

UNDERSTANDING ENGINE OILS

OIL FUNCTIONS

LUBRICATE PARTS AND PREVENT WEAR:

This is the basic function of all oils. Keeping the moving parts separated. In general, the thicker the oil film, the better the wear protection, but the oil additives also play an important role. Modern oil additives allow an oil of lesser viscosity to be used and still provide the same level of protection.

REDUCE FRICTION:

The film of oil reduces friction simply because there is no metal-to-metal contact. The heavier the oil though, the greater the drag and hence more heat may be generated. Correct oil selection is therefore a balance between what is needed to protect the component without generating excessive drag and heat, thereby decreasing fuel economy.

PROTECT AGAINST RUST AND CORROSION:

As oils degrade, they form corrosive by-products so the oil contains anti-corrosion and acid neutralising additives to protect components against rust and corrosion.

BE COMPATIBLE WITH SEALS:

Oils must lubricate and not cause deterioration, shrinking or hardening of commonly used seals.

PREVENT FOAM:

Foam reduces the lubrication properties of the oil, therefore oils must be resistant to foaming or be able to "release" or "dissipate" any foam quickly.

PERMIT EASY STARTING:

Most wear occurs in an engine at start up. Therefore, the oil must have the correct low temperature viscosity to flow quickly to the bearings and valve train to prevent wear. Some engines require a low viscosity oil to actually start at all, especially some of the new diesel engines found in four wheel drives, where the oil is used to operate the pump to prime the fuel injectors.

COOL THE ENGINE:

At least 40% of the engine is cooled by the oil, not the radiator system. This means the oil is always under heat stress (oxidation) as it transfers heat from hot spots back to the sump. This includes main and big end bearings, the crankshaft, connecting rods, other bearings, pistons and the timing gear.

REDUCE COMBUSTION CHAMBER DEPOSITS:

Some oil will always reach the combustion chamber either via the cylinder walls or via the valves. It is then burned off with the fuel. It therefore must burn clean enough that it does not build up on valve seats or pistons tops which can cause problems.

KEEP ENGINE COMPONENTS CLEAN:

Oils need to be very stable under heat and not cause system deposits. They also have the added responsibility of keeping internal surfaces clean and to prevent sludge. This is achieved by a combination of detergent and dispersant additives.

BASE OILS

All oils are made up of base oils and additives. Not all base oils are created equally however. The API classifies these into 5 main groups.

Group	Sulphur %	Saturates %	VI	Manufacturing Method
I	>0.03	<90	80-119	Solvent Refined
II	<0.03	<90	80-119	Hydro-processed
III	<0.03	<90	120 +	Severely hydro-processed
IV	Poly Alpha Olefins (PAOs)			Oligomerization (man made)
V	All Others (including esters)			Various

Group III and IV base oils are 100% synthetic. Some very high quality Group II oils (called Group II Plus) are also accepted as having synthetic performance. When looking at the table, think of saturates (relates to aromatics and other hydrocarbon molecules) and sulphur levels as the degree of purity of the oil. The Group III products used by Penrite are over 99% pure. PAOs are even more pure than Group III oils. Group I and II base oils are considered mineral.

Synthetic base oils are used for two main reasons; greater oxidation stability (for longer oil life) and low volatility (to decrease oil consumption). In order to meet the ACEA specifications on oil volatility, many lighter engine oil viscosity grades must use a percentage of these products, especially if Group I base oils are used.

Group V contains all other base oil types not included in Groups I, II, III and IV e.g. Esters, Naphthenics.

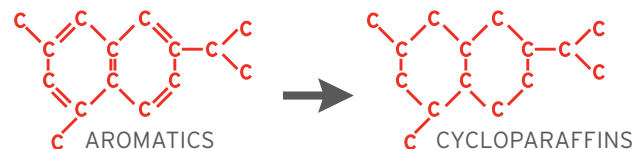
From a Penrite perspective, we choose the combination of the above base oils to ensure maximum performance for a given oil.



Hydroprocessed Based Oils - What do they look like?

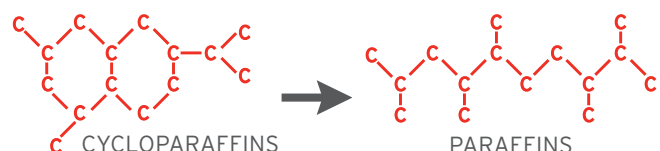
Group II:

- 400°C • >500 psi H • Removes sulphur and nitrogen
- Converts aromatic hydrocarbons to cycloparaffins



Group III:

- 425-430°C • 1,500-3,000 psi H
- Converts cycloparaffins to paraffin chains



SYNTHETIC BASE OILS: PETRO-CHEMICAL MANUFACTURED TYPES

PAOs - Poly Alpha Olefins:

PAOs are derived from the oligomerization, usually of 1-decene. Oligomerization refers to a process where a monomer or a molecule is linked to many others of the same type to form a long chain.

1-decene is further derived from the oligomerization of high purity ethylene (C₂H₄).

PAOs are extremely pure:

- Identical molecules.
- No sulphur or phosphorus.
- No wax.

Benefits of PAOs:

- Excellent cold flow properties.
- Highly resistant to thermal breakdown.
- Excellent shear stability.

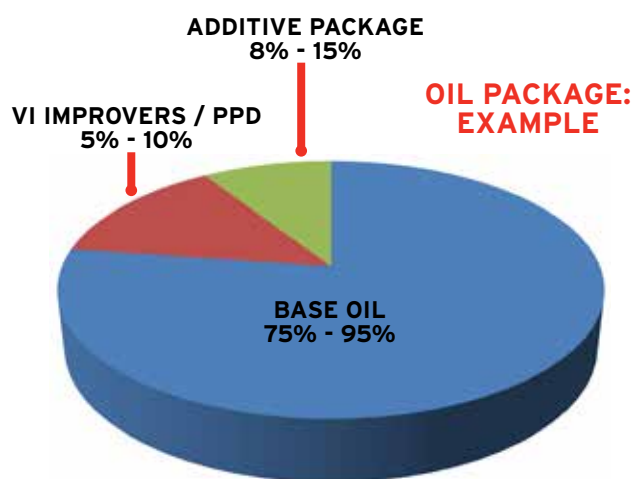
ESTERS:

Manufactured by reacting an acid and an alcohol to give ester plus water. There are many types of esters, such as diesters and polyolesters.

Benefits of Esters:

- Resistant to thermal breakdown.
- Good metal-wetting ability.
- High film strength.
- Good shear stability.

OIL COMPOSITION



Different oils require different percentages of additive package depending on viscosity grade, specification, oil type etc.

OIL ADDITIVES

There are different types of oils and they use many of the same types of ingredients. However, these are put together a little differently. Not all of these are found in every oil. Firstly you have base oils, made from either crude oil at a refinery or man-made (synthetics). To achieve the functions required by finished lubricants, you must then put additives in the oil. These all do different things.



Visit our website at www.penriteoil.com

DETERGENTS:

Any oil with an API engine rating of SC (see page 16 for API Service Classifications), or above has a level of detergency. This detergency level is not necessarily related to all of the quoted API ratings of the oil, as some high detergent diesel oils may only meet lower petrol engine oil specifications. It is a balance. Detergents are usually metallic compounds and they control deposits and keep engines clean.

DISPERSANTS:

These are usually ashless (non metallic) organic chemicals. They keep contaminants and by-products dispersed in the oil helping to prevent deposits and sludge from forming. They are highly effective in controlling low temperature contaminants. They can keep them so fine in suspension, they pass through the oil filter with the oil additives!

FRICTION MODIFIERS:

Used to reduce internal engine friction and are common in low viscosity oils where fuel economy is important.

OXIDATION INHIBITORS:

Reduce oxygen attack or oxidation of the oil, helping to reduce oil thickening, especially at high temperatures.

ANTI-WEAR AGENTS:

Prevent wear due to seizure or scuffing of metal surfaces that would otherwise rub or contact each other. They are normally zinc and phosphorus or other organo-metallic based compounds.

RUST AND CORROSION INHIBITORS:

Prevent rust and corrosion attack on metal surfaces from acids that can build up in oils.

FOAM DEPRESSANTS/AIR RELEASE AGENTS:

Prevent foam from forming, thereby maintaining a lubricating film based on oil not air bubbles, resulting in the ability of the oil to be pumped effectively at the required rate.

POUR POINT DEPRESSANTS (PPD):

Reduce the oils tendency to crystallise at very low temperatures, i.e. Its ability to pour or flow. Most oils contain wax and, at very low temperatures, wax can crystallize. PPDs assist to lower the temperature at which this occurs.

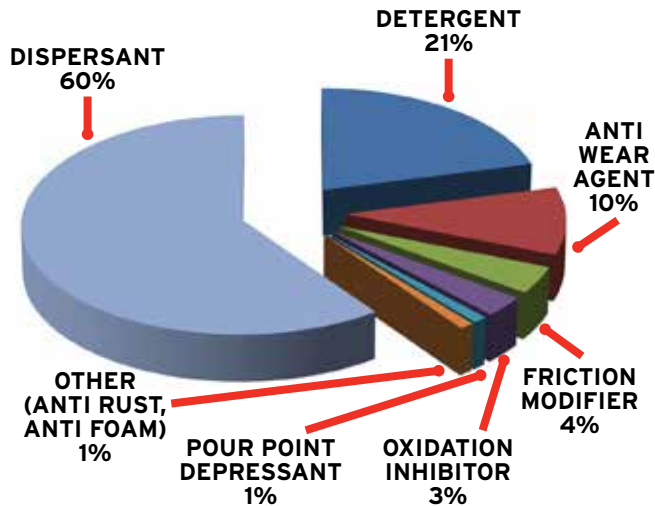
VISCOSITY INDEX IMPROVERS (VII):

These change the oils rate of thinning or its Viscosity Index (VI). The higher the VI, the lower the rate of thinning of the oil with increase in temperature. They are polymers that expand as temperature increases - think of them as like a slowly uncoiling spring. They also assist in making oils into multigrades (see page 15).



OIL ADDITIVE PACKAGE

MOTOR OIL ADDITIVE PACKAGE: EXAMPLE



Depending on the oil type and specification, the performance pack will alter significantly.

SAE VISCOSITY

SAE stands for Society of Automotive Engineers. The SAE developed a classification system to define the viscosity or thickness of oil. This system has been progressively modified over the years.

It defines "operating temperature" engine oil viscosities for different grades and contains specifications for "cranking" viscosity and pumpability at start up, the "W" grades or winter. A multigrade oil is one that meets both a "W" low temperature viscosity requirement and a 100°C "operating temperature" requirement. For engine oils there is a specification that must be met at 150°C, known as a High Temperature/High Shear (HT/HS) viscosity. This is to simulate what happens in high stress areas of the engine e.g. Bearings. Centipoise (cP) and Centistokes (cSt) are the units viscosity is measured in.

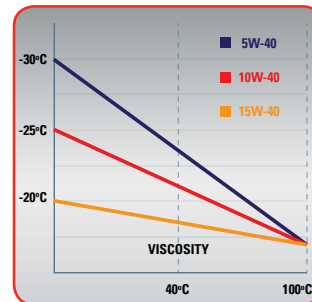
In addition, gear oils require a KRL test. This is a severe oil shear test, and the oil must stay in grade or within a nominated range after shear. Its severity is the main reason why 75W-x gear oils are expensive as these are difficult to make.



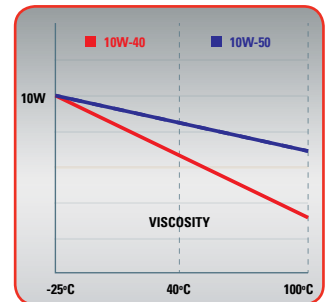
UNDERSTANDING VISCOSITIES

The number in front of the "W" signifies the viscosity of the oil at cold/start up temperature (tested at -10 to -35°C depending on the grade). The lower the first number, the faster the oil flows (pump ability) when the engine is cold.

The second number represents the oil's thickness at operating temperature (100°C). All oils thin out as they get hotter. So, the higher the second number, the less the oil will thin out as it heats up, compared to an oil with a lower second number.



