

This classification also excludes the products intended for the lubrication of wind turbines. The gear lubricants used in wind turbines are described in ISO 6743-6[1] and specified in ISO 12925-1[3].

2 Explanation of symbols used

2.1 The detailed classification of family T has been established by defining the categories of products required for the various applications of this family.

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

The first letter of the code (T) 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 a number denoting the viscosity grade of the lubricant in accordance with ISO 3448:1992[4].

2.3 In the present classification system, products are designated in a uniform manner. For example, a particular product may be designated in complete form, i.e. ISO-L-TSA 46, or in an abbreviated form, i.e. L-TSA 46.

2.4 In this classification system, turbine lubricants are classified separately. It is not uncommon that some turbine lubricants may be used in different turbine types. Some examples are given hereafter – these examples are not restrictive.

a) The same lubricant may cover L-TSA, L-TGA and L-THA categories.

b) The same lubricant may cover L-TSE and L-THE categories.

c) The same lubricant may cover L-TGB and L-TGSB categories.

d) The same lubricant may cover L-TGF and L-TGSE categories.

e) The same lubricant may cover L-TSD, L-TGD and L-TCD categories.

3 Detailed classification

The detailed classification is shown in Table 1.

Table 1 — Classification of lubricants, industrial oils and related products (class L) — Family T (Turbines)

Code letter	General application	Particular application	More specific application	Product type and/or performance requirements	Symbol ISO - L	Typical applications	Remarks
T	Turbines	Steam	Normal service	Highly refined petroleum-base stocks rust- and oxidation-inhibited	TSA	Power generation and industrial drives and their associated control mechanisms, when fire resistance is not needed or mandatory. Marine drives where improved load-carrying properties are not specified for the gearing	
			Geared to the load	Highly refined petroleum-base stocks rust- and oxidation-inhibited, with enhanced load carrying ability	TSE	Power generation and industrial drives, marine geared drives and their associated control systems, when the gearing requires improved load carrying ability	
			Fire resistance	Phosphate-ester-based lubricant	TSD	Power generation and industrial drives and their associated control mechanisms, when fire resistance is required	
		Gas, direct coupled or geared to the load	Normal service	Highly refined petroleum-base stocks rust- and oxidation-inhibited	TGA	Power generation and industrial drives and their associated control mechanisms, when fire resistance is not needed or mandatory. Marine drives where improved load-carrying properties are not needed for the gearing	
			High-temperature service	Highly refined petroleum-base stocks rust- and oxidation-inhibited	TGB	Power generation and industrial drives and their associated control systems where high temperature resistance is required	
			Special properties	Synthetic fluids, polyalphaolefins and related hydrocarbons	TGCH	Power generation and industrial drives and their associated control systems where special properties of the fluid are of interest for the application (enhanced oxidation stability, low-temperature properties, …)	
			Special properties	Synthetic fluid, synthetic-ester type	TGCE	Power generation and industrial drives and their associated control systems where special properties of the fluid are of interest for the application (enhanced oxidation stability, low-temperature properties, …)	These fluids may also exhibit some environment acceptability character
			Fire resistance	Phosphate-ester-based lubricant	TGD	Power generation and industrial drives and their associated control mechanisms, when fire resistance is required	

Table 1 (*continued*)

Code letter	General application	Particular application	More specific application	Product type and/or performance requirements	Symbol ISO - L	Typical applications	Remarks
			High load-carrying ability	Highly refined petroleum-base stocks rust- and oxidation-inhibited, with enhanced load carrying ability	TGE	Power generation and industrial drives, marine geared drives and their associated control systems, when the gearing requires improved load carrying ability	
			High temperature service and high load carrying ability	Highly refined petroleum-base stocks rust- and oxidation-inhibited, with enhanced load carrying ability	TGF	Power generation and industrial drives and their associated control systems where high temperature resistance and load carrying properties are required	
		Single shaft combined cycle turbines, with common lubrication system	High-temperature service	Highly refined petroleum base stocks or synthetic base stock, rust and oxidation inhibited	TGSB	Power generation and the control systems, where fire resistance is not needed	
			High-temperature service and high load-carrying ability	Highly refined petroleum-base stocks or synthetic-base stock, rust- and oxidation-inhibited, with enhanced load-carrying ability	TGSE	Power generation and the control systems, where fire resistance is not needed and where the gears require improved load-carrying ability.	
		Control systems	Fire resistant	Phosphate-ester control fluid	TCD	Steam, gas, hydraulic turbine control mechanisms where fluid supply is separate from the turbine lubricant and fire resistance is needed	
		Hydraulic	Normal service	Highly refined petroleum-base stocks rust- and oxidation-inhibited.	THA	Hydro-turbines with hydrostatic system	
			Special properties	Synthetic fluids, polyalphaolefins and related hydrocarbons	THCH	Hydro-turbines, when low water toxicity and environment protection properties are needed	
			Special properties	Synthetic fluid, synthetic-ester type	THCE	Hydro-turbines, when low water toxicity and environment protection properties are needed	
			High load-carrying ability	Highly refined petroleum-base stocks rust- and oxidation-inhibited, with friction and/or load-carrying additives	THE	Hydro-turbines without hydrostatic systems	

Bibliography

[1] ISO 6743-6, *Lubricants, industrial oils and related products (class L) — Classification — Part 6: Family C (Gears)*

[2] ISO 6743-99, *Lubricants, industrial oils and related products (class L) — Classification — Part 99: General*

[3] ISO 12925-1, *Lubricants, industrial oils and related products (class L) — Family C (Gears) — Part 1: Specifications for lubricants for enclosed gear systems*, including the Technical Corrigendum ISO 12925-1:1996/Cor.1:2002

[4] ISO 3448:1992, *Industrial liquid lubricants — ISO viscosity classification*, including the Technical Corrigendum ISO 3448:1992/Cor.1:1993

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