

Clean and Control Injector Deposits with AMSOIL

With increasing concern for fuel economy, new diesel-engine technology and diesel engine longevity, the use of diesel engines for passenger cars and light trucks has been increasing in several regions of the world. However, whether in a small car or a large mining truck, injector deposits are common to diesel engines. Today's Tech Tip reviews the two types of diesel injector deposits: **external injector deposits** and **internal injector deposits**, and the AMSOIL products formulated to clean and control them.

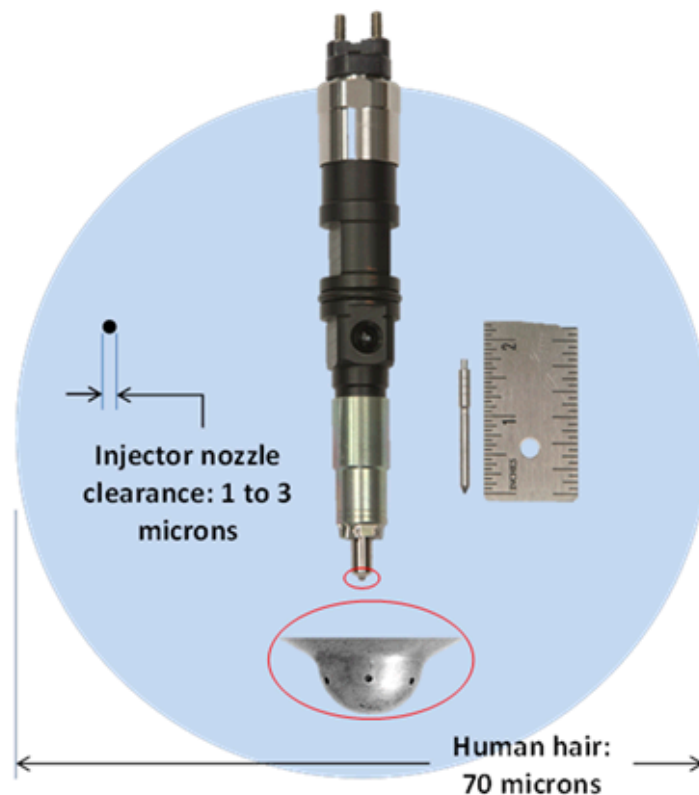
External Injector Deposits

External injector deposits are usually caused by fuel that does not burn completely and builds up around the fuel injector holes. External injector deposits, in most cases, won't lead to fuel injector failure. However, these deposits can disrupt fuel spray and lead to inefficient combustion. This can become noticeable through loss of power or fuel economy.

Internal Injector Deposits

Common indicators for internal diesel injector deposits include difficult starts, rough idling and sluggish performance. They can form in most diesel engines, but are known to cause problems in high-pressure common-rail (HPCR) diesel engines. This is because HPCR injectors have smaller, more intricate moving components.

HPCR injector systems produce pressures close to 206 MPa (30,000 psi) and create an extremely fine fuel mist in the combustion chamber. This helps the fuel burn more completely, increasing fuel economy and reducing emissions. To maintain high injection pressure, the injector assemblies have tight clearances, as small as one to three microns. As a result, minimal deposits on the injector needle can slow the response or cause sticking, eliminating control of injection-event timing or the amount of fuel delivered to the engine. Poor engine performance and fuel economy, and even complete sticking of the injector needles can result. In extreme cases, complete sticking of the injector needles from these deposits can lead to high maintenance costs and vehicle downtime.



The small clearances of HPCR injectors are susceptible to internal diesel injector deposits that interfere with injector needle actuation. This illustration demonstrates the size of these clearances compared to the diameter of a human hair.

The Need for Diesel Injector Cleaner

If high-quality diesel fuel designed specifically for the local climate were the only fuel available, there would be little reason for diesel fuel additives. Since this is not the case, injector cleaner can be a critical part of diesel engine maintenance.