5W-40, 10W-40 & 15W-40 have the same operating temperature and different start up viscosities.

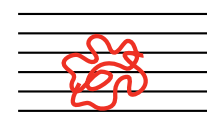


10W-40 & 10W-50 have the same start up viscosities and different operating temperatures viscosities.

PERMANENT VS TEMPORARY SHEAR

The below diagrams show the two types of shear that can occur with viscosity index improvers (VII). Permanent Shear is defined as the physical breaking apart of the polymer into smaller pieces and hence the oil suffers from a permanent loss of viscosity.

Temporary Shear occurs when the polymer is squashed but does not break apart and hence "springs back" to its original size after going through the area of high stress.



Normal polymer coil in oil

Non-reversible (Permanent Shear)



Rupture of coil under permanent shear

Reversible (Temporary Shear)



Polymer coil is squashed under temporary shear forces

The shearing effect occurs when the oil is forced through areas of tight clearances or is "squashed" (e.g. cam lobe to follower) and if the gap is too small, then the polymer will rupture.



Penrite 10 Tenths Racing 10,15 & 20 are formulated to be "shear free" and do not use any polymers. A special base oil combination is used to achieve the desired viscosity grades. As such, there are no components in the oil that can suffer from Permanent Shear so the oil holds its original viscosity for the life of the oil drain.



SAE J300 - ENGINE OILS 2015					
SAE Grade	Cold Cranking MAX Viscosity cP @ Temp, °C	Pumpability Max Viscosity cP @ Temp, °C	Viscosity @ 100°C		HT/HS @ 150°C Min cP
			Min cSt	Max cSt	
0W	6200 @ -35	60,000 @ -40	3.8	NA	NA
5W	6600 @ -30	60,000 @ -35	3.8	NA	NA
10W	7000 @ -25	60,000 @ -30	4.1	NA	NA
15W	7000 @ -20	60,000 @ -25	5.6	NA	NA
20W	9500 @ -15	60,000 @ -20	5.6	NA	NA
25W	13000 @ -10	60,000 @ -15	9.3	NA	NA
8	NA	NA	4.0	<6.1	1.7
12	NA	NA	5.0	<7.1	2.0
16	NA	NA	6.1	<8.2	<2.3
20	NA	NA	6.9	<9.3	2.6
30	NA	NA	9.3	<12.5	2.9
40	NA	NA	12.5	<16.3	See note
50	NA	NA	16.3	<21.9	3.7
60	NA	NA	21.9	<26.1	3.7

NOTE: 3.5cP for 0W-40, 5W-40 & 10W-40 grades, 3.7cP for 15W-40, 20W-40, 25W-40 & 40 grades. Penrite define "70" engine oils as above 26.1cSt at 100°C & "30W" as less than 13,000cP at -5°C.

API SERVICE CLASSIFICATIONS

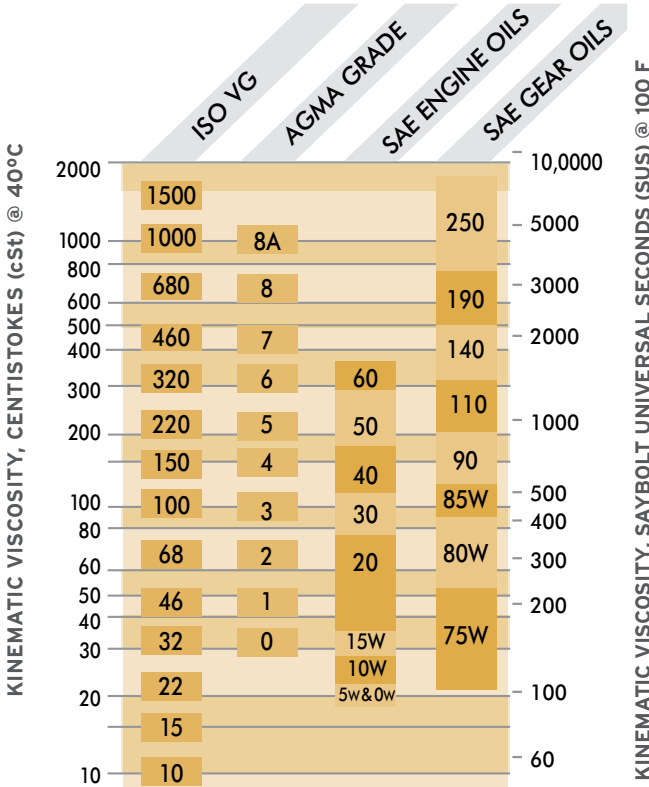
API stands for American Petroleum Institute. In 1970 along with the SAE and ASTM (American Society for Testing and Materials), they established the API Service Classification System to define the performance level of a given oil, unrelated in the main, to oil viscosity.

The API requirements "S" for Spark Ignition (petrol) and "C" for Compression Ignition (diesel) can be briefly described as follows. The latest API "S" and "C" classifications are backwards compatible and suitable for use in place of earlier classifications.

DESIGNATION AND DESCRIPTION:

- SA Oil without additive.
- SB Some antioxidant and anti scuff properties.
- SC Meets 1964-1967 requirements of Automotive manufacturers.
- SD Meets 1968-1971 requirements of Automotive manufacturers.
- SE Meets 1972-1979 requirements of Automotive manufacturers.
- SF Meets 1980-1988 requirements of Automotive manufacturers.
- SG Meets 1989-1993 requirements of Automotive manufacturers.
- SH Meets 1994-1997 requirements of Automotive manufacturers.
- SJ Meets 1998-2000 requirements of Automotive manufacturers.
- SL Meets 2001-2004 on requirements of Automotive manufacturers.
- SM Meets 2004-on requirements of automotive manufacturers. XW-20 and XW-30 grades have chemical limits.
- SN Meets MY2010 requirements of automotive manufacturers. XW-20 and XW-30 grades have chemical limits and are called API Resource Conserving.
- CA Light duty, high quality fuel, for MIL-L-2104A, 1954.

VISCOSITY EQUIVALENTS



NOTE:

- Read across horizontally.
- Assumes 100 VI Single grade oils.
- Equivalence is in terms of viscosity at 40°C only.
- Viscosity limits are approximate: For precise data consult ISO, AGMA and SAE specifications.
- W grades are represented only in terms of approximate 40°C viscosity. For low temperature limits consult SAE specifications.



Visit our website at www.penriteoil.com

CB	Moderate duty, lower quality (high sulphur) fuel.
CC	Moderate to severe duty diesel and gasoline service MIL-L-2104B, 1964.
CD	Severe duty diesel, including turbo, Caterpillar Series 3, MIL-L-2104C.
CD-II	API CD plus Detroit Diesel 6V53T approval for two stroke engines.
CE	Turbo/Supercharged heavy duty diesels from 1983.
CF	Off road indirect injection diesel engines and others using a broad range of fuel types including high sulphur. May be used to replace API CD oils.
CF-2	Severe duty two stroke diesel engine service from 1994.
CF-4	Severe Duty four stroke diesel engine service for lower emission diesel engines (from 1988).
CG-4	Severe Duty four stroke engines meeting 1994 emission standards (less than 0.5% fuel sulphur).
CH-4	High speed four stroke engines meeting 1998 emission standards (less than 0.5% fuel sulphur).
CI-4	High speed four stroke engines fitted with cooled EGR (released Dec 2001) and using low-sulphur fuel.
CI-4 PLUS	As per CI-4 but with further restrictions on after shear viscosity and performance. (released September 2004). Aust. 2008.
CJ-4	Released in 2006 for 15ppm maximum fuel sulphur. Enhanced wear, protection 1.0% ash maximum. US EPA '07.

API "Starburst" and "Donut" Licenses:

API license two types of Marks or Licenses: A Certification Mark commonly referred to as a "Starburst" and a Service Symbol, commonly referred to as a "Donut". These Marks identify a quality, API licensed motor oil petrol and diesel powered engines.

API have designed these licenses that define, certified and monitor engine oil performance that vehicle and engine manufacturers as well as the lubricants industry have considered necessary for satisfactory engine life and performance.

They are intended to assist the end user to identify products that have satisfied the requirements for licensing by the API and therefore provides confidence in the quality of the oil they are purchasing. In some countries, a lubricant cannot be sold without an API quality Mark.

API Certification Mark or "Starburst":

An oil showing this Mark identifies it as meeting the current ILSAC (International Lubricant Standardisation and Approval Committee)

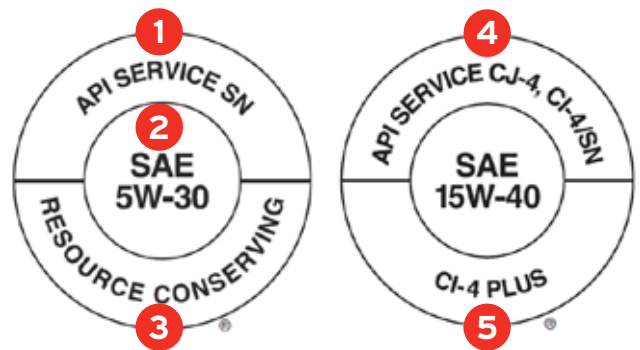


performance standard for engine protection and fuel economy requirements.

The ILSAC GF-5 minimum performance standard is the current basis for issuing a license to use the API Certification Mark or "Starburst".

API Service Symbol or "Donut":

An oil displaying a "Donut" denotes a licensed oil's performance properties through the use of API "S" Service Categories and, if applicable, the Resource Conserving and API "C" designations. Below are examples of "Donuts".



There are different parts to the Service Symbol or "Donut":

1. Performance Level

This will indicate the API performance level attained by the oil. Petrol engine oil specifications are designated by API "S" Service Categories, in this case, API SN. The use of more than one API "S" Service Category in this section of the Service Symbol is prohibited.

Diesel engine oil specifications are designated by API "C" categories, such as CJ-4.

2. Viscosity Grade

This is where the viscosity grade of the licensed product is shown.

3. Resource Conserving and Energy Conserving

These designations apply to oils intended for petrol engine use. Using these oils may result in an overall saving on fuel use or increased fuel economy.

4. Multiple Performance Levels

This section may include more than one API performance level. Oils designed for diesel use might also meet a petrol performance level. In this case, the "C" category is listed first followed by the "S" category.

5. Service Symbol with CI-4 Plus

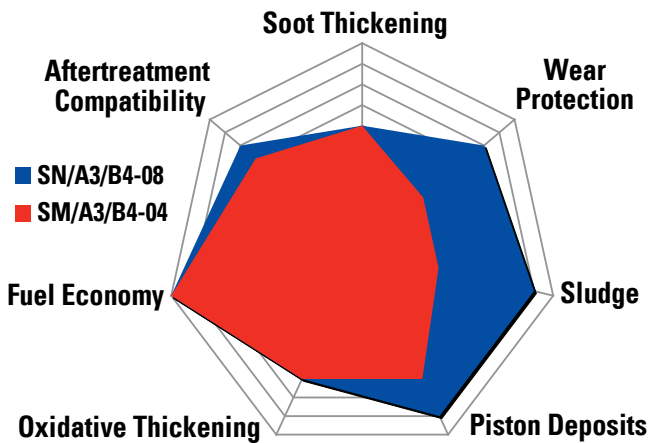
The "CI-4 PLUS" designation identifies oils that are formulated to provide a higher level of protection against soot related viscosity increase and viscosity loss due to shear in diesel engines. When originally introduced, "CI-4 PLUS" identified CI-4 oils meeting a higher level or performance.

CJ-4 oils include all "CI-4 PLUS" performance requirements. In this case, the "CI-4 PLUS" appears in the lower portion of the "Donut". This portion is also known as where the Performance Designation is listed.



BENEFITS OF API SN vs SM

Comparison of Specifications
SM/A3/B4-04 vs. SN/A3/B4-08



- ✓ Better wear protection
- ✓ Reduces engine deposits
- ✓ Improved compatibility with Ethanol fuels such as E85
- ✓ Protects seals
- ✓ Reduces sludge

ACEA ENGINE SERVICE CLASSIFICATIONS

ACEA stands for Association des Constructeurs Européens de l'Automobile. This classification system is the European equivalent of the API classification system, but is stricter and has more severe requirements. Hence an oil that meets both API and ACEA specifications uses a better additive package than one that is designed to meet only API specifications.

