



CHOOSING THE RIGHT HD COOLANT



ABOUT THIS WHITEPAPER

This whitepaper was developed to guide professionals through the process of selecting an HD engine coolant that is ideal for their needs. In it, we will examine:

- MAJOR COOLANT-DEPENDANT INDUSTRIES
- FACTORS TO CONSIDER WHEN SELECTING COOLANT
- HD EXPERT COOLANT PRODUCT OPTIONS
- COOLANT TESTING WITH PROFESSIONALS

HD Expert provides a variety of coolant solutions for HD engines. Our team of expert engineers has developed an array of proprietary formulas specifically for HD applications. These precise formulas keep your engine cool and clean, so you can get the job done.

How to Select Your HD Engine Coolant

In our other whitepapers, we have discussed the different classifications of HD coolant available on the market, as well as their formulations. But once you possess this knowledge, making your choice can still be a challenge. Whether you are searching for the perfect coolant for a single vehicle or a diverse fleet, you need to invest your time/money as prudently as possible to avoid waste – or worse, risk damaging the engine itself.

COOLANT-DEPENDANT INDUSTRIES

Multiple modern industries are dependant on access to specially-engineered coolant solutions, including:

- CONSTRUCTION
- TRUCKING
- MINING
- AGRICULTURE
- MARINE

Construction

Haulers, loaders, and excavators all have a tough job to do. That's why construction industry pros need proprietary formulas developed by engineers to keep their heavy-duty construction equipment in peak condition through even the harshest, heaviest conditions.

Trucking

Trucking and industrial fleets rely on maximum uptime to stay in business. Every minute of downtime costs money, which is why they need formulas developed to keep heavy-duty trucking equipment ready for rain, sleet, snow, and even intense heat out on the road.

Mining

Whether it's surface, subsurface, or underground mining, having a consistently reliable coolant is key to success in this industry. Even the slightest malfunction can have serious consequences, in addition to the pressure of maintaining persistent uptime.

Agriculture

Thanks to short, unpredictable seasons, there's no room for costly breakdowns and unplanned downtime in agriculture. Whether it's planting or harvesting season, farmers need coolant that will keep their equipment out in the field, not in the shop.

Marine

Maritime equipment malfunctions can leave sailors and fishermen stranded – or worse. Additionally, marine fleets need maximum uptime to remain profitable, which means they have to use coolant that will stay functional even in stormy, frigid waters.

The chart below breaks down which HD Expert coolants are best suited to which industry.

	CLASSIC	PREMIUM	EXTREME	ENDURANCE	EXTRA	EXTEND
CONSTRUCTION	✓	✓	✓		✓	
TRUCKING	✓	✓	✓	✓	✓	✓
MINING		✓	✓		✓	
AGRICULTURE		✓		✓	✓	✓
MARINE			✓	✓	✓	
MIXED					✓	

SELECTING YOUR COOLANT

No matter what industry you may be a part of, there are always several key factors to keep in mind when making your coolant selection. These include:

- ▶ VEHICLE FLEET
- ▶ SERVICE LIFE
- ▶ ENGINE TYPE
- ▶ TOP-UP VS. FULL-FILL
- ▶ CLIMATE/EXTERNAL CONDITIONS
- ▶ COST
- ▶ QUALITY

But what do these factors entail, and how do they impact your engine health/lifespan?

Vehicle Fleet

Whether you need to supply a garbage truck, crane, or mobile refrigeration unit, choose a coolant that best fits their specifications – or that works well across multiple types of vehicle, depending.

Service Life

Are you more interested in supplying your vehicles with a long-term coolant solution, or getting them out on the road and ready to go ASAP for a shorter duration – even if it means they'll need servicing sooner?

Engine Type

HD engines have totally unique needs, but some coolants function well with light engines as well. Are you looking to save money by finding a coolant that functions well for both truck and automotive vehicles?

Top-up vs. Full-fill

Sometimes your current coolant just needs a boost to stay functional. Choose between extending your coolant's depleted lifespan or starting over with something new.

