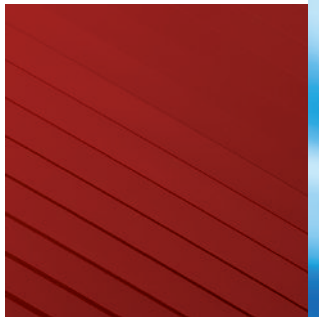
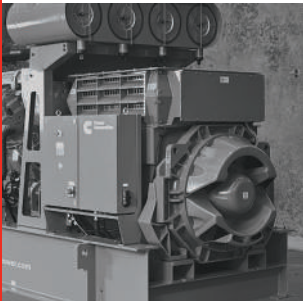


Fleetguard[®]



Cooling System Products

COOLANT





Fleetguard Cooling System Maintenance Products

Estimates project up to **40% of total engine repair costs** are related to problems that originate in the cooling system. Repairs are costly and create unnecessary downtime that affects equipment operations and customer deadlines. Fleetguard cooling system products provide unmatched protection with various maintenance programs to meet your needs and keep your engines running longer with less downtime.

One Stop Shop

Our comprehensive line of cooling system products includes everything you need to ensure an easy, trouble-free cooling maintenance program:

- Fully Formulated Heavy Duty Antifreeze Coolants
- Supplemental Coolant Additives (SCAs)
- Cooling System Cleaners
- Coolant Filters – Standard and Chemically Charged
- Field and Laboratory Testing

Easy Maintenance

Fleetguard cooling system maintenance is as simple as 1, 2, 3.

- STEP 1** Fill with long life coolant that meets your needs.
- STEP 2** Properly top off system using the pre-diluted coolant.
- STEP 3** Test with our simple dip and read test strips and maintain as needed.

All Fleetguard coolants are compatible with all other coolants available and are suitable for use in all gasoline, diesel, and natural gas engines.

Unmatched Protection

In addition to providing superior freeze and boil over protection, Fleetguard products protect your engine from the most damaging cooling system problems, including:

- Corrosion
- Liner Pitting/Cavitation
- Scale & Deposits
- Acidification

Fleetguard coolants are manufactured to the highest standards and meet the performance specifications of most major OEMs. You can depend on Fleetguard cooling system products to provide unmatched protection to your engine.

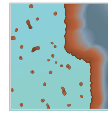
Corrosion

With Fleetguard Protection:

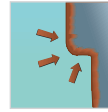


Protective layer created by Fleetguard Fully Formulated Coolant prevents corrosion and erosion.

Without Fleetguard Protection:



Corrosion affects all metal parts, especially aluminium.

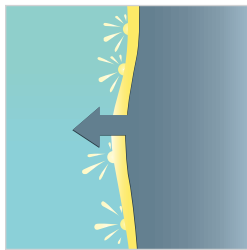


Corrosion products and tiny metal particles begin to circulate in the cooling system, causing erosion damage to mechanical parts.

Liner Pitting/Cavitation

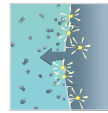
When the liner vibrates, bubbles collapse under an enormous pressure and take small chunks out of the liner.

With Fleetguard Protection:



Fleetguard Fully Formulated Coolant can prevent the fatal effect on your engine by creating a protective layer on the liner wall: implosions now take place on this layer and spare the liner surface.

Without Fleetguard Protection:



Piston-slap causes liner vibration, which creates a vacuum and formation of tiny vapor bubbles.

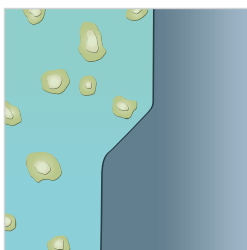


The liner slams back into the coolant causing the bubbles to implode. As this process repeats many times per second, small chunks are kicked out of the liner.

Scale & Deposits

Scale causes detrimental effects to the hot surfaces of your engine cooling system (the liners and the cylinder heads). The consequences are worn piston rings, higher oil consumption and, in the worst cases, total engine failure.

With Fleetguard Protection:



Fleetguard Fully Formulated Coolants contain a proprietary polymer system that 'wraps up' the scale particles so that they can't attach themselves to the hot metal surfaces.

Without Fleetguard Protection:



As the engine functions, the heat causes the formation of scale on the hot surfaces.



The scale layer acts as an insulator, preventing the coolant from absorbing the heat of the engine.

