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It is measured by comparing the viscosity of the oil at 40°C (104°F) with its viscosity at 100°C (212°F). The higher the VI, the less the viscosity changes with temperatures changes and the better the oil protects the engine. Contaminating elements such as sulfur, nitrogen, oxygen and metal components such as nickel or vanadium are inherent to crude oil and cannot be completely removed through the refining process. Fun Fact: Car engine oil has no natural ability to resist rust and corrosion; those properties must be added through use of engine additives. Although car engine oil must flow at cold temperatures to lubricate the engine at startup, it must also remain thick enough to protect the engine at high operating temperatures. Car engine oil base oils can be composed of 1) petroleum, 2) chemically synthesized materials or 3) a combination of synthetics and petroleum (called semi-synthetic or synthetic blend). Viscosity is a car engine oil's most important property. Detergents are engine additives that prevent contaminants from adhering to components, especially hot components such as pistons or piston rings. What must a car engine oil do? The two work in tandem to produce the final product you put in your engine. C-series classifications pertain to diesel engines and include those shown below. If you woke up this morning asking yourself, "I wonder what there is to know

about car engine oil, "you're in luck. As such, synthetic base oils contain no contaminants or molecules that don't serve a designed purpose. SAE viscosity grades The Society of Automotive Engineers (SAE) has developed several viscosity grades or grades, such as 5W-30, 10W-40 and 15W-50. What type of engine oil does my car need? They lubricate internal moving parts, absorb heat and seal the piston rings. Dampen Shock A lubricant can cushion the blow of mechanical shock. For example, a 5W-30 car oil performs like an SAE 5W at 40°C and an SAE 30 car oil at 100°C. Without car engine oil, your engine would destroy itself in a matter of seconds. Transfer Energy Because car engine oil is incompressible, it makes an excellent energy-transfer medium, such as when used with hydraulic valve lifters or to actualize components in an engine with variable valve timing. Modern car engines use extremely fine tolerances and subject oils to a series of very different forces, conditions and stresses. Their versatility and pure, uniform molecular structures impart properties that provide better friction-reduction, optimum fuel efficiency, maximum film strength and extreme-temperature performance conventional lubricants just can't touch. Tell us.", "descriptionBottom": "Please consult your vehicle manufacturer's manual for information specific to your vehicle.", "isCvt": false, "recommendationURL": "/en/lubricants/what-to-buy/find-the-right-motor-oil/product-recommendations", "isVendorPage": false, "subtitle": "Tell us a bit more about your vehicle, and we'll tell you how to best protect it.", "title": "Find the right oil and oil filter for your car", "enableOpenSearch": false, "openSearchLimit": 100, "titleHeading": "h1", "enableTypeahead": true, "hideRecommendationButton": false, "providerKey": "WMI", "tellUs": "", "culture": "en-US", "autoSuggest": {"autoSuggestLabel": "", "whatsThis": {"text": "", "content": ""}, "orText": ""}, "fields": {"years": "Year", "manufacturers": "Make", "models": "Model", "series": "Engine", "bellow": "Ever drive in temperatures below freezing?", "over": "Over 75,000 miles?"}, "searchForm": {"searchButtonText": "", "legendText": "", "legendContent": "", "ortext": "", "modelsearchhelptext": "", "recommendationButtonText": "View your recommendations", "startOver": "", "clearText": "Clear", "yearTooltipLabel": "", "yearTooltipContent": "", "dropdownsPlaceholder": "", "inputs": {}}, "modals": {"contactUs": true, "findYears": true}, "errorMessagees": {"searchError": "Search error", "selectError": "Select error"}, "prepopulatedFields": {"Step1": null, "Step2": null, "Step3": null, "Step4": null, "Step5": null, "Step6": null}, "iconUri": {"isIconConfigured": false, "agricultural": "", "cars": "tr", "commercial": "", "motorcycles": "", "off-highway": "", "vans": ""}, "progressMessage": {"progressStatus": "", "loadingMessage": ""}}> Engine oil is essential to the smooth running of an internal combustion-powered vehicle. Buy AMSOIL in Your Country Fun Fact: Lubricating an engine requires a very small amount of car engine oil compared to the amount needed to ensure proper cooling of these internal parts. How is petrol engine oil classified? Let's go. What is car engine oil? We do, and it's