

GLOSSARY OF TERMS AND THEIR DEFINITIONS
A REFERENCE DOCUMENT FOR WRITERS OF STANDARDS IN
SUBCOMMITTEE B (updated June 2012)

This glossary has been compiled by Subcommittee B's Editorial Section (B.09), and the glossary will be updated, as necessary, by that section. ASTM's Test Monitoring Center is the repository for the glossary and the glossary is available on the TMC web site.

The major change in this updated Glossary is the substitution of D 4175 for individual test method references in many cases. This should greatly simplify development of Referenced Documents sections in new test methods.

The following terms and their definitions have all been previously approved by Subcommittee B, and many of them have been approved by Committee D.02 as well as the Society. Writers of Subcommittee B standards are urged to use these definitions, as appropriate, in the terminology sections of their standards.

additive, *n* - a material added to another, usually in small amounts, to impart or enhance desirable properties or to suppress undesirable properties. **(D 4175)**

automotive, *adj* - descriptive of equipment associated with self-propelled machinery, usually vehicles driven by internal combustion engines. **(D 4175)**

base oil, *n* - a liquid having a suitable boiling range and viscosity for use in lubricating oils.

blind reference oil, *n* - a reference oil, the identity of which is unknown by the test facility.

Discussion: This is a coded reference oil that is submitted by a source independent from the test facility. **(D 4175)**

blowby, *n*—*in internal combustion engines*, that portion of the combustion products and unburned air/fuel mixture that leaks past piston rings into the engine crankcase during operation. **(D4175)**

boundary lubrication, *n* - the type of lubrication, between two surfaces in relative motion, in which the primary factor affecting the lubricating performance is the lubricant's frictional properties, rather than the lubricant's viscometric properties.

Discussion: *Boundary lubrication* is sometimes referred to as *thin film lubrication* , connoting that, under high loads, the lubricant film is not thick enough to prevent surface asperities from contacting each other.

calibrate, *v*—to determine the indication or output of a device (e.g., thermometer, manometer, engine) with respect to that of a standard. **(D4175)**

calibrated test stand, *n* - a test stand on which the testing of reference material(s), conducted as specified in the standard, provided acceptable results.

Discussion: In several automotive lubricant standard test methods, the ASTM Test Monitoring Center provides testing guidance and determines acceptability. (D 4175)

calibration test, *n* – a test, using a coded oil, conducted as specified in the test method.

Discussion: The test result is used to determine the suitability of the testing facility/laboratory to conduct such tests on non-reference oils.

(D 4175)

candidate oil, *n* - an oil that is intended to have the performance characteristics necessary to satisfy a specification and is to be tested against that specification. (D 4175)

clogging, *n* - the restriction of a flow path due to the accumulation of material along the flow path boundaries. (D 4175)

cold-stuck piston ring, *n* - *in internal combustion engines* , a piston ring that is stuck when the piston and ring are at room temperature, but inspection shows that it was free during engine operation.

Discussion: A cold-stuck piston ring cannot be moved with moderate finger pressure. It is characterized by a polished face over its entire circumference, indicating essentially no blowby passed over the outside of the ring during operation. (D 4175)

corrosion, *n* - the chemical or electrochemical reaction between a material, usually a metal surface, and its environment that can produce a deterioration of the material and its properties. (D 4175)

debris, *n* - *in internal combustion engines* , solid contaminant materials unintentionally introduced into the engine or resulting from wear. (D 4175)

developer, *n* - *of an ASTM test method* , the assigned ASTM group, working under the supervision of its governing subcommittee and main committee, that formats the test method in accordance with the Form and Style for ASTM Standards (Bluebook), and continually refines the test method. (D 4175)

developer, *n* - *of a test procedure* , an individual or organization that selects the test apparatus and operating conditions. (D 4175)

dispersant, *n* - *in engine oil* , an additive that reduces deposits on oil-wetted surfaces primarily through suspension of particles. (D 4175)

double-blind reference oil, *n* - a reference oil, the identity of which is unknown by either the

submitting source or the test facility and is not known to be a reference oil by the test facility.

Discussion: This is a coded reference oil that is supplied by an independent source to a second party, who applies their own coded designation to the oil (and if necessary, repackages it to preserve its anonymity), and submits it to a third party for testing. (D 4175)

engine oil, *n* - a liquid that reduces friction or wear, or both, between the moving parts within an engine; removes heat, particularly from the underside of pistons; and serves as a combustion gas sealant for the piston rings.