Climate/External Conditions

Coolant counteracts harmful environmental effects on your engine, which means you may need a different product depending on your external conditions.

Cost

Find a coolant product that matches your budget and resources.

Quality

While recognized industry standards vary worldwide, find a quality coolant that fits your specific needs.

With all of these factors in mind, you can make an educated choice of HD coolant.

HD EXPERT COOLANT PRODUCTS

To explore some of the HD coolant products available on the market through the lens of these essential factors, let's focus on those offered by HD Expert. Our team of researchers and technicians has fine-tuned a diverse line-up of HD coolants – each offering the most advanced technology for maximum performance.

HD Expert's top-tier coolant products include:

- ▶ **CLASSIC**
- ▶ **PREMIUM**
- ▶ **EXTREME**
- ▶ **ENDURANCE**
- ▶ **EXTRA**
- ▶ **EXTEND**

CLASSIC (Conventional Diesel)

Color: Purple

Featuring HD Expert's legacy technology, Classic is a traditional coolant ideally suited for older vehicles.

FORMULATION FEATURES & BENEFITS:

Wide Application

The low silicate level of this aluminum compatible product allows it to be used in older model heavy-duty diesel and natural gas engine (NGE) applications such as on-road truck, off-road and farm equipment. This includes, but is not limited to, Caterpillar, Cummins, Detroit Diesel, Ford, Freightliner, GM, International Truck and Engine, Kenworth, Paccar, Peterbilt, Volvo Mack, Western Star and other HD and industrial application where a conventional HD coolant is required.

Proven Protection

Classic Conventional Diesel is based on traditional inorganic inhibitors, including silicates, nitrites and borates. It is phosphate and amine-free; specifically formulated to protect wet sleeve cylinder liners from erosion, pitting and system metal corrosion in heavy-duty applications. Scale preventative additives counter the negative effects of hard water to ensure optimal heat transfer is maintained.

Field Compatibility

Classic Conventional Diesel is miscible and compatible with any other traditional fully formulated, conventional coolant products, standard heavy-duty SCAs and coolant filters. Recommended for use where a fully formulated heavy-duty diesel coolant is required, this pre-charged product does not require an initial charge of Supplemental Coolant Additives (SCA) and is hard water tolerant.

PREMIUM (Extended Life Diesel)

Color: Red

Premium is designed for older model heavy-duty diesel engines requiring an extended service life, low silicate, nitrite-based hybrid technology.

FORMULATION FEATURES & BENEFITS:

Extended Service Life

Premium provides up to 960,000 km, 600,000 miles, 12,000 hours, or 6 years under normal operating conditions provided the coolant is kept in good condition with nitrite levels in line with the engine's OEM's Requirements.

Wide Application

Premium is designed for use in older model light and heavy-duty diesel applications where an extended service interval is required. It is recommended for use in on-road truck, off-road, farm, marine and stationary applications including, but not limited to, Caterpillar, Cummins, Detroit Diesel/MTU, GM Heavy Truck, Freightliner, PACCAR and Volvo Mack.

Proven Protection

Premium protects all coolant system metals, including aluminum, from erosion, corrosion and rust, and provides excellent wet sleeve liner cavitation protection. Being CAT EC-1 compatible, it provides excellent heat transfer capabilities.

Field Compatibility

Premium is recommended for use where an extended service interval is required. It does not require a charge of SCA or coolant extender at initial fill; however it is compatible with both. Its compatibility extends to use with other similarly formulated extended life low silicate, and nitrite containing hybrid engine antifreeze/ coolants.

EXTREME (Extended Life Diesel Engineered for New Cooling Systems)**Color: Red**

A fortified, nitrite and molybdate-based formula with a long service life, industry professionals trust Extreme to perform in the harshest environments.

FORMULATION FEATURES & BENEFITS:

Extended Service Life

Extreme provides up to 1,200,000 km, 750,000 miles, 15,000 hours or 8 years under normal operating conditions provided the coolant is kept in good condition with nitrite levels in line with the engine's OEM's requirements. Silicate-free provides for no possibility of silicate drop-out or gel formation.