called the Viscosity Index (VI). You can find out what engine oil to use in the Haynes AutoFix for your vehicle, or in the car's owner's manual. The American Petroleum Institute (API) developed a classification system to identify oils formulated to meet the different operating requirements of petrol and diesel engines. These SAE viscosity grades designate the specific ranges in which the particular oil falls. We all need to put engine oil, a lubricant, in our engines, but why are there so many types, what are the differences and does it really matter? Here's what we'll cover: Ready? The API SN-PLUS category is the most recent classification, replacing those before it. A dynamic seal helps keep combustion gases in the combustion chamber, which maximizes horsepower and helps prevent hot gases from contaminating the car engine oil in the sump. This article will guide DIY mechanics through the jargon and codes so that you understand which oil is for your car, how to find out. If you don't maintain your car's minimum engine oil level, there's a good chance key engine components will be starved of oil and either wear prematurely or fail catastrophically. Wouldn't it be handy to have a number that indicated the oil's viscosity change? Protect Against Corrosion A lubricant must have the ability to prevent or minimize internal component corrosion. When an oil is used at a variety of temperatures, as with most engines, the change in viscosity should be as minimal as possible. You will also find out at your local motor factor, and the likes of Halfords and Euro Car Parts have tools on their websites to pick the right oil based on your registration number. The S-series service classification emphasizes oil properties critical to petrol engines. Cool Reducing friction minimizes heat in moving parts, which lowers the overall operating temperature of the equipment. The FA-4 classification was introduced primarily to help maximize fuel economy in over-the-road trucks. Striking the perfect balance of the proper engine additives in relation to the base oil is a tough balancing act for oil formulators, especially as vehicles grow more demanding and sophisticated. Why should I top up the oil in my car? Put simply, it's the lubricant that prevents all those metal parts from tearing each other apart or welding themselves together into the world's coolest boat anchor. Car engine oil contains two fundamental components: base oils and additives. Synthetic base oils, on the other hand, are highly engineered to include only beneficial molecules. Beware of the opinions about oil you may read from well-meaning users on social media or forums - stick to the manufacturer's type and you won't go wrong. The classifications progress alphabetically as the level of lubricant performance increases. Buy AMSOIL in Europe Clean Lubricants maintain internal cleanliness by suspending contaminants within the fluid or by preventing the contaminants from adhering to components. Buy AMSOIL in the UK What is car engine oil made from? Fully synthetic oils typically have a higher VI than conventional oils. Each classification replaces those before it. Dispersants are engine additives that keep contaminants suspended in the fluid. Not all C-series classifications supersede one another. A highly functional lubricant film can resist rupture and absorb and disperse these energy spikes over a broad contact area. Base oils possess a varying degree of solvency that assists in maintaining internal cleanliness. Thicker oils flow more slowly, like honey. While the solvency of the oil is important, detergents and dispersants play a key role. Dispersants act as a solvent, helping the car engine oil maintain cleanliness and prevent sludge formation. Higher numbers reflect better protection for high-heat and high-load situations. Solvency is the ability of a fluid to dissolve a solid, liquid or gas. Buy AMSOIL in Finland Car engine oil additives The various chemicals that comprise a car engine oil's additive system provide anti-wear, anti-foam, corrosion protection, acid neutralization, viscosity maintenance, detergency and dispersancy properties. Modern car engine oil is a highly specialized product carefully developed by engineers and chemists to perform many essential functions. As the mechanical shock to components is dampened, wear and damaging forces are minimized, extending the component's overall operating life. The "W" indicates it is suitable for use in cold temperatures. The mechanical stresses and strains are probably easy to picture and lead to steady molecular breakdown. What's the key takeaway? Oils meeting the latest API classification, API SN-PLUS, may be used