Discussion: It may contain additives to enhance certain properties. Inhibition of engine rusting, deposit formation, valve train wear, oil oxidation and foaming are examples. (D 4175)

free piston ring, *n* - *in internal combustion engines* , a piston ring that will fall in its groove under its own weight when the piston, with the ring in a horizontal plane, is turned 90 degrees (putting the ring in a vertical plane). (D 4175)

Discussion—In determination of this condition, the ring may be touched slightly to overcome static friction.

heavy-duty, *adj* - *in internal combustion engine operation* , characterized by average speeds, power output and internal temperatures that are close to the potential maximums. (D 4175)

heavy-duty engine, *n* - *in internal combustion engine types*, one that is designed to allow operation continuously at or close to its peak output. (D4175)

hot-stuck piston ring, *n* - *in internal combustion engines* , a piston ring that is stuck when the piston and ring are at room temperature, and inspection shows that it was stuck during engine operation.

Discussion: The portion of the ring that is stuck cannot be moved with moderate finger pressure. A hot-stuck ring is characterized by varnish or carbon across some portion of its face, indicating that portion of the ring was not contacting the cylinder wall during engine operation. (D 4175)

knock, *n* - *in a spark ignition engine* , abnormal combustion, often producing audible sound, caused by autoignition of the air/fuel mixture. (D 4175)

light-duty, *adj* - *in internal combustion engine operation* , characterized by average speeds, power output and internal temperatures that are generally much lower than the potential maximums. (D 4175)

light-duty engine, *n* - *in internal combustion engine types* , one that is designed to be normally operated at substantially less than its peak output. (D 4175)

lubricant, *n* - any material interposed between two surfaces that reduces the friction or wear, or

both, between them. (D 4175)

lubricating grease, *n* - a semi-fluid to solid product of a dispersion of a thickener in a liquid lubricant.

Discussion: The dispersion of the thickener forms a two-phase system and immobilizes the liquid lubricant by surface tension and other physical forces. Other ingredients are commonly included to impart special properties. (D 4175)

lubricating oil, *n* - a liquid lubricant, usually comprising several ingredients, including a major portion of base oil and minor portions of various additives. (D 4175)

lubricity, *n* - a descriptive term for the friction-reducing properties of a substance.

Discussion: This quality is sometimes referred to as *oiliness* or *slipperiness*. In lubricating oils, *lubricity* affects the friction occurring under boundary lubrication conditions.

lugging, *adj* - *in internal combustion engine operation*, characterized by a combined mode of relatively low-speed and high-power output. (D 4175)

non-reference oil, *n* - any oil other than a reference oil; such as a research formulation, commercial oil or candidate oil. (D 4175)

non-standard test, *n* - a test that is not conducted in conformance with the requirements in the standard test method; such as running on an uncalibrated test stand, using different test equipment, applying different equipment assembly procedures, or using modified operating conditions. (D 4175)

oxidation, *n* - *of engine oil*, the reaction of the oil with an electron acceptor, generally oxygen, that can produce deleterious acidic or resinous materials often manifested as sludge formation, varnish formation, viscosity increase, or corrosion, or combination thereof. (D4175)

preignition, *n* - *in a spark-ignition engine*, ignition of the mixture of fuel and air in the combustion chamber before the passage of the spark. (D 4175)

purchaser, *n* - *of an ASTM test*, a person or organization that pays for the conduct of an ASTM test method on a specified product.

Discussion: The preferred term is *purchaser*. Deprecated terms that have been used are *client*, *requestor*, *sponsor*, and *customer*. (D 4175)

reference oil, *n* - an oil of known performance characteristics, used as a basis for comparison.

Discussion: Reference oils are used to calibrate testing facilities, to compare the performance of other oils, or to evaluate other materials (such as seals) that interact with oils.