Wide Application

Extreme is ideally suited for heavy-duty diesel applications where extended service interval and aluminum compatibility is required of a nitrite based, silicate free coolant, including on-road truck, off-road, farm and marine engine applications. It is CAT EC-1 compatible, and provides excellent heat transfer capabilities.

Proven Protection

Extreme protects all coolant system metals against rust & corrosion; offering excellent aluminum and wet sleeve liner cavitation protection even at high temperatures. Being 2-EHA free, it is compatible with all system elastomeric materials, ensuring optimal system performance.

Field Compatibility

Extreme is compatible with, but does not necessarily need or require, the addition of SCA or Coolant Extenders. Its compatibility extends to use with other similarly formulated engine antifreeze/ coolants and generally can tolerate hard water.

Powered by ProShield OAT Corrosion Defense

Our proprietary OAT corrosion inhibitor system, ProShield is engineered for new cooling systems, offering protection against corrosion and deterioration, providing excellent high temperature aluminum and liner cavitation protection. This level of protection affords a lower overall operating costs compared to other coolants. HD Expert Extreme is Nitrite and Molybdate rich, as well as being 2-EHA, Silicate, Borate, Amine & Phosphate-free.

ENDURANCE (Maximum Service Life Diesel Engineered for Newer Cooling Systems)**Color: Gold**

Offering the longest service life possible, Endurance is ideal for the newer cooling systems in on-road, long haul, cross country applications.

FORMULATION FEATURES & BENEFITS:

Maximum Service Life

Endurance provides up to 1,600,000 km/1,000,000 miles, 20,000 hours or 8 years under normal operating conditions, provided the coolant is kept in good condition and in line with the engine's OEM's requirements. It is silicate-free provides for no possibility of silicate drop-out or gel formation.

Wide Application

Endurance is designed and recommended for intense heavy-duty diesel and natural gas applications where high heat and aluminum protection are required. It is suitable for use in all on-road and off-road vehicles requiring a coolant that does not contain Nitrite, Amine, Phosphate and Silicate (NAPS free).

Proven Protection

Endurance protects the latest coolant system materials against rust, corrosion and deterioration, and provides superior aluminum protection, excellent CAB flux compatibility and wet sleeve liner cavitation protection as determined through fleet testing and the Deere Liner Cavitation Test, ASTM D7583. Being 2-EHA-free, it is compatible with all system elastomeric materials ensuring optimal system performance.

Field Compatibility

Being a silicate and nitrite-free, Endurance is compatible with, however does not require, additional SCA or coolant extender during the service interval, saving you time and money. Its compatibility extends to use with other similarly formulated engine antifreeze/ coolants and generally can tolerate hard water.

Powered by ProShield OAT Corrosion Defense

Our proprietary OAT corrosion inhibitor system, ProShield is engineered for new cooling systems, offering protection against corrosion and deterioration, providing excellent high temperature aluminum and liner cavitation protection. HD Expert Endurance is Nitrite, 2-EHA and silicate-free.

EXTRA (Mixed-fleet Global Extended Life For All Vehicles; Automotive, Light Truck & heavy-duty Diesel)**Color: Pale Yellow**

HD Extra is specifically designed for complete mixed fleet use in all makes and models, both foreign and domestic, for light-duty and heavy-duty diesel.

FORMULATION FEATURES & BENEFITS:**Extended Service Life**

Extra provides up to 250,000 km, 150,000 miles, or 5 years (Automotive Light Duty); and up to 960,000 km, 600,000 miles, 12,000 hours or 6 years (heavy-duty Diesel) under normal operating conditions, provided the coolant is kept in good condition and in line with the engine's OEM's requirements.

Wide Application

Extra is designed for complete "Mixed Fleet" use in all makes and models of passenger vehicles, light-duty and heavy-duty diesel vehicles, including on-road, off road, construction and farm applications. This nitrite-free product eliminates the need to carry multiple coolants to service different engines, providing for added value.

