मानकः पथप्रदर्शकः

COMPENDIUM OF INDIAN STANDARDS ON

LUBRICANTS AND THEIR PRODUCTS – AUTOMOTIVE SECTOR

Prepared By:

Petroleum Coal and Related Product Department

BUREAU OF INDIAN STANDARDS
NEW DELHI

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Lubricants are substances used to reduce friction, wear, and heat generation between moving surfaces in mechanical systems. They are essential in a wide range of industries, from automotive and aerospace to manufacturing and power generation. Lubricants can be in the form of oils, greases, or pastes and are typically composed of a base oil and various additives that enhance performance, such as anti-wear agents, detergents, corrosion inhibitors, and viscosity improvers.

Their primary function is to form a protective film between surfaces, allowing smoother movement and prolonging the life of components. In engines, lubricants help to seal piston rings, cool engine parts, and suspend contaminants, which are later removed by filters. In industrial applications, they enhance energy efficiency, reduce maintenance frequency, and ensure reliable operation of machinery.

Lubricants can be derived from mineral oils, synthetic compounds, or bio-based sources. The choice depends on application requirements like temperature range, load-bearing capacity, and environmental considerations. With evolving technologies and sustainability demands, modern lubricants are being engineered to perform under extreme conditions while minimizing environmental impact and energy consumption.

Standardization ensures lubricants meet defined quality, safety, and performance benchmarks. It facilitates compatibility with machinery, simplifies procurement, and fosters confidence among manufacturers and users. Given the diversity of lubricant formulations and applications, standards provide a uniform basis for testing, classification, and labeling. In critical sectors like automotive, aerospace, and food processing, adherence to lubricant standards is crucial to prevent equipment failure, ensure reliability, and maintain safety and environmental integrity.

This compendium presents a structured listing and brief overview of Indian Standards (IS) developed under PCD 25 – Lubricants and Their Related Products, specifically applicable to the Automotive Sector.

The objective of this document is to provide a comprehensive reference for manufacturers, OEMs, regulators, technologists, and quality assurance professionals involved in the formulation, application, and evaluation of automotive lubricants. It includes standards for engine oils, gear oils, greases, brake fluids, corrosion preventives, and classification schemes applicable to automotive lubrication systems.

Table 1: List of Indian Standards for Automotive Sector

Sl No.	*IS Number*	*Title*
1.	IS 13656:2019	Internal Combustion Engine Crankcase Oils for Automotive Application
2.	IS 14234 (Part 1):2002	Lubricants for Two-Stroke Spark-Ignition Engines
3.	IS 14234 (Part 2):2017	Lubricants for Four-Stroke Spark-Ignition Engines
4.	IS 1118:2019	Gear Lubricants, Multipurpose (EP Type)
5.	IS 2297:1997	Gear Lubricants, Compounded
6.	IS 1628:1986	Axle Oil Specification
7.	IS 8406:1993	Gear Lubricants for Enclosed Industrial Gear Drives
8.	IS 12203:1999	Lithium Base Grease for Automotive Purposes
9.	IS 506:2019	Automotive and General Purpose Grease
10.	IS 507:1993	General Purpose Grease for Defence Applications
11.	IS 508:2022	Grease, Graphited
12.	IS 719:2022	Antifriction Bearing Grease
13.	IS 720:2022	Locomotive Greases
14.	IS 7514:2020	Low Temperature Grease
15.	IS 7623:2019	Multipurpose Industrial Grease
16.	IS 8654:2019	Automotive Hydraulic Brake Fluid
17.	IS 14779:2000	Temporary Corrosion Preventives – Oil Based
18.	IS 958:2020	Temporary Corrosion Preventives – Grease Type

Details of Indian Standards for Automotive Lubricants

1. IS 13656 : 2019 Internal Combustion Engine Crankcase Oils for Automotive Application

Scope:

This standard prescribes the requirements and methods of sampling and test for the various types of internal combustion engine lubricating oils for use in diesel engines and gasoline engines used in passenger and commercial vehicles including off highway equipment. This standard permits the use of multi-labelled oils for lubrication of compression ignition types of internal-combustion engines used in passenger and commercial vehicles, off-highway vehicles and industrial equipment. Lubricating oils, covered in this standard, are broadly classified into two types.

2. IS 14234 (Part 1):2002 Lubricants for Two-Stroke Spark-Ignition Engines

Scope:

This standard covers lubricants primarily intended for use in automotive, two-stroke, spark ignition, air-cooled, gasoline engines such as mopeds, scooters, motor cycles, portable generators, etc. This standard prescribes the requirements and the engine tests for the three classes of lubricants as applicable to air-cooled spark ignited two-stroke gasoline engines. Lubricants conforming to the requirements of this standard may also be prescribed/recommended by engine manufacturers for use in other types of two stroke gasoline engines.

3. IS 14234 (Part 2):2017 Lubricants for Four-Stroke Spark-Ignition Engines

Scope:

This standard covers lubricants primarily intended for use in automotive, four-stroke, spark ignition, air cooled, air-cooled, gasoline engines such as those fitted to scooters, mopeds, motor cycles etc. This standard prescribes the requirements for the four grades (see 3) of lubricants as applicable to spark ignited four-stroke gasoline engines. Lubricants conforming to the requirements of this standard may also be prescribed/recommended by engine manufacturers for use in other types of four stroke gasoline engines.