Acidification

Coolants acidify due to the degradation of antifreeze and combustion gases entering the cooling system, which can damage cooling system components. Fleetguard Fully Formulated Coolants buffer the coolant to prevent and neutralize the formation of acids.



Select Fully Formulated Coolant

ES Compleat™

Fleetguard offers a choice of coolant (antifreeze) products in North America to meet every need for every type of engine from diesel to natural gas to gasoline. From lowest cost to extended service intervals, from glycols to glycerin, these products are formulated by engine experts to provide exceptional protection over the life of your equipment.



ES Compleat OAT

- Organic Additive Technology coolant for use in all heavy duty and light duty diesel and gas engines.
- Life-of-the-Engine, 1,000,000-mile coolant.
- Protects against liner pitting and provides solid corrosion protection for aluminum, cast iron, copper, brass, and solder. Contains proprietary scale inhibitors. Compatible with gaskets, elastomers, non-metals including silicon seals/hoses.
- OEM approved formulation free of nitrite, amine, phosphate, borate, silicate, and 2-ethylhexonic acid.
- Compatible with Fleetguard non-chemical filters.
- Available in Ethylene Glycol based 50/50, 60/40 premix or concentrate.
- Meets ASTM D3306, ASTM D6210, TMC RP 329.

ES Compleat OAT	OAT EG Concentrate	OAT EG PreMix 60/40	OAT EG PreMix 60/40
Bulk	* CC36070	* CC36074	CC2908
275 Gal. Tote (1040 L)	CC36071	CC36075	
55 Gal. Drum (208 L)	CC36072	CC36076	
6/ 1 Gal. Bottle (3.78 L)	CC36073	CC36077	
55 Gal. Drum (208 L)			CC36078
275 Gal. Tote (1040 L)			CC36079



ES Compleat

- Fully formulated hybrid coolant (antifreeze) with dual borate, phosphate buffer and low silicate formulation for use in all heavy duty diesel and gas engines.
- Life-of-the-Engine, 1,000,000-mile coolant.
- Protects against liner pitting and provides solid corrosion protection for aluminum, cast iron, copper, brass, and solder. Contains proprietary scale inhibitors.
- Compatible with Fleetguard DCA4 liquid, or DCA4 chemical filters.
- Available in both ethylene or propylene glycol base as either a 50/50, 60/40, premix or concentrate.
- Meets ASTM D3306, ASTM D6210, TMC RP 329.

ES Compleat	EG Concentrate	EG PreMix	PG Concentrate	PG PreMix
Bulk		CC2827		
275 Gal. Tote (1040 L)	CC2823	CC2834	CC2833	CC2838
275 Gal. Tote (1040 L)		CC2907 60/40		CC2872 60/40
55 Gal. Drum (208 L)	CC2821	CC2826	CC2831	CC2836
55 Gal. Drum (208 L)		CC2863 60/40		CC2865 60/40
5 Gal. Pail (19 L)	CC2847	CC2848	CC2849	CC2850
6/ 1 Gal. Bottle (3.78 L)	CC2820	CC2825	CC2830	CC2835

STEP 1 Select Fully Formulated Coolant

Fleetcool™

Fleetcool products contain Ethylene Glycol (EG) base fluids and are designed for use in heavy duty diesel engines. Fleetcool Concentrate mixes readily with clean tap water or demineralized water, while Fleetcool Premix is formulated with demineralized water and is ready to use. Fleetcool contains a Borate/Nitrite, low silicate, fully formulated heavy duty inhibitor package that is compatible with all SCA liquids and filters.



Fleetcool EX

- Fully formulated phosphate-free hybrid coolant (antifreeze) for use in all heavy duty diesel and gas engines.
- Life-of-the-Engine, 1,000,000-mile coolant.
- Protects against liner pitting and provides solid corrosion protection for aluminum, cast iron, copper, brass, and solder. Contains proprietary scale inhibitors.
- Compatible with Fleetguard DCA2 liquid, or DCA2 chemical filters.
- Available in Ethylene Glycol based 50/50, premix or concentrate.
- Meets ASTM D3306, ASTM D6210, TMC RP 329.

