

ICS 75.100

CCS E 34



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7631.9-2014

Replacing GB/T 7631.9-1997

**Lubricants, industrial oils and related products (class L) -
Classification - Part 9: Family D (Compressors)**

润滑剂、工业用油和有关产品(L类)的分类 第9部分:D组(压缩机)

Issued on: February 19, 2014

Implemented on: June 1, 2014

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Explanation of the designation
- 4 Detailed classification

1 Scope

This part of GB/T 7631 sets out the detailed classification of the family D lubricants of class L (lubricants, industrial oils and related products): lubricants for air compressors, lubricants for gas compressors and lubricants for refrigeration compressors.

The part applies to the use of lubricants in specific fields and in particular to stationary air compressors, so that the risk of fire and explosion is reduced as far as possible; the related safety rules are given in GB 10892. The aim of the part is to provide a reasonable range of use for the air compressor, gas compressor and refrigeration compressor lubricants in common use in China, rather than to place unnecessary restrictions on those compressor lubricants through product specifications or product descriptions.

The part is intended to be read together with GB/T 7631.1.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies; for undated references, the latest edition (including all amendments) applies.

GB/T 498, Petroleum products and lubricants - General classification (GB/T 498-1987, neq ISO/DIS 8681:1985).

GB/T 3141, Industrial liquid lubricants - ISO viscosity classification (GB/T 3141-1994, eqv ISO 3448:1992).

GB 10892, Stationary air compressors - Safety rules and code of practice (GB 10892-2005, ISO 5388:1981, MOD).

GB 23820, Safety of machinery - Lubricants with incidental product contact - Hygiene requirements (GB 23820-2009, ISO 21469:2006, IDT).

The printed reference list gives the titles in Chinese only; the English wording above renders those Chinese titles.

3 Explanation of the designation

3.1 The detailed classification of family D is settled by the kinds of product required by the main applications of that family.

3.2 Each product is denoted by a symbol made up of a group of letters, and the letters taken together form the designation. NOTE: the first letter of the designation, D, indicates the family to which the product belongs; the second letter has no meaning of its own when taken alone. The name of each product may carry, appended to it, the viscosity grade specified in GB/T 3141.

3.3 Each product is named uniformly in accordance with GB/T 498. The designation may be written in full, for example ISO-L-DAB 68, or in abbreviated form, for example L-DAB 68, the figures denoting the viscosity grade given in GB/T 3141.

4 Detailed classification

The detailed classification of compressor lubricants is given in Tables 1 to 3.

Table 1, classification of air compressor lubricants, is laid out in eight columns: family symbol, field of application, particular application, more specific application, product type and/or performance requirement, product designation (ISO-L), typical application and remarks. Under the field of application "air compressors" it covers positive displacement air compressors whose compression chamber is oil lubricated, positive displacement air compressors whose compression chamber is not oil lubricated, and dynamic compressors. The oil lubricated machines carry the designations DAA and DAB for reciprocating crosshead and trunk piston compressors and for oil drip rotary vane compressors, and DAG, DAH and DAJ for oil flooded rotary vane and screw compressors, the three latter designations being separated by the lubricant change interval stated in the table. For the non lubricated chamber machines, which include liquid ring compressors, water injected vane and screw compressors, oil free reciprocating compressors and oil free rotary compressors, and for the dynamic machines, which include centrifugal and axial flow compressors, the table gives no product designation and notes that the lubricant serves the gears, bearings and moving parts. The lower half of the same table covers vacuum pumps whose compression chamber is oil lubricated, with designations DVA and DVB for reciprocating, oil drip rotary and oil flooded rotary vane and screw vacuum pumps and DVC to DVF for oil sealed rotary vane and rotary piston vacuum pumps; within each vacuum range the table separates a designation for non corrosive gases from one for corrosive gases, and the remarks column states the pressure range bounding each of the low, medium and high vacuum bands. Those pressure bounds are printed with exponents and are not reproduced here.

Table 2, classification of gas compressor lubricants, uses the same eight column layout and

covers positive displacement reciprocating and rotary compressors handling every gas other than those of refrigeration and heat pump circuits and other than air. It gives the designation DGA for gases that do not react chemically with severely refined mineral oil and do not thin it beyond use, with a severely refined mineral oil as the product type; DGB for gases that would be served by a DGA oil but that carry moisture or condensate, with a specific mineral oil; DGC for gases with a high solubility in mineral oil that lowers its viscosity, with a synthetic fluid; DGD for gases that react chemically with mineral oil, with a synthetic fluid; and DGE for very dry inert gases or reducing gases at a stated dew point, again with a synthetic fluid. The remarks column records that ammonia reacts with certain additives contained in lubricating oils, and that for oxygen and oxygen enriched air mineral oils are forbidden and only a few synthetic fluids are suitable. A note to the table states that gas compression at high pressure may make lubrication difficult and that the compressor manufacturer should be consulted, and a footnote warns that products of the same designation among DGC, DGD and DGE may have different chemical compositions and are not to be mixed before the supplier has been consulted. The typical application column lists the gases together with the pressure levels at which each applies; those pressure levels are printed with exponents and are not reproduced here.

Table 3, classification of refrigeration compressor lubricants, is laid out in eight columns: family symbol, field of application, refrigerant, lubricant class, some of the lubricant types (typical, not exhaustive), product designation (ISO-L), typical application and remarks. The refrigerants are taken in turn: ammonia, with DRA where lubricant and refrigerant are immiscible and DRB where they are miscible; hydrofluorocarbons, with DRC for the immiscible case and DRD for the miscible one; chlorofluorocarbons and hydrochlorofluorocarbons together, with DRE, miscible; carbon dioxide, with DRF, miscible; and hydrocarbons, with DRG, miscible. The lubricant types named across those rows are severely refined mineral oils of naphthenic or paraffinic base, alkylbenzenes, poly alpha olefins, poly(alkylene) glycols, polyol esters and polyvinyl ethers. Following the table the text states that Table 3 applies only to systems in which the lubricant is in contact with the refrigerant, and that where food may come into incidental contact with the lubricant, that lubricant is to comply with the relevant provisions of GB 23820.