Have you ever noticed the difference in prices for the same type of fuel at a fuel station? What do words like ‘premium’ or ‘speed’ mean with respect to petrol? And why are they costlier than the normal fuel?

India has seen a steady rise in the number of premium and luxury vehicle sales over the last couple of years, be it the Sports Utility Vehicle segment or Luxury Sedans or even sport bikes for that matter.

What makes these vehicles ‘sporty’ or ‘super’ is mainly the engine apart from other things. This suggests that they are a little different than the average vehicles on the road and so should be the fuel that they use, right?

Though premium vehicle sales has increased considerably in recent times, this is not the case with the premium fuels which account for nearly 10% of India’s total fuel consumption. So what makes them premium as compared to ordinary ones? And should you be filling it up as well? Let’s find out.

Research Octane Number (RON) is a standard measure of the performance of a gasoline engine fuel. The higher the RON, the more compression the fuel can withstand before self-igniting (detonation). Broadly speaking, fuels with a higher RON are mostly used in high performance engines that have higher compression ratios.

In India most of the ordinary and premium petrol are 91 RON. The premium petrol is generally ordinary petrol with additives; hence they don’t really change the value of RON. However, in some places two variants – ‘93 Octane’ and ‘97 Octane’ – are also available with RON values of 93 and 97, respectively. In January 2017, 99 Octane was launched having RON 99 and it is the most advanced automotive fuel for sale in India till date.

In a normal petrol engine the air-fuel mixture is heated due to being compressed and then is ignited rapidly by the spark plug. If this mixture is

**Premium Fuels:**

**Fact vs Fiction**

**SHORT FEATURE**

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heated (or compressed) too much, it will self-ignite before the ignition system sparks. This will lead to much higher stresses than what the engine components are designed for, and can cause a “knocking” or “pinging” sound. Knocking can cause major engine damage or even seizure if severe. The compression ratio is directly related to power and efficiency of an engine. Therefore, engines with higher compression ratios can extract more energy from the same quantity of fuel as compared to engines with lower compression ratios.

Sports cars and bikes have engines that are designed to operate at a high maximum compression, and thus demand fuels of higher RON. However, a common misconception is that power output or fuel efficiency of your vehicle can be increased just by using premium petrol, which is not true.

In fact if the compression ratio is lower, for example, 8:1 or 9:1, any premium petrol would be of no practical advantage. Similarly, if your engine has a compression ratio above 12:1, it will be better to use only RON 95 grade fuel or above. A fuel with a higher RON is less prone to self-ignition and can withstand a greater rise in temperature or pressure during the compression. This allows more power to be extracted from the same amount of fuel, and also improves the fuel efficiency.

However, burning a fuel with a lower octane rating than that for which the engine is designed often results in a reduction of power output and efficiency. This is the reason that automobile manufacturers clearly specify in their vehicles’ owner’s manual which grade of fuel to be used. These instructions can also be found imprinted on or near the fuel tanks of the vehicles.

So, using posh petrol in a family hatchback is not beneficial really. Similarly using normal petrol in a high performance sports car could also be damaging for the engine.

One of the significant reasons that the sale of premium fuels has not increased significantly in India is because the conventional demand and priority of the masses here has always been that of affordable vehicles that are economy friendly.

Nevertheless, more international brands are venturing into the Indian automobile market and the demand for sports or performance vehicles is gradually increasing. This indicates that the oil companies can expect a rise in the sales of premium fuels in future if this trend persists.

I have been using Speed 97 petrol from Bharat Petroleum for almost 7 years now and though it is more than 30% expensive as compared to normal petrol, the following points make it worth the price difference:

**Benefits of High Octane Fuel**
- Increased power output
- Improved fuel efficiency
- Lesser engine maintenance
- Better engine life

Remember, these benefits can only be availed if your engine has a high compression ratio, usually above 12:1. Otherwise, you are better off with the ‘Normal’ liquid diet for your engine!

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**High vs Low Compression Ratio**

<table>
<thead>
<tr>
<th>Higher Compression Ratio</th>
<th>Lower Compression Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased power output</td>
<td>Lower power output</td>
</tr>
<tr>
<td>Improved mileage</td>
<td>Reduced mileage</td>
</tr>
<tr>
<td>Slightly shorter engine life</td>
<td>Slightly longer engine life</td>
</tr>
<tr>
<td>Requires high octane fuel</td>
<td>Requires normal fuel</td>
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<tr>
<td>Risk of engine knocking</td>
<td>Negligible risk of engine knock</td>
</tr>
</tbody>
</table>