(D 4175)

rust (coatings), *n*—of iron or its alloys, a corrosion product consisting of hydrated iron oxides, usually reddish in color but can also be brown-to-black. **(D4175)**

scoring, *n* - in tribology , a severe form of wear characterized by the formation of extensive grooves and scratches in the direction of sliding. **(D 4175)**

scuff, scuffing, *n* - in lubrication , damage caused by instantaneous localized welding between surfaces in relative motion that does not result in immobilization of the parts. **(D 4175)**

scuffing, *n*—in lubrication, damage caused by instantaneous localized welding between surfaces in relative motion that does not result in immobilization of the parts. **(D4175)**

seizure, *n* - in lubrication , welding between surfaces in relative motion that results in immobilization of the parts. **(D 4175)**

sludge, *n* - in internal combustion engines , a deposit, principally composed of insoluble resins and oxidation products from fuel combustion and the lubricant, that does not drain from engine parts but can be removed by wiping with a cloth. **(D 4175)**

soot, *n* - in internal combustion engines , sub-micron size particles, primarily carbon, created in the combustion chamber as products of incomplete combustion. **(D 4175)**

spark-plug fouling, *n* - in a spark-ignition engine , a deposit on the electrodes of a spark-plug of essentially non-conducting material that may, but will not necessarily, prevent the plug from operating.

spark-plug whiskering, or bridging, *n* - in a spark-ignition engine , a deposit of conductive material that tends to form a bridge between the spark-plug electrodes or to a ground, thus shorting out the plug.

sponsor, *n* - of an ASTM test method , an organization that is responsible for ensuring supply of the apparatus used in the test procedure portion of the test method.

Discussion: In some instances, such as a test method for chemical analysis, an ASTM working group can be the *sponsor* of a test method. In other instances, a company with a self-interest may or may not be the *developer* of the test procedure used within the test method, but is the *sponsor* of the test method. **(D 4175)**

standard test, *n* - a test on a calibrated test stand, using the prescribed equipment that is assembled in accordance with the requirements in the test method, and conducted according to the specified operating conditions. **(D4175)**

Discussion—The specified operating conditions in some test methods include requirements for determining a test's operational validity. These requirements are applied after a test is completed and can include (1) mid-limit ranges for the average values of primary and secondary parameters that are narrower than the specified control ranges for the individual values, (2) allowable deviations for individual primary and secondary parameters for the specified control ranges, (3) downtime limitations, and (4) special parameter limitations.

stuck lifter, *n* - in *internal combustion engines* , a lifter plunger that does not return to its original position by its own force upon removal from the engine. (D 4175)

synthetic, *adj* - in *lubricants* , originating from the chemical synthesis of relatively pure organic compounds from one or more of a wide variety of raw materials. (D 4175)

test equipment, *n* - all specified apparatus other than the item(s) being tested; which can include the test stand, instrumentation, particular bench or engine models, special test preparation fixtures and tools, and any special parts.

test oil, *n* – any oil subjected to evaluation in an established procedure. (D 4175)

test parameter, *n* – a specified component, property, or condition of a test procedure. (D 4175)

Discussion—Examples of *components* are fuel, lubricant, reagent, cleaner, and sealer; of *properties* are density, temperature, humidity, pressure, and viscosity; and of *conditions* are flow rate, time, speed, volume, length, and power.

test procedure, *n* –one where test parameters, apparatus, apparatus preparation, and measurements are principal items specified. (D 4175)

test procedure developer, *n* – an individual or organization that selects the test apparatus and operating conditions that are used in an ASTM test method.

Discussion – After the test method is established, the test procedure developer may continue to be involved in such things as modifications of the operating conditions, resolution of operating problems, and supply of test parts.

thickener, *n* - in *a lubricating grease* , a substance composed of finely divided particles dispersed in a liquid lubricant to form the product's structure. (D 4175)

Discussion: The thickener can be fibers (such as various metallic soaps) or plates or spheres (such as certain non-soap thickeners) which are insoluble or, at the most, only very slightly soluble in the liquid lubricant. The general requirements are that the solid particles be extremely small, uniformly dispersed, and capable of forming a relatively stable, gel-like structure with the liquid lubricant. (D 217)

tight piston ring, *n* - in *internal combustion engines* , a piston ring that will not fall in its groove

under its own weight when the piston, with the ring in a horizontal plane, is turned 90 degrees (putting the ring in a vertical plane); by subsequent application of moderate finger pressure, the ring will be displaced. **(D 4175)**

used oil, *n* - any oil that has been in a piece of equipment (for example, an engine, gearbox, transformer, or turbine), whether operated or not. **(D 4175)**

varnish, *n* - *in internal combustion engines* , a hard, dry, generally lustrous deposit that can be removed by solvents but not by wiping with a cloth. **(D 4175)**

wear, *n*—the loss of material from a surface, generally occurring between two surfaces in relative motion, and resulting from mechanical or chemical action or a combination of both.
(D4175)