



PENRITE

# TECHNICAL BULLETIN

## What is the difference between Synthetic, Semi Synthetic and Mineral Oils?

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Modern engine oils and lubricants are made up of **BASE OIL** plus additives.

The base oil type is generally broken up into 3 types -

- 1) **Synthetic**
- 2) **Semi Synthetic**
- 3) **Mineral**

### Synthetic Base Oils

Synthetic Base oils are made of either laboratory formed or crude oil that has undergone severe hydro processing to the stage where its chemical compound has been modified. Synthetic oil can also be a mixture of Group III, IV & V Synthetic types of oils.

### Semi Synthetic Base Oils

These are a mixture of Mineral and Synthetic base oils. The mixture can vary by product and manufacturer. These base oils can also be called “*Synthetic Enhanced*”, “*Synthetic Fortified*” or other marketing names that imply better performance than a mineral base oil but may not meet the accepted industry criteria of a semi synthetic base oil.

### Mineral Base Oils

Mineral base oils are made from refined crude oil. There are many levels of refinement available from solvent cleaned through to severe hydrocracking. Mineral oils can also be a mixture of the different grades of mineral oil.

### API Classifications

The API (American Petroleum Institute) classifies base oils into 6 categories, as below –

Base Oil	Market Class	Manufacturing Method	Mineral	Semi	Synthetic
Group I	Mineral	Conventional solvent refined	■	■	■
Group II	Mineral	Hydro processed			
Group III	Synthetic	Severely hydro processed	■	■	■
Group IV	Synthetic (PAO's)	Oligomerization (Laboratory made)			
Group V	Esters/Others	Acids, Vegetable Oils etc...			
Group VI	Synthetic	Oligomerization (Laboratory made)			

Which base oil type is best? All of the above have different characteristics that makes them more suitable for a particular application.

**Mineral** base oils are very suitable for most engines and can be manufactured in specifications to suit most applications. They are particularly suitable for heavier viscosity grades or for engines such as rotaries where synthetic oil is not recommended.

**Semi Synthetics** base oils are the best of both worlds being a combination of both mineral and synthetic base oil. They can cover nearly all types of requirements and vehicle applications from the latest to the very old.

**Synthetic** base oils are also extremely versatile and are very suited to lower viscosity high protection, fuel efficient oils. The different types of synthetic oils provides different characteristics that can be engineered for a particular requirement.

So really, one is not better than the other as all 3 types have their distinct application strengths.

At Penrite we believe in providing “**The Right Oil for the Right Application**”. To find the correct product for your vehicle, [Click Here](#) to visit the Penrite Recommendation Guide, which will ensure you receive the correct oil for your application.



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