4. IS 1118:2019 Gear Lubricants, Multipurpose (EP Type)

Scope:

This standard prescribes the requirements and methods of sampling and test for the various types of multipurpose automotive gear lubricating oils [extreme pressure (EP) type]. The lubricant is primarily intended for use in automotive hypoid gear units, manual transmissions, final drives, steering gears and fluid lubricated universal joints of automotive equipment.

5. IS 2297:1997 Gear Lubricants, Compounded

Scope:

This standard prescribes the requirements, method of sampling and test for the gear lubricants intended for use in worm gear drives. The lubricant shall conform to one of the eleven viscosity grades as distinguished by the prescribed viscosity limit given in Table 1. These lubricants are primarily intended for use in enclosed and semi-enclosed worm gears operating under such conditions of load, temperature and sliding speed for which straight mineral oils are not adequate and EP type oils are not called for. These are, however, NOT SUITABLE for lubrication of HYPOID gears. The lubricants covered by this standard are equivalent to the service designation API-GL-2.

6. IS 1628:1986 Axle Oil Specification

Scope:

This standard prescribes the requirements and the methods -bf sampling and test for axle lubricating oil, primarily intended for use as a lubricant in plain bearing axles, used by Railways and other users.

7. IS 8406:1993 Gear Lubricants for Enclosed Industrial Gear Drives

Scope:

This standard prescribes the requirements and the methods of sampling and test for the gear lubricants intended for use in enclosed and semi-enclosed industrial gear systems where tooth pressures and pitch-line velocities are severe enough to render the use of straight mineral oils unsuitable. This standard does not cover lubricants for food and drug industries and those required to be operated under extremely severe and hostile environment as indicated below:
a) Gear drives operating at speeds over 3 600 rev/min and/or pitch-line velocities exceeding 1 500 m/min;
b) Lubricants sump temperatures generally exceeding 100°C;
c) Applications where incidental contact may occur with the product under manufacture; and
d) Gear drives operating in chemical and dust laden atmospheres.

8. IS 12203:1999 Lithium Base Grease for Automotive Purposes

Scope:

This standard prescribes the requirements and method of sampling and test for lithium base greases suitable for applications on all automotive vehicles and also as wheel bearing grease operating at temperatures ranging from -20 to 120°C. This standard also covers lithium grease containing molybdenum disulphide additive.

9. IS 506:2019 Automotive and General Purpose Grease

Scope:

This standard prescribes the requirements and methods of sampling and test for greases intended for automotive and general purpose applications.

10. IS 507:1993 General Purpose Grease for Defence Applications

Scope:

This standard prescribes the requirements and the methods of sampling and test for greases intended for plain bearings and other automotive and general applications. The standard also includes applications over the ambient temperature range of - 18°C to + 60°C.

11. IS 508:2022 Grease, Graphited

Scope:

This standard prescribes the requirements and the methods of sampling and tests for greases, graphite and use for general service under comparatively high load, low speed or low relative displacement of inter-acting surfaces requiring lubrication. Greases covered in this standard are not intended to be used in ball and roller bearings.

12. IS 719:2022 Antifriction Bearing Grease

Scope:

This standard prescribes the requirements and the method of sampling and tests for grease intended for antifriction bearings, such as ball, roller and needle bearings.

13. IS 720:2022 Locomotive Greases

Scope:

This standard prescribes the requirements and the methods of sampling and tests for greases, for locomotive journal, rod lubrication and for locomotive lubrication, other than anti-friction bearings.

14. IS 7514:2020 Low Temperature Grease

Scope:

This standard prescribes the requirements and the methods of sampling and test for low temperature grease intended for use as a general purpose lubricant in cold climates, including the lubrication of chassis and of low speed ball-bearings

15. IS 7623:2019 Multipurpose Industrial Grease

Scope:

This standard prescribes the requirements and methods of sampling and test for multipurpose greases suitable for industrial application and for lubrication of plain as well as antifriction bearings. This standard also covers multipurpose greases containing extreme pressure (EP) additives.

16. IS 8654:2019 Automotive Hydraulic Brake Fluid

Scope:

This standard prescribes the requirements and methods of sampling and test for non-petroleum type heavy duty automotive hydraulic brake fluid for use in hydraulic brake systems fitted with drum, disc or either type of brakes at wide ambient temperatures. These fluids are designed for use in braking systems fitted with rubber cups and seals made from styrene butadiene rubber (SBR).

17. IS 14779:2000 Temporary Corrosion Preventives – Oil Based

Scope:

This standard prescribes the requirements and the methods of sampling and tests for temporary corrosion preventive fluids suitable for the protection of metal surfaces during transport and storage.

18. IS 958:2020 Temporary Corrosion Preventives – Grease Type

Scope:

This standard prescribes the requirements and the methods of sampling and tests for temporary corrosion preventives, grease type, soft film suitable for the protection of cleans metal surfaces mainly consist of iron and steel during transport and storage.