Unlike the API, ACEA has three main groups - "A/B" for gasoline and light duty (passenger car, 4WD etc) diesel engines, "C" for light duty three way catalyst (TWC) and Diesel Particulate Filter (DPF) compatible oils, usually low and mid **SAPS (Sulphated Ash Phosphorus Sulphur)** and "E" for heavy duty diesel engines. These can be defined as follows.

DESIGNATION AND DESCRIPTION:

- A1/B1** For use in gasoline and light duty diesel engines capable of using low friction, low viscosity, and low HT/HS shear (2.9 to 3.5cP) oils. A fuel economy specification, this oil may not be able to be used in all engines.
- A3/B3** Stable, stay in grade oil intended for use in high performance gasoline and diesel engines or extended drain intervals.
- A3/B4** For use in direct injection diesel engines where special oils may be required, but also suitable for applications described under A3/B3.
- A5/B5** Similar to A3/B3 but for engines capable of using low friction, low viscosity and low HT/HS oils. May be unsuitable for use in some engines.
- C1** Stable, stay in grade oil of A5/B5 performance level and low SAPS (Sulphated Ash $\leq 0.5\%$). These oils cannot meet API SM/SN.

- C2** Stable, stay in grade oil of A5/B5 performance and mid SAPS (Sulphated Ash $\leq 0.8\%$).
- C3** Stable, stay in grade oil with mid SAPS (Sulphated Ash $\leq 0.8\%$). These oils may also meet A3/B4* and API SN. HT/HS $>3.5cP$.
- C4** Stable, stay in grade oil similar to C1 but with tighter volatility limits and no lower limit on phosphorus.
- E2** General purpose oil for naturally aspirated and turbocharged diesel engines, medium to heavy duty service and mostly normal drain intervals. (Obsolete by 2010).
- E4** Stable, stay in grade oil more severe than E7, for significantly extended oil drain intervals. Usually synthetic or predominantly synthetic. Also for Euro 3 and Euro 4 engines.
- E6** As for E4 but with chemical limits to allow use in engines with particulate filters and SCR NOx reduction systems. Only for diesel fuel with $<50ppm$ sulphur. 1.0% ash, 0.08% phosphorus. Euro 4 and 5.
- E7** Designed for use in Euro 1, Euro 2 and Euro 3 emission diesel engines in severe heavy duty service and extended drain intervals where allowed. More severe than E2/E3 but not as severe as E4.
- E9** Designed for Euro 5 engines with DPFs. SAPS limits line up with API CJ-4 and 7BN minimum.

ACEA specification oils have tighter shear stability and oil volatility requirements than equivalent API specification oils.

*ACEA 2010 specification oils can no longer meet both C3 and A3/B4.

ACEA LOW AND MID SAPS SPECIFICATIONS

Low and mid SAPS oils generally meet an ACEA "C" specification, which are aimed at light duty diesel engines. There are 4 main ACEA low and mid SAPS specifications, all of which have slightly different chemical limits. See below:

REQUIREMENT	ACEA C1 (Low SAPS)	ACEA C2 (Mid SAPS)	ACEA C3 (Mid SAPS)	ACEA C4 (Low SAPS)
Viscosity HTHS @ 150°C	≥ 2.9	≥ 2.9	≥ 3.5	≥ 3.5
Sulphur, Mass %	≤ 0.2	≤ 0.3	≤ 0.3	≤ 0.2
Phosphorus, Mass %	≤ 0.05	≤ 0.09	≥ 0.07 ≤ 0.09	≤ 0.09
Sulphated Ash, Mass %	≤ 0.5	≤ 0.8	≤ 0.8	≤ 0.5

Other low and mid SAPS specifications used in the industry:

- Some European car manufacturers have their own low SAPS specifications to cover DPF applications such as BMW LL-04, MB 229.31/51, VW 507.00, amongst others.
- Japan have JASO DL-1 specification, as required in some late model Mazda and Mitsubishi diesel vehicles.



Visit our website at www.penriteoil.com

ILSAC ENGINE SERVICE CLASSIFICATIONS

ILSAC (International Lubricants Standardisation and Approval Committee) includes the major automobile manufacturers that manufacture vehicles in the USA and Japan. Effectively, ILSAC specifications are the fuel economy version of the API specifications.

- GF-1 Is obsolete.
- GF-2 Is equivalent to API SJ.
- GF-3 Is equivalent to API SL.
- GF-4 Is equivalent to API SM.
- GF-5 Is equivalent to API SN.

ILSAC grades only apply to viscosities XW-20 & XW-30. GF-4 has introduced a phosphorus limit of 0.08% maximum and a sulphur limit of 0.2% maximum, GF-5 is similar, but it introduced new requirements relating to phosphorus volatility and compatibility with ethanol fuels.

The latest ILSAC specification, GF-5 is backwards compatible and is suitable for use in place of earlier ILSAC classifications.

SUMMARY

ILSAC, API and ACEA specifications require a large range of engine and laboratory tests on the oil. Parameters such as high and low temperature wear, oxidation, soot control, oil thickening, deposit control, volatility, stay in grade performance, fuel economy, chemical composition and many others are tested against limits and rated.

In the case of the API, the oil specifications become more severe as the letters climb the alphabet, eg SL is more severe than SJ. This is not necessarily the case with ACEA as their specifications are more application specific.

OTHER FOUR STROKE CLASSIFICATIONS

HEAVY DUTY:

JASO - Japanese Automotive Standards Organization. They have 3 heavy duty classifications:

- JASO DL-1 Light duty diesel engine oil specification developed for use in engines equipped with an exhaust after treatment device such as a DPF or a catalyst.
- JASO DH-1 Heavy duty diesel, higher ash formulation with performance superior to API CF-4. Has additional valve train wear and piston cleanliness requirements.
- JASO DH-2 Heavy duty diesel engine oil specification, similar to API CJ-4 and ACEA E9. It was developed for use in engines equipped with an exhaust after treatment device such as a DPF or a catalyst.

MOTORCYCLE:

JASO also have 4 classifications for motorcycle oil, MA, MA1, MA2 and MB. Their differences are determined by a clutch system friction test.

- JASO MA Japanese four stroke motorcycles, non-friction modified engine oil suitable for use with wet clutches. Now further split into MA1 and MA2 based on a clutch system friction test.
- JASO MB Japanese four stroke motorcycles lowest friction oil.

MARINE:

- NMMA FC-W® Released in 2004 for four stroke outboard oils.
- NMMA FC-W® CAT Mid-SAPS oil for four stroke outboard engines with exhaust after treatment catalyst systems.

GLOBAL SPECIFICATIONS

Developed by ACEA, EMA (Engine Manufacturers Association) & JAMA (Japanese Automobile Manufacturers Association) for diesel oils with different limits to the 'donor' categories.

HEAVY DUTY: DHD-1 = E7/CI-4 + JASO tests

LIGHT DUTY: DLD-1 = B2 + JASO tests
DLD-2 = B1 + JASO tests
DLD-3 = B3 + JASO tests

OEM APPROVALS

Using the correct fluid during the warranty period for a vehicle ensures that you maintain your manufacturer warranty for that vehicle. Using a non-approved oil for servicing during the warranty period can jeopardise the manufacturer's warranty and could lead to engine failure if the product does not meet the OEM specifications for that engine.

OEM (Original Equipment Manufacturer) Approval example opposite: dexos™



TWO STROKE OILS

These are low ash or ashless oils depending on the end use. Products can be used in oil injection systems or premixed with the fuel. As they are consumed with the fuel, two stroke oils must not cause excessive combustion chamber or piston deposits, or engine failure may result.

The most common two stroke specifications are:
AIR COOLED:

- API TC Provides good wear protection and engine cleanliness.



ISO EG-B/JASO FB	Provides good protection against scuffing and varnish.
ISO EG-C/JASO FC	As per EG-B/FB but with severe restrictions on exhaust smoke, system blocking and detergency.
ISO EG-D/JASO FD	Enhanced detergency and varnish protection compared to EG-C/FD.

TISI Thai Industrial standard with limits on smoke, generally equivalent to JASO FC.

WATER COOLED (MARINE):

NMMA TC-W3®: Ashless oil for two stroke outboard engines. Oils can be licensed against this category.

SHELF LIFE OF OILS

The performance properties of lubricants will remain intact for many years provided they are in protected storage and not exposed to severe high/low temperature cycles and outside contamination. Generally, the simpler the oil formulation, the longer the oil will remain satisfactory.

DIESEL PARTICULATE FILTERS (DPF) & CORRECT LUBRICANTS

Diesel Particulate Filters (DPF), sometimes known as Catalysed Particulate Filters (CPF), form part of the latest generation systems, designed to clean exhaust emissions in many late model diesel vehicles.

Below is an example of what a DPF may look like:



What does a DPF do and how does it work?

- A DPF captures soot and particulates from the exhaust gas until a predetermined amount is reached.
- At set time intervals, it cleans or regenerates itself by burning off captured soot using a high temperature cleaning process.

For optimum performance of the DPF, most vehicles will require a low or mid SAPS oil.

Why do DPFs need low SAPS oils?

- Ash is produced after combustion and is carried, along with soot to be trapped by the DPF. Too much ash and it won't be able to be removed during regeneration, thus clogging the filter which can then cause exhaust back pressure and potential engine damage.
- Excessive Phosphorus can poison exhaust system catalysts, reducing their efficiency.
- Excessive Sulphur can poison devices that remove nitrogen oxides from exhaust emissions.

Below is a picture showing the effects of using the incorrect oil in a DPF:

Burnt particulate matter that is starting to block the filter. If the incorrect oil is used, this can block a DPF prematurely and cause expensive repairs.



FUEL COMPATIBLE ENGINE OILS

E85 Fuel is a mixture consisting of 85% ethanol and 15% unleaded petrol. It is important to use engine oils that are compatible with E85 fuel. Oils meeting API SN Resource Conserving and ILSAC GF-5 are best able to handle E85 fuel as a specific test was introduced for oils meeting this specification for corrosion protection when used with E85 as the fuel.

LPG Fuel vehicles powered by LPG (Liquid Petroleum Gas) or dual fuel (Petrol/LPG), need specialised engine oils to counteract effects such as oil nitration and valve seat recession. Oil nitration is the main cause of premature bearing failure in these engines. LPG also runs hotter and dryer than petrol and can cause valve seat recession in engines that are not using a correctly balanced engine oil. LPG oils have effective additives that counter balance the effects of running on LPG.

E10 Fuel is a blend of 90% Unleaded Petrol and 10% Ethanol. Many vehicles can run on this blend of fuel and most engine oils, especially those meeting current specifications, with improved additive packs and higher detergency levels, are well suited to providing the protection required.

Diesel Fuel engine oils contain higher quantities of detergents and dispersants to cope with the increased amount of soot created during engine operation. Later model vehicles fitted with DPF's may also need specialised low or mid SAPS oils.

Racing Fuels are generally higher octane versions of petrol/gasoline that provide better engine efficiency and power. Most engine oils can easily cope with high octane fuels. E.g. Avgas.

Methanol/Alcohol Fuels - Exotic fuels such as methanol and alcohol blends are generally used in motorsport. Most modern oils can provide adequate protection with these fuels providing that the oil does not become too diluted with the fuel. It is recommended that oils used with these fuels, be changed at least after each race meeting.



Visit our website at www.penriteoil.com

Our Engine Oil Brands

Choose the right engine oil for your vehicle.

HPR

- ✓ Premium.
- ✓ Full Synthetic, Semi Synthetic and Premium Mineral.
- ✓ Latest API and ACEA Specifications.
- ✓ DOUBLE LAYER of engine wear protection with FULL ZINC and EXTRA TEN technology.
- ✓ Manufacturer Approved to maintain vehicle warranty and specifications. (see table below)

ENVIRO+

- ✓ Application Specific.
- ✓ Full Synthetic Low and Mid SAPS.
- ✓ Latest API and ACEA Specifications.
- ✓ Catalyst and DPF Compatible oils with Fuel Saving benefits.
- ✓ Manufacturer Approved to maintain vehicle warranty and specifications. (see table below)
- ✓ Latest low viscosity fuel efficient oils.