in any engine calling for it or a previous API specification, unless otherwise specified. The overwhelming majority of oils today are multi-viscosity, meaning they behave differently at different operating temperatures to provide the best of both worlds - good cold-flow when the temperature drops and reliable protection once the engine reaches operating temperature. The lower the viscosity, the faster the oil flows, like water. The oil refining process separates the various types of molecules in the oil by weight, leaving molecules similar in weight but dissimilar in structure, reducing performance. (Think of the "W" as meaning "Winter.") The classifications increase numerically; the lower the number, the lower the temperature at which the oil can be used for safe and effective engine protection. The chemical degradation comes from the accumulation of contaminants from engine combustion processes and leaky gaskets and oil seals (in older cars), and the effects of oxidation. Lubricants accomplish this either by chemically neutralizing corrosive products or by forming a barrier between the components and the corrosive material. The base oils comprise the largest portion of the car engine oil. Car engine oil is one of the most important factors in your engine's performance and longevity. It's a vital part of your engine's longevity and performance. As such, it pays in the long run to use the best oil for your vehicle. The viscosity of oil varies with changes in temperature - thinner when hot, thicker when cold. Here, we present a primer on car engine oil fundamentals. It's also vital to change the engine oil at the manufacturer's specified service intervals, because oil wears out. Seal Car engine oil acts as a dynamic seal in locations like the piston ring/cylinder interface. Note the new FA-4 classification, which pertains only to some 2017 and newer diesel engines. SN-PLUS oils are designed to provide... Improved oxidation resistance Deposit protection Maximum fuel economy Emissions-system performance Resistance to a new type of engine knock called low-speed pre-ignition (LSPi) How is diesel engine oil classified? Engine oil isn't cheap, but it's a lot cheaper than a premature engine replacement. Viscosity refers to the car engine oil's resistance to flow and is the most important property of an oil. That would mean a LOT of expense and trouble - far more than the cost of a litre of oil at the gas station and a dipstick check every weekend. Your engine might be purring like a cat, but inside the oil is being subjected to constant mechanical and chemical stresses that will slowly degrade its performance. WHERE TO BUY AMSOIL A car engine oil must... Minimize Friction Lubricants reduce contact between components, minimizing friction and wear. The initial price of a high-quality fully synthetic oil may be more, but the lifetime cost can be far less compared to conventional oil, especially if you practice extended drain intervals. Buy AMSOIL in Norway Petroleum (or conventional) base oils are refined from crude oil. The API system has two general categories: S-series and C-series. First our experts will answer a few common questions about engine oil, then we have a handy infographic to explain the meaning of everything on the label of a bottle of oil, and more. And the older your engine, the more oil it will tend to use (or leak) and the more often you need to check the dipstick to make sure it stays above the minimum level. That's a ton on information, but it boils down to this: car engine oil is more than a commodity. When an oil passes a series of both bench tests and engine tests (API Sequence tests), it can be sold bearing the applicable API service classification. An old car engine might be perfectly happy with a few good glugs of old-fashioned SAE 20W 50 viscosity mineral oil, but engine technology has moved on and the demands on engine oils have moved on, too, with fully synthetic 5W 30 oil being the sort of thing you'd use in a modern engine. What is viscosity? Buying car oil isn't so simple. It's not just about keeping the oil level topped up. Lubricants also absorb heat from contact surface areas and transport it to a location to be safely dispersed, such as the oil sump. Even if your car is relatively new and you take it to a dealer for servicing, you still need to check the oil level. Think of coffee as an analogy - the base oil is the water and the additive package is the coffee beans. A few examples of chemical additives include zinc, phosphorus and boron. Detergents help keep critical components, like the pistons, clean and functioning properly.

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