Fleetcool EX	EX EG Concentrate	EX EG PreMix
Bulk	CC2739	CC2743
275 Gal. Tote (1040 L)	CC2740	CC2744
55 Gal. Drum (208 L)	CC2741	CC2745
5 Gal. Pail (19 L)		
6/ 1 Gal. Bottle (3.78 L)	CC2742	CC2746
6/ 1 Qt. Bottle (0.94 L)		



Fleetcool

- Cost-effective standard life coolant (antifreeze) with borate buffer and low silicate formulation for use in all heavy duty diesel and gas engines.
- Product need not be drained and replaced until condemnation limits are reached.
- Protects against liner pitting and provides solid corrosion protection for aluminum, cast iron, copper, brass, and solder. Contains proprietary scale inhibitors.
- Compatible with Fleetguard DCA2 liquid or DCA2 chemical filters.
- Available in an Ethylene Glycol (EG) base as 50/50 premix or concentrate.
- Meets ASTM D3306, ASTM D6210, TMC RP 329.

Fleetcool	EG Concentrate	*EG PreMix
Bulk	*CC8965	*CC8970
275 Gal. Tote (1040 L)	CC8966	CC8971
55 Gal. Drum (208 L)	CC8967	CC8972
5 Gal. Pail (19 L)	CC8968	CC8973
6/ 1 Gal. Bottle (3.78 L)		CC8974

STEP 1 Select Fully Formulated Coolant

Glycerin



ES Comleat Glycerin

- Fully formulated hybrid coolant (antifreeze) uses non-toxic top quality Glycerin from renewable sources. Good for use in all heavy duty diesel and gasoline engines.
- Product need not be drained and replaced until condemnation limits are reached.
- Protects against liner pitting and provides solid corrosion protection for aluminum, cast iron, copper, brass, and solder. Contains proprietary scale inhibitors.
- Compatible with Fleetguard DCA4 liquid, or DCA4 chemical filters.
- Available only in a glycerin base as a 50/50 premix.
- Meets ASTM D3306, ASTM D6210, TMC RP 329.

ES Comleat Glycerin	Glycerin
Bulk	CC36004
275 Gal. Tote (1040 L)	CC36003
55 Gal. Drum (208 L)	CC36002
5 Gal. Pail (19 L)	CC36001
1 Gal. Bottle (3.78 L)	CC36000



STEP 2 Maintain Additive Levels

Coolant Additives



Liquid Supplemental Coolant Additives (SCAs)

DCA2

- Standard Corrosion Protection Using Borate/Nitrite Based Inhibitor Package

DCA4

- Superior Liner Pitting, Scale & Corrosion Protection Using Phosphate/Molybdate Based Inhibitor Package

Liquid Supplemental Coolant Additives (SCAs)	DCA2	DCA4
12/ 1 Pint Bottle (.47 L)	DCA30L	DCA60L
6/ 1/2 Gal. Bottle (1.89 L)	DCA35L	DCA65L
6/ 1 Gal. Bottle (3.78 L)	DCA40L	DCA70L
5 Gal. Pail (19 L)	DCA45L	DCA75L
55 Gal. Drum (208 L)	DCA50L	DCA80L

Coolant Filtration

Coolant filtration is proven to reduce wear and to maintain all cooling system components. Additionally, water filters can provide a convenient and reliable method for delivering supplemental coolant additives into the cooling system to improve performance and extend coolant service life.



Standard Service Water Filters

- For use at OEM recommended standard service intervals
- Immediate Release SCA for Use with Any Coolant at Standard Service Interval
- High quality cellulosic media, which is 95% efficient at 60 microns
- For use up to 1500 hours or 75,000 miles

Standard Service Water Filters	Immediate Release Coolant Additive	Thread Size	Standard Service Water Filter	Immediate Release Coolant Additive	Thread Size
WF2070	2 units DCA4	11/16-16 UN- 2B	WF2126	8 units DCA4	M36 X 2-6G INT
WF2071	4 units DCA4	11/16-16 UN- 2B	WF2022	8 units DCA4	1-16 UN-2B
WF2072	6 units DCA4	11/16-16 UN- 2B	WF2082	6 units DCA4	1-16 UN-2B
WF2073	8 units DCA4	11/16-16 UN- 2B	WF2051	4 units DCA2	11/16-16 UN- 2B
WF2087	9 units DCA4	11/16-16 UN- 2B	WF2088	6 units DCA2	11/16-16 UN- 2B
WF2151	4 units DCA4	11/16-16 UN- 2B	WF2054	15 units DCA2	11/16-16 UN- 2B
WF2015	8 units DCA4	3/4-20 UNEF- 2B	WF2144	12 units DCA2	11/16-16 UN- 2B
WF2074	12 units DCA4	11/16-16 UN- 2B	WF2096	8 units DCA2	M16 X 1.5-6H INT
WF2075	15 units DCA4	11/16-16 UN- 2B	WF2145	18 units DCA2	11/16-16 UN- 2B
WF2076	23 units DCA4	11/16-16 UN- 2B	WF2053	8 units DCA2	11/16-16 UN- 2B
WF2083	4 units DCA4	3/4-20 UNF-2B	WF2055	23 units DCA2	11/16-16 UN- 2B
WF2104	15 units DCA4	11/16-16 UN- 2B	WF2091	14 units DCA2	11/16-16 UN- 2B
WF2106	4 units DCA4	11/16-16 UN- 2B	WF2056	34 units DCA2	11/16-16 UN- 2B
WF2108	8 units DCA4	M16 X 1.5-6H INT			