10 TENTHS

100% PERFORMANCE

- ✓ High Performance and Competition.
- ✓ Full Synthetic PAO (Group 4) and Ester (Group 5) base oils (Racing and Premium Ranges).
- ✓ SHEAR FREE (Racing Range) formulation offers start up protection, maintains oil pressure and eliminates viscosity loss.
- ✓ FULL ZINC+ anti-wear additive package.

EVERYDAY

- ✓ Everyday Motoring.
- ✓ Full Synthetic, Semi Synthetic and Premium Mineral.
- ✓ Latest API Specifications for better wear protection, less sludge and piston deposits.

Classic

- ✓ Classic, Veteran & Vintage vehicles prior to 1990's.
- ✓ Premium Mineral.
- ✓ HIGH ZINC anti-wear additive package.
- ✓ Designed to meet the original requirements.

OEM APPROVALS

PRODUCT:	OEM APPROVALS:
HPR 5	MB-Approval 229.5
Enviro+ 5W-30	Volkswagen VW 504.00/507.00
Enviro+ GF-5	General Motors dexos1®
Enviro+ DL-1	JASO DL-1
Enviro+ 5W-40	Volkswagen VW 502.00/505.00/505.01, Porsche A40, MB-Approval 229.51, BMW Longlife-04, General Motors dexos2®
Enviro+ 10W-40	MB-Approval 228.51, Cummins CES 20081, Volvo VDS-4, Mack EO-O Premium Plus, Renault RLD-3, JASO DH-2, MAN M 3575/3477/3271-1



Our Engine Oil Features

The Penrite **DOUBLE LAYER of PROTECTION** is standard on all **HPR and 10 Tenths Racing Oils**.

FULL ZINC



Zinc is part of an anti-wear additive used to coat metal surfaces and be a sacrificial agent against wear. Penrite products containing **FULL ZINC** have between 1000-1600 ppm (parts per million) of zinc.

Penrite 10 Tenths Racing and Premium Full Synthetic Oils contain **FULL ZINC+**, which have optimised zinc levels plus boron and an organomolybdenum complex (Racing 0 & 5 only), to lift the total level of the anti-wear package to over **1800+** ppm on the Premium FS and Racing ranges (**2200+** ppm for Racing 0 & 5 only).

Together with **FULL ZINC** and the **EXTRA TEN**, this combination provides a **DOUBLE LAYER** of engine wear protection over normal engine oils at operating temperature.

EXTRA TEN

EXTRA TEN technology is available in all HPR and 10 Tenths Premium Range engine oils. **EXTRA TEN** is an increase in the oil's operating temperature viscosity over the normal SAE or manufacturer recommended rating i.e. HPR 10 (10W-50) vs 10W-40. **EXTRA TEN** technology was developed over 30 years ago due to local driving conditions and the harsh Australian climatic environment.

EXTRA TEN reduces the rate at which the oil thins as it is heated and provides an increase in film strength, lower heat and friction thus contributing to longer engine life. It is particularly effective when engines are under load such as when towing and working in harsh conditions.



To find out more about how Penrite's **"EXTRA TEN"** protects your engine, simply visit the Penrite website to view the short **VIDEO**.



Visit our website at www.penriteoil.com

WEAR PROTECTION

As engine oils are compressed and pulverised by the workings of an engine, the VI Improvers in the oil are cut or sheared, losing their ability to expand when heated which affects the oil's multigrade viscosity. Penrite 10 Tenths Racing Oils feature **WEAR PROTECTION** technology that prevents viscosity loss.



This unique benefit and the **100% PAO & ESTER** full synthetic technology provides ultimate engine performance and protection.

100% PAO & ESTER FULL SYNTHETIC

Blended using premium full synthetic 100% PAO (Poly Alpha Olefin) Group IV & ESTER Group V base oils for maximum heat resistance and high performance.

100% PAO's (Poly Alpha Olefin) are extremely pure due to their complex petro-chemical manufacturing process. As a result, the chemical oil structure formation is "flat" compared to lower grade full synthetic chain structures.

Having a "flat" oil structure creates less friction between chemical structures which allows the oil to effectively become "more slippery."

The combination of **100% PAO's & ESTER** together with our premium additives, provides the ultimate protection against oxidation due to their outstanding heat resistance.

Other product benefits include oil pressure stability, longer engine life and greater engine performance.

LOW EMISSIONS

ENVIRO+ is a wide range of highly advanced, full synthetic, low and mid SAPS engine oils that have been developed for late model fuel efficient passenger, light and heavy duty vehicles including those fitted Diesel Particulate Filters (DPFs).



The range covers petrol, E85 and diesel fuel types. Many of these products are **OEM APPROVED** and will not void any vehicle warranties, when used in appropriate applications.

REPLACEMENT VISCOSITIES

Replacement Viscosities means "Can be used where the following SAE viscosities are recommended."

This refers to an oil with a particular viscosity grade being able to be used to replace other viscosity grades, as listed.

Key Label Messages



FOR PRODUCT RECOMMENDATIONS REFER TO OUR LUBE RECOMMENDATION GUIDE.



Visit our website at www.penriteoil.com



ENGINE OILS

Penrite recognises that different engine designs require a range of oils to properly lubricate and protect the engine while preserving the fuel economy or power of the engine. The first consideration is the original oil requirement for start up viscosity at typical ambient conditions. Then the most appropriate oil grade in our range is applied that would ensure good protection at operating temperatures. This is one of the reasons why Penrite engine oils have some of the widest multigrade ranges of any oil company.

PENRITE



Visit our website at www.penriteoil.com


Penrite HPR premium quality engine oils are a performance range of engine lubricants designed for Australian conditions. The Penrite HPR range has been engineered with a unique DOUBLE LAYER of engine protection with FULL ZINC and Penrite's advanced EXTRA TEN technology.

HPR™

ENGINE OILS | HPR



The Penrite HPR range has been developed for use in vehicles from modern compact multi valved family cars through to high performance super cars, racing and competition machines, 4WD's, SUV's, light and heavy commercials and motorcycles.

HPR 0

Product Code	Pack Size	Carton Qty	Base Oil: Full Synthetic Replacement Viscosities: OW-20, 5W-20	Viscosity: OW-30
HPR00001	1 Litre	6	Key Specifications: API SL/CF, ACEA A3/B4, GM 4718M, MB 229.3/229.5, Ford M2C913-A/913-B, BMW Longlife-01 Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel, Hybrid Features: Full Zinc, Extra Ten	
HPR00005	5 Litres	4		
HPR00020	20 Litres	1		
HPR00205	205 Litres	1		


Penrite HPR 0 is a premium, full synthetic, SAE OW-30 engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. Also suitable for use where ILSAC GF-3/GF-4 and ACEA A1/B1 or A5/B5 is required. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.

HPR 5

Product Code	Pack Size	Carton Qty	Base Oil: Full Synthetic Replacement Viscosities: 5W-30, 10W-30	Viscosity: 5W-40
HPR05001	1 Litre	6	OEM Approvals: MB-Approval 229.5 Key Specifications: API SN/CF, ACEA A3/B4, JASO MA1, VW 502.00/505.00, GM 4718M, GM-LL-B-025, Ford M2C912-A/913-A/913-B/913-C/913-D/153-G/153-H Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel Features: Full Zinc, Extra Ten, Manufacturer Approved	 
HPR05005	5 Litres	4		
HPR05006	6 Litres	3		
HPR05010	10 Litres	1		
HPR05020	20 Litres	1		
HPR05060	60 Litres	1		
HPR05205	205 Litres	1		

Penrite HPR 5 is a premium, full synthetic, SAE 5W-40, Original Equipment Manufacturer (OEM) warranty, Fully Licensed/Approved engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. Also suitable for use where ILSAC GF-3/GF-4 and ACEA A1/B1 or A5/B5 is required. Licensed by API to meet API SN Service Category. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.

HPR 10

Product Code	Pack Size	Carton Qty	Base Oil: Full Synthetic Replacement Viscosities: 10W-40, 15W-40	Viscosity: 10W-50
HPR10001	1 Litre	6	Key Specifications: API SN/CF, ACEA A3/B4, MB 229.1/229.3, Ford M2C905-A3/910-A/153-F/153-G, GM 9986126, Holden HN 2100, VW 500.00/502.00/505.00, BMW LL-01/LL-98 Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel Features: Full Zinc, Extra Ten	
HPR10005	5 Litres	4		
HPR10006	6 Litres	3		
HPR10010	10 Litres	1		
HPR10020	20 Litres	1		
HPR10060	60 Litres	1		
HPR10205	205 Litres	1		

Penrite HPR 10 is a premium, full synthetic, SAE 10W-50 engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.



Visit our website at www.penriteoil.com

HPR 15

Product Code	Pack Size	Carton Qty
HPR15001	1 Litre	6
HPR15005	5 Litres	4
HPR15010	10 Litres	1
HPR15020	20 Litres	1
HPR15060	60 Litres	1
HPR15205	205 Litres	1

Base Oil: Full Synthetic **Viscosity:** 15W-60
Replacement Viscosities: 15W-50, 20W-40, 20W-50

Key Specifications: API SN/CF, ACEA A3/B4, GM 6094M, Ford M2C153-E/902-A3, MB 229.1, VW 502.00/505.00

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel

Features: Full Zinc, Extra Ten

Penrite HPR 15 is a premium, full synthetic, SAE 15W-60, engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.



HPR 30

Product Code	Pack Size	Carton Qty
HPR30001	1 Litre	6
HPR30005	5 Litres	4
HPR30020	20 Litres	1
HPR30060	60 Litres	1
HPR30205	205 Litres	1

Base Oil: Premium Mineral **Viscosity:** 20W-60
Replacement Viscosities: 20W-40, 20W-50, 25W-60, SAE 30

Key Specifications: API SM/CG-4, ACEA A3/B3, GM 6094M, Ford WSS-M2C153-E, VW 502.00/505.00

Fuel Types: Petrol/E10, Racing, Diesel, LPG/Dual Fuel

Features: Full Zinc, Extra Ten

Penrite HPR 30 is a premium high performance mineral, SAE 20W-60, non-friction modified engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC (approx. 1600 ppm) and Penrite's advanced EXTRA TEN technology. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.



HPR 40 & 50

Product Code	Pack Size	Carton Qty
HPR 40		
HPR40001	1 Litre	6
HPR40005	5 Litres	4
HPR40020	20 Litres	1
HPR40060	60 Litres	1
HPR40205	205 Litres	1

Base Oil: Premium Mineral
Features: Full Zinc, Extra Ten

Viscosity: 25W-70
Replacement Viscosities: 25W-50, 25W-60, SAE 40

Viscosity: 40-70
Replacement Viscosities: SAE 50

Key Specifications: API SL
Fuel Types: Petrol/E10, Racing

Penrite HPR 40 & 50 are premium high performance mineral, SAE 25W-70 & 40-70 respectively, non-friction modified engine oils. They contain a DOUBLE LAYER of engine wear protection with FULL ZINC (approx. 1500 ppm) and Penrite's advanced EXTRA TEN technology. They use a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions.