Proven Protection

It provides protection against rust and corrosion for all coolant system metals, including aluminum, excellent protection against wet sleeve liner cavitation pitting and is compatible with all aluminum radiators found in today's engine cooling systems.

Field Compatibility

Compatible with ALL engine coolant technologies on the market today, Extra is well suited for top-up of both conventional and extended life coolants (ELC). As it is nitrite-free, it is compatible with, but does not necessarily need or require, the addition of SCA or Coolant Extenders and generally can tolerate hard water.

Powered by ProShield OAT Corrosion Defense

Our proprietary OAT corrosion inhibitor system, ProShield is engineered for new cooling systems, offering protection against corrosion and deterioration, providing excellent high temperature aluminum and liner cavitation protection. This level of protection affords a lower overall operating costs compared to other coolants. This low silicate product is 2-EHA, Nitrite, Amine, Borate & Phosphate-free.

EXTEND (Long Service Life Diesel)

Color: Pink

Offering a long service life, Extend is based exclusively on organic additive technology (OAT), making it suitable for all heavy-duty and diesel engines.

FORMULATION FEATURES & BENEFITS:

Extended Service Life

Provides up to 960,000 km (600,000 miles), 12,000 hours or 6 years' service life protection in heavy-duty applications under normal operating conditions provided the coolant is kept in good condition and in line with the engine's OEM's Requirements.

Wide Application

Designed and recommended for intense service heavy-duty diesel and electrically powered (EVs) vehicles including on-road, off-road, construction, marine, mining and agricultural equipment. It is free of silicates, phosphates, borates, nitrites and amines and equally suitable for light duty automotive applications. It eliminates the need to carry multiple coolants to service different engines, providing for added value.

Proven Protection

It protects the latest coolant system metals including brass, copper, solder, steel and cast iron against rust, corrosion and deterioration. Extend provides superior aluminum protection, excellent CAB flux compatibility and wet sleeve liner cavitation protection as determined through fleet testing and the Deere Liner Cavitation Test, ASTM D7583. Being 2-EHA free, it is compatible with all system elastomeric materials ensuring optimal system performance. As a full OAT product, it provides extended water pump performance with no possibility of deposit / gel formation when used as directed.

Field Compatibility

When used in the long haul or heavy-duty applications, there is no need to initially charge the fresh coolant with SCAs. It is fully compatible with other similarly formulated organic additive technology long life engine coolants. The product is also widely compatible with other silicate-free engine coolants.

Powered by ProShield OAT Corrosion Defense

Our proprietary OAT corrosion inhibitor system, ProShield is engineered for new cooling systems, offering protection against corrosion and deterioration, providing excellent high temperature aluminum and liner cavitation protection. This level of protection affords a lower overall operating costs compared to other coolants and is 2-EHA, Borate, Nitrite, Amine, Phosphate and Silicate (BNAPS) free.

WORK WITH COOLANT PROFESSIONALS

Still not 100% sure what coolant product will work best with your particular vehicle or fleet? We recommend consulting a coolant professional to maximize your fleet's performance. Nearly half of all engine breakdowns occur due to cooling system problems. That's why HD Expert offers free coolant testing to help you determine your specific coolant needs before you make your purchase.

Your free HD Expert analysis includes detailed information on:

- ▶ **CONTAMINATION LEVELS**
- ▶ **PH LEVELS**
- ▶ **CORROSION INHIBITOR LEVELS**
- ▶ **FOAMING PROPERTIES**
- ▶ **FREEZING & BOILING POINTS**

By considering all of these factors and filtering them through the options provided by HD Expert, possibly in consultation with one of our team members, you can find the coolant product that is ideal for your exact needs. This is a matter of both financial responsibility and general safety, as an engine without the right coolant can overheat, freeze, or break down entirely. Sidestep potential disaster by carefully selecting your HD coolant products with a professional approach.

HD Experts are the heavy-duty coolant professionals for all your most challenging coolant needs. Their sole focus is creating specialized coolant formulations for HD engines, resulting in superior protection, improved temperature control, and an extended service life. Discover what their solutions (including ProShield corrosion defence) can do for you today!