STEP 2 Maintain Additive Levels

Coolant Filtration



Extended Service Water Filters

- Easy Maintenance every 12 months, 150,000 miles (250,000 km), or 4000 hours
- Patented Slow-Release Mechanism Replenishes Chemicals Depleted by Use
- StrataPore™ Multilayer Media Offers Superior Durability, Efficiency and Capacity
- Improved Mechanical Design for Increased Durability and Corrosion Resistance

Extended Service Water Filters	Slow Release Coolant Additive	Thread Size	Extended Service Water Filter	Non-Chemical Coolant Additive	Thread Size
WF2121	15 units DCA4	11/16-16 UN- 2B	WF2122	Non-Chemical	11/16-16 UN- 2B
WF2124	15 units DCA4	3/4-20 UNEF- 2B	WF2129	Non-Chemical	M16 X 1.5-6H INT
WF2128	15 units DCA4	M16 X 1.5-6H INT	WF2134	Non-Chemical	3/4-20 UNEF- 2B
WF2131	15 units DCA2	11/16-16 UN-2B	WF2123	Non-Chemical	11/16-16 UN- 2B
WF2133	15 units DCA2	3/4-20 UNEF-2B	WF2130	Non-Chemical	M16 X 1.5-6H INT
WF2138	15 units DCA2	M16 X 1.5-6H INT	WF2127	Non-Chemical	M36 X 2-6G INT



Non-Chemical Filters

- For Use at OEM Recommended Standard Service Intervals
- High quality cellulosic media, which is 95% efficient at 60 microns
- For use up to 1500 hours or 75,000 miles

Non-Chemical Filters	Standard Service	Thread Size
WF2077	Standard Service	11/16-16 UN- 2B
WF2078	Standard Service	3/4-20 UNF-2B
WF2101	Standard Service	11/16-16 UN- 2B
WF2109	Standard Service	M16 X 1.5-6H INT
WF2084	Standard Service	11/16-16 UN- 2B
WF2107	Standard Service	11/16-16 UN- 2B



Filter Head Assembly

- Head Assembly for Installation on Engines without Water Filtration Capability
- Assemblies Provide Everything Needed to Achieve Benefits of Coolant Filtration

Filter Head Assembly*	Description	Style	Port Size	Thread Size
204163 S	Water Filter Spin-On Head	Aluminum	3/8" NPT	11/16-16 UN- 2B
215617 S	Dual Water Filter Spin-On Heads	Aluminum	1/2" NPT	11/16-16 UN- 2B
256535 S	Filter Head Mounting Bracket	N/A	N/A	N/A
257715 S	Water Filter Head (204163 S) and Mounting Bracket Assembly	Aluminum Head	3/8" NPT	11/16-16 UN- 2B
3904378 S	Severe Duty Water Filter Head	Aluminum / Steel Insert	3/8" NPT	11/16-16 UN- 2B

* Severe Duty Filter Head is recommended for most applications.

STEP 3 Test and Maintain Coolant Regularly

Coolant Testing

Every good cooling system maintenance program should include regular coolant testing to determine if the proper level of protection is present or if contaminants exist. A good coolant testing program eliminates guesswork and allows the cooling system to maintain peak performance.