HPR Diesel 5, 10 & 15

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

HPR Diesel 5

HPRD5001	1 Litre	6
HPRD5005	5 Litres	4
HPRD5010	10 Litres	1
HPRD5020	20 Litres	1
HPRD5060	60 Litres	1
HPRD5205	205 Litres	1
HPRD51000LTR	1000 Litres	1

HPR Diesel 10

HPRD10001	1 Litre	6
HPRD10005	5 Litres	4
HPRD10010	10 Litres	1
HPRD10020	20 Litres	1
HPRD10060	60 Litres	1
HPRD10205	205 Litres	1

HPR Diesel 15

HPRD15001	1 Litre	6
HPRD15005	5 Litres	4
HPRD15010	10 Litres	1
HPRD15020	20 Litres	1
HPRD15060	60 Litres	1
HPRD15205	205 Litres	1

Base Oil: Semi Synthetic
Features: Full Zinc, Extra Ten

Viscosity: 5W-40

Replacement Viscosities: 5W-30, 10W-30, 10W-40

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, MB 228.3/229.3, VW 502.00/505.00, JASO DH-1, Global DLD-2/DLD-3, Ford M2C153-H/171-C/913-B/913-C

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Viscosity: 10W-40

Replacement Viscosities: 10W-30

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, MB 228.3/229.3, VW 502.00/505.00, JASO DH-1, Global DLD-2/DLD-3, Ford M2C153-H/171-C

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Viscosity: 15W-50

Replacement Viscosities: 15W-40, 20W-40, 20W-50

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, Ford M2C171-C/153-F/153-G, JASO DH-1, MB 228.3/229.3

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Penrite HPR Diesel 5, 10 & 15 are premium high performance, semi synthetic, SAE 5W-40, 10W-40 & 15W-50 respectively, non-friction modified diesel engine oils. They contain a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. They contain a combination of high technology additives, including increased dispersant levels, low shear viscosity modifiers to protect against corrosion, oil oxidation and sludge under all operating conditions.



HPR Diesel

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

HPRD001	1 Litre	6
HPRD005	5 Litres	4
HPRD010	10 Litres	1
HPRD020	20 Litres	1
HPRD060	60 Litres	1
HPRD205	205 Litres	1

Base Oil: Premium Mineral **Viscosity:** 20W-60

Replacement Viscosities: 20W-40, 20W-50, Mono 30

Key Specifications: API CH-4/SJ, ACEA A3/B3/E7, Global DLD-1, JASO MA, JASO CD Plus, Ford WSS-M2C911-A1, VW 500.00, MTU Type 2, MB 228.3

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Features: Full Zinc, Extra Ten

Penrite HPR Diesel is a premium high performance, mineral, SAE 20W-60, non-friction modified diesel engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. It contains a combination of high technology additives, including increased dispersant levels and low shear viscosity modifiers. It protects against corrosion, oil oxidation and sludge under all operating conditions.



Visit our website at www.penriteoil.com

HPR Gas 10 & Gas

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

HPR Gas 10

HPRG10001	1 Litre	6
HPRG10005	5 Litres	4
HPRG10020	20 Litres	1
HPRG10060	60 Litres	1
HPRG10205	205 Litres	1

HPR Gas

HPRG001	1 Litre	6
HPRG005	5 Litres	4
HPRG020	20 Litres	1
HPRG060	60 Litres	1
HPRG205	205 Litres	1

Base Oil Gas 10: Semi Synthetic Gas: Premium Mineral
Features: Full Zinc, Extra Ten

Viscosity: 10W-50

Replacement Viscosities: 10W-40, 15W-40, 15W-50

Key Specifications: API CI-4/SL, ACEA A3/B3, MB 228.1/229.3, Ford M2C153-F/153-G/905-A3/910-A, JASO MA, Holden HN 2314, VW 502.00/505.00, China National GB 11122-2006

Fuel Types: LPG/Dual Fuel, Petrol/E10, Diesel

Viscosity: 20W-60

Replacement Viscosities: 20W-40, 20W-50, SAE 30

Key Specifications: API CG-4 /SL, VW 501.01, Holden HN 2314, MB 228.3/229.1, Ford WSE-M2C902-A3

Fuel Types: LPG/Dual Fuel, Petrol/E10, Diesel

Penrite HPR GAS 10 & HPR Gas are premium high performance, semi synthetic SAE 10W-50 and premium mineral SAE 20W-60, non-friction modified engine oils. They contain a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. They also contain a combination of high technology additives, including additives to prevent oil nitration and low shear viscosity modifiers. They protect against corrosion, oil oxidation and sludge under all operating conditions.



PENRITE PRODUCT	Litres							
	1	5	6	10	20	60	205	1000
HPR 0	⊙	⊙	-	-	⊙	-	⊙	-
HPR 5	⊙	⊙	⊙	⊙	⊙	⊙	⊙	-
HPR 10	⊙	⊙	⊙	⊙	⊙	⊙	⊙	-
HPR 15	⊙	⊙	-	⊙	⊙	⊙	⊙	-
HPR 30	⊙	⊙	-	-	⊙	⊙	⊙	-
HPR 40	⊙	⊙	-	-	⊙	⊙	⊙	-
HPR 50	⊙	⊙	-	-	⊙	⊙	⊙	-
HPR Diesel 5	⊙	⊙	-	⊙	⊙	⊙	⊙	⊙
HPR Diesel 10	⊙	⊙	-	⊙	⊙	⊙	⊙	-
HPR Diesel 15	⊙	⊙	-	⊙	⊙	⊙	⊙	-
HPR Diesel	⊙	⊙	-	⊙	⊙	⊙	⊙	-
HPR Gas 10	⊙	⊙	-	-	⊙	⊙	⊙	-
HPR Gas	⊙	⊙	-	-	⊙	⊙	⊙	-

(All products are available in 1000L Pods, on request)

Key Features & Benefits of the HPR range:

- › EXTRA TEN provides an extra layer of protection.
- › FULL ZINC to minimise engine wear.
- › OEM Approvals on selected products.
- › Latest API and ACEA industry specifications.
- › Race bred for road and track.
- › Available in multiple sizes to suit most applications.



Visit our website at www.penriteoil.com

ENVIRO+™

Enviro+ engine oils are a range of highly advanced, full synthetic low and mid SAPS (Sulphated Ash, Phosphorus and Sulphur) engine oils that have been developed for late model fuel efficient passenger, light and heavy duty vehicles including those fitted with long life catalysts such as Diesel Particulate Filters (DPFs).

The Enviro+ range has been developed to provide long lasting protection for vehicles with extended oil drain intervals as well as providing OEM approved products to satisfy new vehicle warranty requirements. The range covers petrol, E85 and diesel fuel types.

ACEA "C" COMPATIBLE PRODUCTS

PRODUCT	ACEA C1	ACEA C2	ACEA C3	ACEA C4
Enviro+ 5W-20		YES		
Enviro+ 5W-30		SFU	YES	
Enviro+ DL-1		YES		
Enviro+ C-3		SFU	YES	
Enviro+ C-4	SFU			YES
Enviro+ 5W-40		SFU	YES	

(SFU = Suitable For Use)

Enviro+ Hybrid OW-16 **NEW**

PETROL ONLY

Product Code	Pack Size	Carton Qty	Base Oil: Full Synthetic	Viscosity: OW-16
--------------	-----------	------------	--------------------------	------------------

EPLUSHYBOW16001	1 Litre	6
EPLUSHYBOW16005	5 Litres	4

Key Specifications: API SN
Fuel Types: Hybrid, Petrol/E10
Features: Mid SAPS, Maximises Fuel Economy & Wear Protection

Penrite Enviro+ Hybrid OW-16 is a premium full synthetic SAE OW-16 engine oil, particularly suited for modern petrol/hybrid vehicles. It uses the latest advances in mid SAPS additive technology and features low volatility synthetic base oil that minimises oil loss. Not suitable for use in vehicles fitted with Diesel Particulate Filters (DPFs).



Enviro+ OW-20 **NEW**

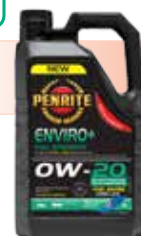
PETROL ONLY

Product Code	Pack Size	Carton Qty	Base Oil: Full Synthetic	Viscosity: OW-20
--------------	-----------	------------	--------------------------	------------------

EPLUSOW20001	1 Litre	6
EPLUSOW20005	5 Litres	4
EPLUSOW20020	20 Litres	1

Key Specifications: API SN Resource Conserving, ILSAC GF-5, Ford M2C945-A/947-A, Chrysler MS-6395, GMW 16182
Fuel Types: Petrol/E10, E85, LPG/Dual Fuel, Hybrid
Features: Mid SAPS, Maximum Engine Life

Penrite Enviro+ OW-20 is a premium full synthetic, SAE OW-20 engine oil. It uses the latest advances in mid SAPS additive technology and features low volatility synthetic base oil that minimises oil loss as well as an enhanced corrosion protection package for ensuring compatibility with ethanol based fuels such as E85. Licensed by API to meet API SN Resource Conserving and ILSAC GF-5. Not suitable for use in vehicles fitted with Diesel Particulate Filters (DPFs).



Enviro+ 5W-20

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUS5W20001	1 Litre	6
EPLUS5W20005	5 Litres	4
EPLUS5W20010	10 Litres	1
EPLUS5W20020	20 Litres	1
EPLUS5W20060	60 Litres	1
EPLUS5W20205	205 Litres	1

Base Oil: Full Synthetic**Viscosity:** 5W-20

Key Specifications: API SN, ACEA C2, GMW 16182, Chrysler MS-6395, Ford M2C153-H/925-A/930-A/945-A

Fuel Types: Petrol/E10, Diesel, Diesel with DPF, Hybrid

Features: Mid SAPS, Latest Oil Technology, Maximum Power

Penrite Enviro+ 5W-20 is a premium full synthetic, SAE 5W-20 fuel efficient, low viscosity engine oil. It is manufactured using the latest advances in mid SAPS additive technology. It is designed to maximise fuel economy as well as providing complete protection for vehicles running low viscosity engine oils.



Enviro+ 5W-30

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUS5W30001	1 Litre	6
EPLUS5W30005	5 Litres	4
EPLUS5W30010	10 Litres	1
EPLUS5W30020	20 Litres	1
EPLUS5W30060	60 Litres	1
EPLUS5W30205	205 Litres	1

Base Oil: Full Synthetic**Viscosity:** 5W-30

OEM Approvals: VW 504.00/507.00

Key Specifications: ACEA C3, BMW Long Life-04, MB 229.51/229.31, VW 505.01 (2005), Porsche C30

Fuel Types: Petrol/E10, Diesel, Diesel with DPF

Features: Mid SAPS, Maintains Fuel Economy, Manufacturer Approved

Penrite Enviro+ 5W-30 is a premium full synthetic, SAE 5W-30 Original Equipment Manufacturer (OEM), Fully Licensed and Warranty Approved engine oil. It is fully approved for warranty service for VAG (Volkswagen Automotive Group) vehicles such as Volkswagen/Audi/Skoda/Seat and for other premium European brands. It uses the latest advances in mid SAPS additive technology. Also suitable for use where an ACEA C2 oil is required.



Enviro+ GF-5

PETROL ONLY

Product Code	Pack Size	Carton Qty
EPLUSGF5001	1 Litre	6
EPLUSGF5005	5 Litres	4
EPLUSGF5006	6 Litres	3
EPLUSGF5010	10 Litres	1
EPLUSGF5020	20 Litres	1
EPLUSGF5060	60 Litres	1
EPLUSGF5205	205 Litres	1

Base Oil: Full Synthetic**Viscosity:** 5W-30

OEM Approvals: GM dexos1™ Licensed

Key Specifications: API SN Resource Conserving, ILSAC GF-5, Ford M2C946-A, GM 4718M/6094M, Chrysler MS 6395

Fuel Types: Petrol/E10, E85, LPG/Dual Fuel, Hybrid

Features: Mid SAPS, Latest Oil Technology, Manufacturer Approved

Penrite Enviro+ GF-5 is a premium full synthetic, SAE 5W-30 Original Equipment Manufacturer (OEM), Fully Licensed and Warranty Approved engine oil. It is approved for warranty service for GM, Holden and HSV petrol engined vehicles, requiring dexos1™ engine oil. It uses the latest advances in mid SAPS additive technology. Licensed by API to meet API SN Resource Conserving and ILSAC GF-5. Not suitable for use in vehicles fitted with Diesel Particulate Filters (DPFs).



Enviro+ DL-1

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUSDL1001	1 Litre	6
EPLUSDL1005	5 Litres	4
EPLUSDL1010	10 Litres	1
EPLUSDL1020	20 Litres	1
EPLUSDL1060	60 Litres	1
EPLUSDL1205	205 Litres	1

Base Oil: Full Synthetic**Viscosity:** 5W-30

OEM Approvals: JASO DL-1 - Registration Number D061POA001

Key Specifications: ACEA C2

Fuel Types: Petrol/E10, Diesel, Diesel with DPF

Features: Mid SAPS, Improved Fuel Economy, Long Drain Intervals

Penrite Enviro+ DL-1 is a premium full synthetic, SAE 5W-30 engine oil, manufactured using the latest advances in mid SAPS additive technology. It meets ACEA C2 requirements and is On-File for JASO DL-1 applications.



