

TECHNICAL INFO

OIL SPECIFICATIONS EXPLAINED

All oils are intended for an application and in general are not interchangeable. You would not for example put an Automatic Transmission Oil or a Gear Oil in your engine! It's important to know what the oil's intended purpose is.

VISCOSITY

Most oils on the shelves today are "Multigrades", which simply means that the oil falls into 2 viscosity grades (i.e. 10w-40 etc)

Multigrades were first developed some 50 years ago to avoid the old routine of using a thinner oil in winter and a thicker oil in summer.

In a 10w-40 for example the 10w bit (W = winter, not weight or watt or anything else for that matter) simply means that the oil must have a certain maximum viscosity/flow at low temperature. The lower the "W" number the better the oil's cold temperature/cold start performance.

The 40 in a 10w-40 simply means that the oil must fall within certain viscosity limits at 100°C. This is a fixed limit and all oils that end in 40 must achieve these limits. Once again the lower the number, the thinner the oil: a 30 oil is thinner than a 40 oil at 100°C etc. Your handbook will specify whether a 30, 40 or 50 etc is required.

SPECIFICATIONS

Specifications are important as these indicate the performance of the oil and whether they have met or passed the latest tests, or whether the formulation is effectively obsolete or out of date. There are two specifications that you should look for on any oil bottle and these are API (American Petroleum Institute) and ACEA (Association des Constructeurs Europeens d'Automobiles) all good oils should contain both of these, and an understanding of what they mean is important.

API

This is the more basic as it is split (for passenger cars) into two categories. S = Petrol and C = Diesel, most oils carry both petrol (S) and diesel (C) specifications.

The following table shows how up to date the specifications the oil are:

PETROL

SG - Introduced 1989 - has much more active dispersant to combat black sludge.

SH - Introduced 1993 - has same engine tests as SG, but includes phosphorus limit 0.12%, together with control of foam, volatility and shear stability.

SJ - Introduced 1996 - has the same engine tests as SG/SH, but phosphorus limit 0.10% together with variation on volatility limits

SL - Introduced 2001 - all new engine tests reflective of modern engine designs meeting current emissions standards

SM - Introduced November 2004 - improved oxidation resistance, deposit protection and wear protection, also better low temperature performance over the life of the oil compared to previous categories.

SN - Introduced in 2010 - The API SN category is an improvement over the API SM category in the following areas:

- High temperature deposit protection for pistons
- Better sludge control
- Better seal compatibility
- After treatment compatibility

Note:

All specifications prior to SL are now obsolete and, although suitable for some older vehicles, are more than 10 years old, and do not provide the same level of performance or protection as the more up to date SL and SM specifications.

DIESEL

CD - Introduced 1955 - international standard for turbo diesel engine oils for many years, uses single cylinder test engine only

CE - Introduced 1984 - improved control of oil consumption, oil thickening, piston deposits and wear, uses additional multi cylinder test engines

CF4 - Introduced 1990 - further improvements in control of oil consumption and piston deposits, uses low emission test engine

CF - Introduced 1994 - modern version of CD, reverts to single cylinder low emission test engine. Intended for certain indirect injection engines

CF2 - Introduced 1994 - defines effective control of cylinder deposits and ring face scuffing, intended for 2 stroke diesel engines

CG4 - Introduced 1994 - development of CF4 giving improved control of piston deposits, wear, oxidation stability and soot entrainment. Uses low sulfur diesel fuel in engine tests

CH4 - Introduced 1998 - development of CG4, giving further improvements in control of soot related wear and piston deposits, uses more comprehensive engine test program to include low and high sulfur fuels

CI4 Introduced 2002 - developed to meet 2004 emission standards, may be used where EGR (exhaust gas recirculation) systems are fitted and with fuel containing up to 0.5 % sulfur. May be used where API CD, CE, CF4, CG4 and CH4 oils are specified.

Note:

All specifications prior to CH4 are now obsolete and, although suitable for some older vehicles, are more than 10 years old and do not provide the same level of performance or protection as the more up to date CH4 & CI4 specifications.

If you want a better more up to date oil specification then look for SL, SM, CH4, CI4

ACEA

This is the European equivalent of API (US) and is more specific in what the performance of the oil actually is. A = Petrol, B = Diesel and C = Catalyst compatible or low SAPS (Sulfated Ash, Phosphorus and Sulfur).

Unlike API the ACEA specs are split into performance/application categories as follows:

A1 Fuel economy petrol

A2 Standard performance level (now obsolete)

A3 High performance and/or extended drain

A4 Reserved for future use in certain direct injection engines

A5 Combines A1 fuel economy with A3 performance

- B1** Fuel economy diesel
- B2** Standard performance level (now obsolete)
- B3** High performance and/or extended drain
- B4** For direct injection car diesel engines
- B5** Combines B1 fuel economy with B3/B4 performance

C1-04 Petrol and Light duty Diesel engines, based on A5/B5-04 low SAPS, two way catalyst compatible.

C2-04 Petrol and light duty Diesel engines, based on A5/B5-04 mid SAPS, two way catalyst compatible.

C3-04 Petrol and light duty Diesel engines, based on A5/B5-04 mid SAPS, two way catalyst compatible, Higher performance levels due to higher HTHS.

Note: SAPS = Sulfated Ash, Phosphorous and Sulfur.

Put simply, A3/B3, A5/B5 and C3 oils are the better quality, stay in grade performance oils.

APPROVALS

Many oils mention various OEM's on the bottle, the most common in the UK being VW, MB or BMW but do not be misled into thinking that you are buying a top oil because of this.

Oil Companies send their oils to OEM's for approval however some older specs are easily achieved and can be done so with the cheapest of mineral oils. Newer specifications are always more up to date and better quality/performance than the older ones.

Some of the older OEM specifications are listed here and depending on the performance level of your car are best ignored if you are looking for a quality high performance oil:

VW - 500.00, 501.00 and 505.00

Later specs like 503, 504, 506 and 507 are better performing more up to date oils

MB - 229.1

Later specs like 229.3 and 229.5 are better performing more up to date oils.

BMW - LL98

Later specs like LL01 and LL04 are better performing more up to date oils.