4-Way ES Compleat OAT Test Kit

- Easy to use test strips measure Molybdate, Nitrite, Freeze point, and pH
- Results in 45-75 Seconds
- Designed specifically for use with ES Compleat™ OAT

4-Way ES Compleat OAT Test Kit

50 Strip Test Kit	CC8997
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3-Way SCA/Freeze Point Strips

- Measures Protection against Liner Pitting, Corrosion and Coolant Dilution
- Easy to Use Test Strips Measure Freeze Point and Molybdate/Nitrite
- Results in 45 – 75 Seconds

3-Way SCA-Freeze Point Strips

50/Bottle	25 4-Packs/Box	100 Singles/Box	50/Bottle (Metric)	25 4-Packs (Metric)
CC2602	CC2602A	CC2602B	CC2602M	CC2602AM



2-Way Glycerin Coolant Test Kit

- Easy to Use Test Strips Measure Nitrite and Molybdate levels
- Designed specifically for use with ES Compleat Glycerin

2-Way Glycerin Coolant Test Kit

50/Bottle	CC36050
100 Singles/Box	CC36050B



QuikChek Coolant Quality Strips

- Easy to Use Test Strips Measure Levels of pH, Sulfate and Chloride for Overall Coolant Quality
- Minimizes Unnecessary Draining of Coolant still within Specifications

QuikChek Coolant Quality Strips

10/Bottle	CC2718
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Water-Chek 3-Way Strips

- Determines if Coolant Make-Up Water Meets OEM, TMC and ASTM specifications
- Easy to Use Test Strips Measure pH, Chloride and Hardness

Water-Chek 3-Way Strips

100 Singles/Box	CC2609
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STEP 3 Test and Maintain Coolant Regularly

Coolant Testing



Refractometer

- Determines the Freeze Point Protection for Coolants
- More Accurate than Test Strips or Float-Type Hydrometers
- Durable Storage Case Included

Refractometer

Ethylene Glycol or Propylene Glycol	CC2806
Glycerin	CC36049
ES Compleat™ OAT	CC8998



Monitor-C Laboratory Testing - Coolant Analysis

- Expert Laboratory Analysis with On-line Reporting, Results in 24 Hours
- Measures Molybdate, Nitrite, pH, Hardness, Chloride, Sulfates, Corrosion Products (iron, lead, etc), and Silicates
- Tests for Freeze/Antifreeze Points, TDS and Buffers
- Available in Both Standard Packaging and with a Prepaid Mailer

Monitor-C Laboratory Testing

Standard Kit	CC2700
Standard Kit with Prepaid Mailer	CC2706

Cooling System Cleaners

Cummins Filtration offers two types of cleaners to keep your cooling system in top condition. Both Restore and Restore Plus remove contaminants without harming metal surfaces, gaskets, hoses or plastic parts. They are also approved by Cummins® as the preferred product for cleaning oil contaminated cooling systems under warranty maintenance.



Restore

- Alkaline-Based Cleaner
- Most Effective Cooling System Oil/Fuel Contamination-Cleaning Agent on Market
- More Effective than Automotive Distributor Detergent Powders
- Safe for Use in Aluminum Radiators and Heaters
- Removes Silicate Gel
- Approved by Cummins

Restore

1 Gal. Bottle (3.78 L)	CC2610
5 Gal. Pail (19 L)	CC2611
55 Gal. Drum (208 L)	CC2612

STEP 3 Test and Maintain Coolant Regularly

Cooling System Cleaners



Restore Plus

- Safely Removes Rust, Corrosion, Scale, and Solder Bloom – Without Disassembling your Cooling System
- Mild Acid-Based Chelating Cleaner

Restore Plus

1 Gal. Bottle (3.78 L)

CC2638

55 Gal. Drum (208 L)

CC2637

Disposable Totes



SpaceKraft® Disposable Tote

- Disposable – NO return
- Holds 275 Gal. (1040 liters) (5 drums)
- Stacks up to 4 high
- Corrugated 8-ply construction – Over 25 Tons of Compression Strength
- Easy side dispensing ball valve



Cutting and Dispensing



SpaceKraft Totes can be emptied by gravity or pumping. Follow the instructions below to cut the bladder and attach the ball valve in Kit Part #3918034S.

In addition to the ball valve, the kit includes a 2-in Male Nipple, Elbow and Cutter Tool. When gravity draining, attach the ball valve and elbow and place tote on rack of pallets at least 25 in above ground level. When dispensing by pump, a quick disconnect coupling is recommended.

SpaceKraft Totes conform to 46 CFR, Part 64, and meet UN#3082 for shipping ethylene glycol, propylene glycol, or Urea liquids. EG, PG or Urea products are not considered hazardous by OSHA definition and are not considered hazardous from a shipping standpoint if containers hold less than 500 gallons of product.