D061POA001

DL-1Visit our website at www.penriteoil.com

Enviro+ C-3 **NEW**

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUSC3001	1 Litre	6
EPLUSC3005	5 Litres	4
EPLUSC3010	10 Litres	1
EPLUSC3020	20 Litres	1

Base Oil: Full Synthetic

Viscosity: 5W-30

Key Specifications: ACEA C3, VW 504.00/507.00, MB 229.31/229.51, BMW Longlife-04, Porsche C30, VW 505.01(2005)

Fuel Types: Petrol/E10, Diesel, Diesel with DPF

Features: Mid SAPS, Improved Fuel Economy, Long Drain Intervals

Penrite Enviro+ C-3 is a premium full synthetic, SAE 5W-30 engine oil, manufactured using the latest advances in mid SAPS additive technology. It meets and exceeds many European manufacturer specifications. Also suitable for use where an ACEA C2 oil is required.



ENGINE OILS | Enviro+

Enviro+ C-4

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUSC4001	1 Litre	6
EPLUSC4005	5 Litres	4
EPLUSC4010	10 Litres	1
EPLUSC4020	20 Litres	1
EPLUSC4205	205 Litres	1

Base Oil: Full Synthetic

Viscosity: 5W-30

Key Specifications: ACEA C4, Renault RN 0720, Ford M2C934-B (level)

Fuel Types: Petrol/E10, Diesel, Diesel with DPF

Features: Low SAPS, Improved Fuel Economy, Long Drain Interval

Penrite Enviro+ C-4 is a premium full synthetic, SAE 5W-30 engine oil, manufactured using the latest advances in low SAPS additive technology. It is also suitable for use in applications requiring ACEA C1 engine oils.



Enviro+ 5W-40

PETROL & DIESEL

Product Code	Pack Size	Carton Qty
EPLUS5W40001	1 Litre	6
EPLUS5W40004	4 Litres (Asia)	4
EPLUS5W40005	5 Litres	4
EPLUS5W40006	6 Litres	3
EPLUS5W40010	10 Litres	1
EPLUS5W40020	20 Litres	1
EPLUS5W40060	60 Litres	1
EPLUS5W40205	205 Litres	1
EPLUS5W401000LTR	1000 Litres	1

Base Oil: Full Synthetic

Viscosity: 5W-40

Replacement Viscosities: 0W-40, 5W-30, 10W-30

OEM Approvals: GM dexos2™, Porsche A40,

VW Standard 502.00/505.00/505.01,

MB-Approval 229.51, BMW Longlife-04

Key Specifications: API SN/CF, ACEA C3, MB 229.31

Fuel Types: Petrol/E10, Diesel, Diesel with DPF

Features: Mid SAPS, Extra Ten, Latest Oil Technology, Manufacturer Approved

Penrite Enviro+ 5W-40 is a premium full synthetic, SAE 5W-40 Original Equipment Manufacturer (OEM), Fully Licensed and Warranty Approved engine oil. It is approved for warranty service for particular GM/Holden (dexos2™), VW, Audi, Skoda, Seat, BMW, Mercedes Benz and Porsche vehicles. It uses the latest advances in mid SAPS additive technology. Licensed by API to meet API SN Service Category. Suitable for use where an ACEA C2 oil is required.



PENRITE PRODUCT	Litres								
	1	4	5	6	10	20	60	205	1000
Enviro+ Hybrid 0W-16	⊙	-	⊙	-	-	-	-	-	-
Enviro+ 0W-20	⊙	-	⊙	-	-	⊙	-	-	-
Enviro+ 5W-20	⊙	-	⊙	-	⊙	⊙	⊙	⊙	-
Enviro+ 5W-30	⊙	-	⊙	-	⊙	⊙	⊙	⊙	-
Enviro+ GF-5	⊙	-	⊙	⊙	⊙	⊙	⊙	⊙	-
Enviro+ DL-1	⊙	-	⊙	-	⊙	⊙	⊙	⊙	-
Enviro+ C-3	⊙	-	⊙	-	⊙	⊙	-	-	-
Enviro+ C-4	⊙	-	⊙	-	⊙	⊙	-	⊙	-
Enviro+ 5W-40	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙

(All products are available in 1000L Pods, on request)

- Key Features & Benefits of the Enviro+ range:**
- > Designed for low emission engines.
 - > FULL SYNTHETIC.
 - > FUEL SAVING technology on selected products.
 - > E85 Fuel compatible for selected products.
 - > Maximise DPF and exhaust catalyst life.
 - > Vehicle Manufacturer Approvals.
 - > Latest API and ACEA Industry Specifications.



Visit our website at www.penriteoil.com

10 TENTHS™

100% PERFORMANCE

Penrite 10 Tenths Racing & Premium Range are high performance, premium 100% PAO & Ester full synthetic engine oils that provide the ultimate protection in on road and competition applications. Designed, tested and proven in tough Australian conditions.

Racing 0, 5, 10, 15 & 20

Product Code **Pack Size** **Carton Qty** **Base Oil:** 100% PAO & Ester Full Synthetic
Features: Full Zinc+, Shear Free, Competition Proven

Racing 0

RACING0W20005 5 Litres 4

Viscosity: 0W-20

Key Specifications: API SL/CF, BMW LL-98, MB 229.1

Fuel Types: Petrol/E10, Racing

Racing 5

RACING5W30001 1 Litre 6

RACING5W30005 5 Litres 4

RACING5W30020 20 Litres 1

Viscosity: 5W-30

Replacement Viscosities: 5W-20

Key Specifications: API SL/CF, ACEA A1/B1, BMW LL-98, MB 229.1, Ford M2C913-A/B/M2C912-A1

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel, Racing

Racing 10

RACING10W40001 1 Litre 6

RACING10W40005 5 Litres 4

RACING10W40020 20 Litres 1

Viscosity: 10W-40

Replacement Viscosities: 10W-30

Key Specifications: API SN/CF, ACEA A3/B3, BMW LL-98, MB 229.1/229.3, VW 502.00/505.00, Porsche GL

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel, Racing

Racing 15

RACING15W50001 1 Litre 6

RACING15W50005 5 Litres 4

RACING15W50020 20 Litres 1

RACING15W50205 205 Litres 1

Viscosity: 15W-50

Replacement Viscosities: 15W-40, 20W-40

Key Specifications: API SN/CF, ACEA A3/B3, BMW LL-98, MB 229.1, VW 502.00/505.00, Porsche GL

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel, Racing

Racing 20

RACING20W60005 5 Litres 4

RACING20W60020 20 Litres 1

Viscosity: 20W-60

Replacement Viscosities: 20W-50, 25W-60

Key Specifications: API SN/CF, ACEA A3/B3, BMW LL-98, MB 229.1

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel, Racing



Penrite Racing 0, 5, 10, 15 & 20 are premium 100% PAO & Ester, full synthetic, SAE 0W-20, 5W-30, 10W-40, 15W-50 & 20W-60 respectively, SHEAR FREE modern engine oils. They contain an anti-wear package of engine wear protection with FULL ZINC+ exceeding 1800+ ppm levels (Racing 0 & 5 exceed 2200+ ppm) for ultimate engine wear protection.



Race Castor Oil

Product Code **Pack Size** **Carton Qty** **Base Oil:** Castor/Synthetic Ester Oil **Viscosity:** 20W-40
Replacement Viscosities: SAE 30, SAE 40

RCAS001 1 Litre 6

Fuel Types: Petrol/E10, E85, Racing

Features: Soluble in methanol and petrol, Longer engine life

Penrite Race Castor is an ashless SAE 20W-40 engine oil manufactured from high quality castor vegetable oil, synthetic ester, anti-corrosion additives and an advanced anti-oxidant. The synthetic base fluids are specially blended to allow suitability for use where SAE 30 and SAE 40 castor based oils were used. It will assist in reducing or eliminating traditional problems such as lacquer and deposit formation.



Running-In Oil

Product Code	Pack Size	Carton Qty
RUN005	5 Litres	4
RUN020	20 Litres	1

Base Oil: Premium Mineral **Viscosity:** 15W-40
Replacement Viscosities: 20W-40, SAE 30

Key Specifications: API SF/CC
Fuel Types: Petrol/E10, E85, Racing, Diesel, LPG/Dual Fuel
Features: High Zinc, Non-friction modified

Penrite Running In Oil is a premium mineral, SAE 15W-40, non friction modified, low detergent and dispersant engine oil, designed for the critical running in period for both new, re-built and crate engines. It contains an advanced anti-wear additive pack featuring HIGH ZINC (exceeding 1600+ ppm levels) for ultimate engine wear protection during these first stages of engine use.



Premium 0, 5 & 10

Product Code	Pack Size	Carton Qty
Premium 0		
FS0W40005	5 Litres	4
FS0W40020	20 Litres	1
FS0W40205	205 Litres	1

Base Oil: 100% PAO & Ester Full Synthetic
Features: Full Zinc+, Extra Ten, Latest Oil Technology

Viscosity: 0W-40
Replacement Viscosities: 0W-30
Key Specifications: API SN/CF, ACEA A3/B3, JASO MA, BMW LL-98, MB 229.1/229.3, VW 502.00/505.00, Porsche GL
Fuel Types: Petrol/E10, Racing, Diesel, LPG/Dual Fuel

Premium 5		
FS5W50005	5 Litre	4
FS5W50020	20 Litres	1
FS5W50205	205 Litres	1

Viscosity: 5W-50
Replacement Viscosities: 5W-40
Key Specifications: API SN/CF, ACEA A3/B3, JASO MA, BMW LL-98, MB 229.1, VW 502.00/505.00
Fuel Types: Petrol/E10, Racing, Diesel, LPG/Dual Fuel

Premium 10		
FS10W60005	5 Litre	4
FS10W60020	20 Litres	1
FS10W60205	205 Litres	1

Viscosity: 10W-60
Replacement Viscosities: 10W-50, 15W-50
Key Specifications: API SN/CF, ACEA A3/B3, JASO MA, BMW LL-98, MB 229.1
Fuel Types: Petrol/E10, Racing, Diesel, LPG/Dual Fuel



Penrite Premium 0, 5 & 10 are premium, 100% PAO & Ester full synthetic, SAE 0W-40, 5W-50 & 10W-60 respectively, non friction modified, modern engine oils. They utilise premium synthetic base oils with a FULL ZINC+ (exceeding 1800+ ppm levels) additive pack for the ultimate in engine protection and performance.



Key Features & Benefits of the 10 Tenths Racing & Premium ranges:

- > 100% PREMIUM PAO and ESTER full synthetic base oils for ultimate performance (except Running-In and Race Castor Oil).
- > FULL ZINC+ additive pack for excellent wear protection.
- > LATEST oil technology for less wear, sludge and piston deposits.
- > COMPETITION PROVEN and trusted for performance engines.
- > Longer oil life in high performance vehicles.
- > European-standard additive package.
- > Protects engine at start up.
- > SHEAR FREE formulation reduces viscosity loss (10 Tenths Racing Only).
- > EXTRA TEN provides better engine protection.

PENRITE PRODUCT	Litres			
	1	5	20	205
10 TENTHS RACING 100% PERFORMANCE				
Racing 0	-	⊙	-	-
Racing 5	⊙	⊙	⊙	-
Racing 10	⊙	⊙	⊙	-
Racing 15	⊙	⊙	⊙	⊙
Racing 20	-	⊙	⊙	-
Race Castor Oil	⊙	-	-	-
Running-In Oil	-	⊙	⊙	-
10 TENTHS PREMIUM 100% PERFORMANCE				
Premium 0	-	⊙	⊙	⊙
Premium 5	-	⊙	⊙	⊙
Premium 10	-	⊙	⊙	⊙

(All products are available in 1000L Pods, on request)

Expert Tip: Penrite's 10 Tenths Racing range is SHEAR FREE. What does that mean to you? When your oil does not lose its viscosity as a result of high loads and stress, you get ultimate protection for your engine for the life of the oil drain.



Visit our website at www.penriteoil.com

EVERYDAY™

Penrite "Everyday" engine oils are premium quality Semi Synthetic and Premium Mineral engine lubricants developed to meet the demands of everyday driving in modern passenger car, light and heavy commercial vehicles. The range covers ideal viscosity ranges for everyday driving conditions as well as the latest industry specifications as demanded by modern vehicle manufacturers to meet their requirements including extended oil drain periods.

Premium Mineral 5W-30, 10W-30, 15W-40 & 20W-50

Product Code	Pack Size	Carton Qty	Base Oil: Premium Mineral Features: Latest Oil Technology, Maximum Wear Protection
Premium Mineral 5W-30			
PMO05001	1 Litre	6	Viscosity: 5W-30 Key Specifications: API SN Resource Conserving, ILSAC GF-5 Fuel Types: Petrol/E10, E85, LPG/Dual Fuel, Hybrid
PMO05005	5 Litres	4	
Premium Mineral 10W-30			
PMO10001	1 Litre	6	Viscosity: 10W-30 Key Specifications: API SN Resource Conserving, ILSAC GF-5 Fuel Types: Petrol/E10, E85, LPG/Dual Fuel, Hybrid
PMO10005	5 Litres	4	
Premium Mineral 15W-40			
PMO15001	1 Litre	6	Viscosity: 15W-40 Key Specifications: API SN/CF Fuel Types: Petrol/E10, Diesel LPG/Dual Fuel
PMO15005	5 Litres	4	
Premium Mineral 20W-50			
PMO20001	1 Litre	6	Viscosity: 20W-50 Key Specifications: API SN/CF Fuel Types: Petrol/E10, Diesel LPG/Dual Fuel
PMO20005	5 Litres	4	

Penrite Premium Mineral Range are a high quality premium mineral, SAE 5W-30, 10W-30, 15W-40 & 20W-50 respectively, engines oils made from pure hydrocracked base oils and an advanced anti wear additive system. They are designed for use in modern 4, 6 & 8+ cylinder naturally aspirated, supercharged and turbocharged engines. The products are also suitable for use in new and older rotary engines. The SAE 5W-30 and 10W-30 grades have been Licensed by API to meet API SN Resource Conserving and ILSAC GF-5. The SAE 15W-40 grade is Licensed to meet API SN Service Category.



Stops Oils Burning 30-70

Product Code	Pack Size	Carton Qty	Base Oil: Premium Mineral	Viscosity: 30-70
PMO30001	1 Litre	6	Key Specifications: API SJ Fuel Types: Petrol/E10 Features: Reduces Oil Consumption, Maintains Oil Pressure	
PMO30005	5 Litres	4		

Penrite Stops Oil Burning is a high quality premium mineral, 30-70 engine oil. It is designed for older petrol engines where there is excessive oil consumption due to conditions such as worn piston and oil rings, cylinder bore deformation, worn or broken valve stem seals, worn main seals and other gasket and oil sealing issues.





Semi Synthetic 5W-40, 10W-40 & 15W-40

Product Code	Pack Size	Carton Qty	Base Oil: Semi Synthetic Features: Complete Protection of Engine Parts
Semi Synthetic 5W-40			
ED5W40001	1 Litre	6	Viscosity: 5W-40 Key Specifications: API SN/CF, ACEA A3/B4 Replacement Viscosities: 5W-30 Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel
ED5W40005	5 Litres	4	
Semi Synthetic 10W-40			
ED10W40001	1 Litre	6	Viscosity: 10W-40 Key Specifications: API SN/CF, ACEA A3/B4 Replacement Viscosities: 10W-30 Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel
ED10W40005	5 Litres	4	
Semi Synthetic 15W-40			
ED15W40001	1 Litre	6	Viscosity: 15W-40 Key Specifications: API SN/CF, ACEA A3/B4 Replacement Viscosities: 20W-40 Fuel Types: Petrol/E10, LPG/Dual Fuel
ED15W40005	5 Litres	4	



Penrite Semi Synthetic Range are a premium quality, semi synthetic, SAE 5W-40, 10W-40 & 15W-40 respectively, engine oils for use in a wide range of modern motor vehicles. They are formulated from a carefully balanced blend of high performance additives and a mix of mineral and synthetic base oils to provide complete protection for engines. The SAE 10W-40 and 15W-40 have been Licensed by API to meet API SN Service Category.

Key Features & Benefits of the Everyday range:

- > Complete engine protection.
- > Available in convenient 5 Litre handy packs.
- > Current API SN specification.*
- > Fuel saving API SN resource conserving specification.*
- > Rotary engine compatible oils:**
- > E85 compatible oils.

Expert Tip: API SN meet MY (Model Year) 2010 requirements of automotive manufacturers and supersedes SM (MY 2004) and SL (2001-2004) etc.

*Check PDS for specified products.
** Premium Mineral range only.

PENRITE PRODUCT	Litres	
	1	5
Premium Mineral 5W-30	⊙	⊙
Premium Mineral 10W-30	⊙	⊙
Premium Mineral 15W-40	⊙	⊙
Premium Mineral 20W-50	⊙	⊙
Stops Oils Burning 30-70	⊙	⊙
Semi Synthetic 5W-40	⊙	⊙
Semi Synthetic 10W-40	⊙	⊙
Semi Synthetic 15W-40	⊙	⊙

(All products are available in 1000L Pods, on request)



Visit our website at www.penriteoil.com

PRO WORKSHOP

The Penrite Pro range of engine oils has been specifically developed for workshop, car dealerships and professional vehicle service and repair centres. This professional range of oils has been blended to meet the oil specifications for most Australian, US, European, Korean, Asian and Japanese produced vehicles.



Pro 5

Product Code	Pack Size	Carton Qty
PRO5020	20 Litres	1
PRO5060	60 Litres	1
PRO5205	205 Litres	1

Base Oil: Full Synthetic **Viscosity:** 5W-30
Replacement Viscosities: 5W-20, 7.5W-30

Key Specifications: API SN/CF, ACEA C3, BMW LL-04, MB 229.31, GMW 16177

Fuel Types: Petrol/E10, Diesel, Diesel with DPF, LPG/Dual Fuel, Hybrid

Features: Mid SAPS, Minimises Sludge Formation, Maximises Wear Protection

Penrite Pro 5 is a premium grade, mid SAPS, full synthetic, SAE 5W-30 engine oil. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions. Suitable for use in many diesel vehicles fitted with Diesel Particulate Filters (DPFs) and may also be used where ACEA A1/B1, A5/B5 and ILSAC GF-5 oils are specified.



Pro 10

Product Code	Pack Size	Carton Qty
PRO10020	20 Litres	1
PRO10060	60 Litres	1
PRO10205	205 Litres	1

Base Oil: Semi Synthetic **Viscosity:** 10W-30
Replacement Viscosities: 7.5W-30

Key Specifications: API SN Resource Conserving

ILSAC GF-5, Ford M2C910-A

Fuel Types: Petrol/E10, E85, LPG/Dual Fuel, Hybrid

Features: Minimises Sludge Formation, Maximises Wear Protection

Penrite Pro 10 is a premium grade, semi synthetic, SAE 10W-30 engine oil. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions. Suitable for use in many late model vehicles. Not suitable for use in diesel vehicles or in rotary engines.



Pro Extra

Product Code	Pack Size	Carton Qty
PROEXTRA020	20 Litres	1
PROEXTRA060	60 Litres	1
PROEXTRA205	205 Litres	1

Base Oil: Semi Synthetic **Viscosity:** 10W-40
Replacement Viscosities: 10W-30

Key Specifications: API SN/CF, ACEA A3/B4

Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel

Features: Minimises Sludge Formation, Maximises Wear Protection

Penrite Pro Extra is a premium grade, semi synthetic, SAE 10W-40 engine oil. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions. Suitable for use in many modern vehicles.



Visit our website at www.penriteoil.com

Pro 15 Plus

Product Code	Pack Size	Carton Qty
PRO15PLUS020	20 Litres	1
PRO15PLUS060	60 Litres	1
PRO15PLUS205	205 Litres	1

Base Oil: Semi Synthetic **Viscosity:** 15W-50
Replacement Viscosities: 15W-40, 20W-40, 20W-50

Key Specifications: API SN/CF, ACEA A3/B4
Fuel Types: Petrol/E10, Diesel, LPG/Dual Fuel
Features: Minimises Sludge Formation, Maximises Wear Protection

Penrite Pro 15 Plus is a premium grade, semi synthetic, SAE 15W-50 engine oil. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions. Suitable for use in many vehicles requiring a slightly heavier viscosity oil.



Pro 20

Product Code	Pack Size	Carton Qty
PRO20020	20 Litres	1
PRO20060	60 Litres	1
PRO20205	205 Litres	1

Base Oil: Premium Mineral **Viscosity:** 20W-50
Replacement Viscosities: 20W-40

Key Specifications: API SM/CF
Fuel Types: Petrol/E10, Diesel
Features: Minimises Sludge Formation, Maximises Wear Protection

Penrite Pro 20 is a premium quality, premium mineral, SAE 20W-50 engine oil. It uses a combination of the latest additive technology and a low shear rate viscosity modifier, to ensure additional protection against wear, corrosion, oil oxidation, piston deposits and sludge under all conditions. Suitable for use in many older and large capacity engines.



Key Features & Benefits of the PRO Workshop range:

- > Designed especially for workshops and garages.
- > Latest technology additives.
- > For use in petrol and light duty diesel engines.
- > Pro 5 is suitable for many DPF applications.

PENRITE PRODUCT	Litres		
	20	60	205
Pro 5	⊙	⊙	⊙
Pro 10	⊙	⊙	⊙
Pro Extra	⊙	⊙	⊙
Pro 15 Plus	⊙	⊙	⊙
Pro 20	⊙	⊙	⊙

(All products are available in 1000L Pods, on request)

Expert Tip: Search the Penrite website for Training fact sheets, videos, technical bulletins and FAQs.



Visit our website at www.penriteoil.com

HEAVY DUTY

Penrite blend a range of Heavy Truck, Commercial and Farm lubricants that meet and exceed the requirements for major truck and engine manufacturers. Our heavy diesel range now spans from monograde 2 stroke oils through to the latest European powertrains.

OEM APPROVALS

PRODUCT:	OEM APPROVALS:
Diesel HD	MB-Approval 228.31, Cummins CES 20081, Mack EO-O Premium Plus, Renault RLD-3 Compliant, MAN M 3575, Detroit Diesel DFS 93K218 Conformance, Volvo VDS-4
Enviro+ 10W-40	MB-Approval 228.51, Cummins CES 20081, Volvo VDS-4, Mack EO-O Premium Plus, Renault RLD-3 Compliant, MAN M 3575/3477/3271-1, JASO DH-2 (on file)

Diesel HD

Product Code	Pack Size	Carton Qty
DHD005	5 Litres	4
DHD010	10 Litres	1
DHD020	20 Litres	1
DHD060	60 Litres	1
DHD205	205 Litres	1
DHD1000LTR	1000 Litres	1

Base Oil: Premium Mineral **Viscosity:** 15W-40

OEM Approvals: MB-Approval 228.31, Cummins CES 20081, Mack EO-O Premium Plus, Renault RLD-3 Compliant, MAN M 3575, Detroit Diesel DFS 93K218 Conformance, Volvo VDS-4

Key Specifications: API CJ-4/SM, ACEA E7/E9, Allison C-4, JASO DH-2, MTU Type 2, MB 228.3, Caterpillar ECF-1-a/ECF-2/ECF-3
Fuel Types: Diesel, Diesel with DPF, Petrol/E10, LPG/Dual Fuel

Penrite Diesel HD is a high performance, heavy duty, low SAPS, OEM Warranty Approved, SAE 15W-40 premium mineral diesel engine oil designed for use in vehicles with and without Diesel Particulate Filters (DPF). It is made from a combination of hydrocracked base stocks and the latest OEM (Original Equipment Manufacturer) approved additive technology. Ideal for use as a mixed fleet engine oil.