SpaceKraft has agreed to provide customer sales support and distributor training on tote handling and dispensing. In addition, SpaceKraft will provide tote and dispensing videos upon request. For field support or to report leaks, call SpaceKraft Customer Service at 1-877-868-2748.

Coolant Product Glossary

Antifreeze: A mixture of glycol or glycerin base plus an additive package. The base provides freeze and boil over protection, while the additive package prevents corrosion, liner pitting, and the formation of scale and deposits.

ASTM: American Society for Testing of Materials (www.astm.org), the most important standards-setting organization in the world, publishes specifications most commonly cited, ASTM D-3306 for cars and ASTM D-6210 for trucks, and ASTM D-4985 for old trucks.

Conventional Coolant: A coolant whose additive package is made up entirely of conventional additives such as borate, molybdate, nitrite, nitrate, phosphate, and silicate.

Coolant: The fluid in the cooling system, Typically it will be composed of 50% antifreeze concentrate and 50% water.

Coolant Bases: Chemicals used in antifreeze to lower freeze point and increase boil point. The most common coolant bases include ethylene glycol (EG), diethylene glycol (DEG), propylene glycol (PG), and glycerin.

Coolant Types: Coolants are divided into three types depending on the chemicals used in the additive package. The three coolant types are: conventional, organic acid or OAT, plus hybrid.

Fully Formulated Coolant: Another term for a heavy duty antifreeze/coolant. Unlike light duty coolant, a fully formulated coolant contains additives to prevent liner pitting and scale/ deposit formation.

Heavy Duty Coolant: Fully Formulated to provide buffering capacity, corrosion, erosion, and liner pitting protection. Also provides foam, scale, and deposit control.

Light Duty Coolant: Formulated to provide buffering capacity, corrosion protection, and control foam tendencies

Molybdate: A conventional coolant additive used in premium, long life coolants. Molybdate when used with nitrite provides optimum liner pitting protection as well as increases a coolant's ability to protect aluminum.

Nitrite: A conventional additive found in many heavy duty SCAs and antifreezes. Nitrite provides excellent liner pitting as well as steel and cast iron corrosion protection.

OAT Coolant: Organic Acid Technology Coolant. Composed primarily of organic acids with very limited or no use of conventional additives.

Organic Acid: Type of coolant additive that has become much more popular in the past 10 years. Organic acids are also referred to by the term carboxylate. There are several organic acids commonly used in coolants such as benzoic, sebacic, adipic, etc.

Phosphate: A conventional coolant additive used to provide buffering capacity plus aluminum corrosion protection. Detroit Diesel along with some European OEMs do not recommend coolants that contain phosphate.

Precharged: A term used to describe the addition of SCA to a light duty coolant to make it acceptable for heavy duty service. This practice is now seldom used with the wide availability of fully formulated heavy duty coolant.

Premix Coolant: Coolant where the antifreeze concentrated is already cut with water and delivered to the customer ready to use. Water content of premix coolant generally runs in the 40% to 60% range depending on climate and altitude.

Reserve Alkalinity: The measure of a coolants ability to resistant pH change caused by exhaust gas leakage into the cooling system plus the thermal breakdown of glycols.

SCA: Supplemental Coolant Additive. The products are available in liquid form or a solid contained within a coolant filter. SCAs are a mixture of chemicals that provide corrosion, liner pitting, and scale/ deposit control similar to the additive package in an antifreeze. They can be used to replenish the additives in an antifreeze coolant or used alone in water only coolant.

Total Hardness: The amount of both calcium (as CaCO₃) and magnesium (as MgCO₃) in a make-up water which indicates the potential to form scale and deposits in the cooling system. EMA, ASTM, and TMC limit make-up water total hardness to 170 ppm.



Fleetguard® Fuel Additives

We also provide a wide range of fuel additives that are designed to provide genuine solutions to the challenges of today's modern fuels and fuel systems. Our broad product line provides solutions for cold weather operations, fuel system performance improvement, as well as emissions control support. To learn more about our fuel additives, see our **Fuel Additives Brochure LT36049** available on cumminsfiltration.com.



Have a technical question about a Cummins Filtration product? From filtration to coolant products, we can answer your most pressing maintenance questions.

For detailed technical information about all products featured in this brochure, refer to the **Fleetguard Technical Information Catalog, LT32599**. Some part numbers may not be available in all countries. Contact your local customer assistance center for product availability.



cumminsfiltration.com

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For technical details, refer to the **Fleetguard Technical Information Catalog** or visit Fleetschool.