Diesel FX

Product Code	Pack Size	Carton Qty
DFX001	1 Litre	6
DFX005	5 Litres	4
DFX006	6 Litres	3
DFX010	10 Litres	1
DFX020	20 Litres	1
DFX060	60 Litres	1
DFX205	205 Litres	1
DFX1000LTR	1000 Litres	1

Base Oil: Premium Mineral **Viscosity:** 15W-40

Key Specifications: API CI-4 PLUS/SL, ACEA E7/A3/B3, MIL-PRF-2104H/NATO O-1236, MB 228.3/229.1, MAN 3275, Allison C4, Global DHD-1, Volvo VDS-3, JASO DH-1, Cummins CES 20071/72/76/77/78, Caterpillar ECF-1-a

Fuel Types: Diesel, Petrol/E10, LPG/Dual Fuel

Penrite Diesel FX is a premium quality, mineral, SAE 15W-40, mid ash, Full Zinc, diesel engine oil formulated with high quality additives and hydrocracked mineral base oils. It is designed predominantly for use in four stroke heavy duty diesel engines. Diesel FX can be used in both turbocharged and naturally aspirated engines in on-highway and off-highway applications. Ideal for use as a mixed fleet engine oil. Not suitable for use in vehicles fitted with Diesel Particulate Filters (DPFs).



Visit our website at www.penriteoil.com



Enviro+ HD 5W-30 **NEW**

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

EPLUSHD5W30020	20 Litres	1
EPLUSHD5W30205	205 Litres	1

Base Oil: Full Synthetic

Viscosity: 5W-30

Key Specifications: API CJ-4, ACEA E4/E6/E7/E9, Caterpillar ECF-3, Cummins CES 20081, Detroit Diesel 93K218, Deutz DQC IV-10 LA, Mack EO-O Premium Plus, MAN M3477/M3575/M3271-1, Volvo VDS-4, MB 228.31/228.51, MTU Category 3.1 (Pending), Renault RLD-3
Fuel Types: Diesel, Diesel with DPF

Penrite Enviro+ HD 5W-30 is a highly advanced, low SAPS, low viscosity, heavy duty, full synthetic, extended drain, ultra high performance diesel (UHPD) engine oil. It is formulated with the highest standard synthetic base oil and advanced additives to ensure protection against wear, corrosion, oil oxidation and sludge. It is also designed for use in vehicles fitted with and without Diesel Particulate Filters (DPFs).



Enviro+ 10W-40

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

EPLUS10W40005	5 Litres	4
EPLUS10W40010	10 Litres	1
EPLUS10W40020	20 Litres	1
EPLUS10W40060	60 Litres	1
EPLUS10W40205	205 Litres	1

Base Oil: Full Synthetic

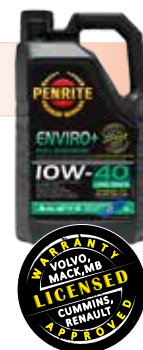
Viscosity: 10W-40

Replacement Viscosities: 15W-40

OEM Approvals: MB-Approval 228.51, Cummins CES 20081, Volvo VDS-4, Mack EO-O Premium Plus, Renault RLD-3 Approved, JASO DH-2 (on file), MAN M 3575/3477/3271-1

Key Specifications: API CJ-4/SM, ACEA E4/E6/E9, MB 228.31, MAN 3277CRT/3477/3575, Caterpillar ECF-3-a, MTU Type 3
Fuel Types: Petrol/E10, Diesel, Diesel with DPF, LPG/Dual Fuel

Penrite Enviro+ 10W-40 is a highly advanced, low SAPS, heavy duty, full synthetic OEM Warranty Approved, extended drain/mixed fleet, ultra high performance diesel (UHPD) engine oil. It is formulated with the highest standard additives to ensure protection against wear, corrosion, oil oxidation and sludge. It is also designed for use in vehicles fitted with and without Diesel Particulate Filters (DPFs).



Visit our website at www.penriteoil.com

HPR Diesel 5, 10 & 15

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

HPR Diesel 5

HPRD5001	1 Litre	6
HPRD5005	5 Litres	4
HPRD5010	10 Litres	1
HPRD5020	20 Litres	1
HPRD5060	60 Litres	1
HPRD5205	205 Litres	1
HPRD51000LTR	1000 Litres	1

HPR Diesel 10

HPRD10001	1 Litre	6
HPRD10005	5 Litres	4
HPRD10010	10 Litres	1
HPRD10020	20 Litres	1
HPRD10060	60 Litres	1
HPRD10205	205 Litres	1

HPR Diesel 15

HPRD15001	1 Litre	6
HPRD15005	5 Litres	4
HPRD15010	10 Litres	1
HPRD15020	20 Litres	1
HPRD15060	60 Litres	1
HPRD15205	205 Litres	1

Base Oil: Semi Synthetic
Features: Full Zinc, Extra Ten

Viscosity: 5W-40

Replacement Viscosities: 5W-30, 10W-30, 10W-40

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, MB 228.3/229.3, VW 502.00/505.00, JASO DH-1, Global DLD-2/DLD-3, Ford M2C153-H/171-C/913-B/913-C

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Viscosity: 10W-40

Replacement Viscosities: 10W-30

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, MB 228.3/229.3, VW 502.00/505.00, JASO DH-1, Global DLD-2/DLD-3, Ford M2C153-H/171-C

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Viscosity: 15W-50

Replacement Viscosities: 15W-40, 20W-40, 20W-50

Key Specifications: API CI-4 PLUS/SL, ACEA A3/B4/E7, Ford M2C171-C/153-F/153-G, JASO DH-1, MB 228.3/229.3

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Penrite HPR Diesel 5, 10 & 15 are premium high performance, semi synthetic, SAE 5W-40, 10W-40 & 15W-50 respectively, non-friction modified diesel engine oils. They contain a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. They contain a combination of high technology additives, including increased dispersant levels, low shear viscosity modifiers to protect against corrosion, oil oxidation and sludge under all operating conditions.



HPR Diesel

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

HPRD001	1 Litre	6
HPRD005	5 Litres	4
HPRD010	10 Litres	1
HPRD020	20 Litres	1
HPRD060	60 Litres	1
HPRD205	205 Litres	1

Base Oil: Premium Mineral **Viscosity:** 20W-60
Replacement Viscosities: 20W-40, 20W-50, Mono 30

Key Specifications: API CH-4/SJ, ACEA A3/B3/E7, Global DLD-1, JASO MA, JASO CD Plus, Ford WSS-M2C911-A1, VW 500.00, MTU Type 2, MB 228.3

Fuel Types: Diesel, LPG/Dual Fuel, Petrol/E10

Features: Full Zinc, Extra Ten

Penrite HPR Diesel is a premium high performance, mineral, SAE 20W-60, non-friction modified diesel engine oil. It contains a DOUBLE LAYER of engine wear protection with FULL ZINC and Penrite's advanced EXTRA TEN technology. It contains a combination of high technology additives, including increased dispersant levels and low shear viscosity modifiers. It protects against corrosion, oil oxidation and sludge under all operating conditions.



Penblue (AdBlue®)

Product Code	Pack Size	Carton Qty
--------------	-----------	------------

PENBLUE010	10 Litres	1
PENBLUE210	210 Litres	1
PENBLUE1000LTR	1000 Litres	1

Colour: Clear

Key Specifications: DIN 70070, AUS 32, ISO 22241

Penrite Penblue (Adblue®), is a fully VDA licensed and registered AdBlue® aqueous urea solution, 32.5% in weight (AUS 32), mixed with demineralised water for use in selected catalyst reduction systems. It is a clear solution that is non toxic, safe to handle and is a reduction agent for oxides of nitrogen (NOx), required by SCR (Selective Catalytic Reduction) technology in many diesel vehicles.



Mono Truck 30, 40 & 50

Product Code	Pack Size	Carton Qty
Mono Truck 30		
MONO30020	20 Litres	1
MONO30205	205 Litres	1
Mono Truck 40		
MONO40005	5 Litres	4
MONO40020	20 Litres	1
MONO40205	205 Litres	1
(5L: Solomon Islands Only)		
Mono Truck 50		
MONO50020	20 Litres	1

Base Oil: Premium Mineral **Viscosity:** SAE 30, 40 & 50

Key Specifications: ACEA E1 (SAE 30), API CF-2/CF/SG (SAE 30), API CF-2/CF/SF (SAE 40 & 50), Allison C3 (SAE 30), MIL-L-2104F (SAE 30 & 40), Mack EO-K/2 (SAE 30 & 40), MB 228.0 (SAE 30), MB 227.0 (SAE 30, 40 & 50), Caterpillar TO-2 (SAE 30, 40 & 50), Detroit 7SE-270 (SAE 30, 40 & 50)

Fuel Types: Petrol/E10, LPG/Dual Fuel, Diesel

Penrite Mono Truck 30, 40 & 50 engine oils are for older 2 and 4 stroke diesel engines. They are monograde oils formulated with premium mineral base oil and modern additives to provide outstanding protection in diesel as well as petrol engines against wear, corrosion, oil oxidation and sludge. Mono Truck 30, 40 & 50 are designed for use in naturally aspirated and turbo-charged diesel engines operating under severe on and off highway conditions. They are suitable for many older design small diesel engines used in fishing boats and trawlers and in stationary engines. Mono Truck 40 is the prime recommendation for Detroit Diesel 53, 71 and 91 series 2-stroke engines and Mono Truck 50 is suited to the 149 series engines.



ENGINE OILS | Heavy Duty

Universal Farm Oil (STOU)

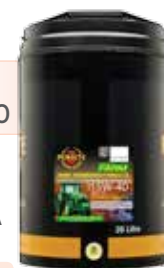
Product Code	Pack Size	Carton Qty
UFO020	20 Litres	1
UFO205	205 Litres	1
UFO1000LTR	1000 Litres	1

Base Oil: Premium Mineral **Viscosity:** 15W-40
Replacement Viscosities: 15W-30, 20W-40, SAE 80W, SAE 90

Key Specifications: API GL-4, API CG-4/SF, ACEA E3, MB 227.1, MAN 271, Massey Ferguson MF 1135/1139/1141/1143/1144/1145, Ford M2C159-B/C, John Deere JDM J27/JD20 A/C, New Holland 420A

Fuel Types: Petrol/E10, LPG/Dual Fuel, Diesel

Penrite Universal Farm Oil is a premium mineral, Super Tractor Universal Oil (STOU), manufactured from highly refined base oils and advanced multi-functional additives. It is a multi purpose product for use in a wide range of machines and covers multiple applications. It is designed for use in four stroke, naturally aspirated and turbo charged diesel and petrol engines, transmissions, front and rear axles, differentials, wet brakes, hydraulics, Power Take Off (PTO) clutches and some final drives of farm tractors and construction equipment, where an STOU type oil is recommended.



PENRITE PRODUCT	Litres								
	1	5	6	10	20	60	205	210	1000
Diesel HD	-	⊙	-	⊙	⊙	⊙	⊙	-	⊙
Diesel FX	⊙	⊙	⊙	⊙	⊙	⊙	⊙	-	⊙
Enviro+ HD 5W-30	-	-	-	-	⊙	-	⊙	-	-
Enviro+ 10W-40	-	⊙	-	⊙	⊙	⊙	⊙	-	-
HPR Diesel 5	⊙	⊙	-	⊙	⊙	⊙	⊙	-	⊙
HPR Diesel 10	⊙	⊙	-	⊙	⊙	⊙	⊙	-	-
HPR Diesel 15	⊙	⊙	-	⊙	⊙	⊙	⊙	-	-
HPR Diesel	⊙	⊙	-	⊙	⊙	⊙	⊙	-	-
Penblue (AdBlue®)	-	-	-	⊙	-	-	-	⊙	⊙
Mono Truck 30	-	-	-	-	⊙	-	⊙	-	-
Mono Truck 40	-	⊙	-	-	⊙	-	⊙	-	-
Mono Truck 50	-	-	-	-	⊙	-	-	-	-
Universal Farm Oil (STOU)	-	-	-	-	⊙	-	⊙	-	⊙

(All products are available in 1000L Pods, on request)



Visit our website at www.penriteoil.com