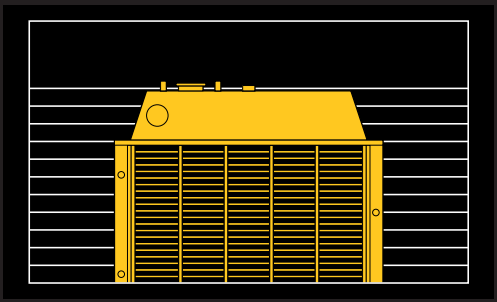
Cat® ELC™ (Extended Life Coolant)

For all Caterpillar® and most OEM diesel and gasoline engines

For Europe, Africa and Middle Eastern Countries



Developed, tested, and approved by Caterpillar, Cat® Extended Life Coolant lasts at least twice as long as conventional coolant in Cat machines and commercial engines and three times as long in Cat truck engines. It requires no supplemental coolant additives (SCAs); instead, Cat ELC Extender is added once, at the time conventional coolants would otherwise be replaced.

Recommended use

Cat ELC is the coolant used as factory fill worldwide for all Caterpillar machines. It can be used in all Cat and most OEM diesel and gasoline engines. **It exceeds Caterpillar's EC-1 coolant performance specification** (see page 2). It also exceeds ASTM D4985 and ASTM D5345 standards for heavy duty, low silicate antifreeze/coolants and ASTM D3306 and ASTM D4656 for automotive applications.

Cat **ELC Premixed** contains 50% ELC and 50% totally purified water. It is to be used for initial fill and for top-off. This formula ensures that water quality does not compromise engine coolant performance and life. With **Cat ELC** there is no concern about hard water scale or the correct mixture of water and concentrate. Freeze protection with **Cat ELC** is to -37°C. **Cat ELC Concentrate** is available to further lower the freeze protection point.

Cat ELC Extender should be added after 6000 hours (500 000 km) of operation, and the system should be drained and flushed with clean water after 12 000 hours (1 000 000 km). No cleaning agents are needed. If Caterpillar's S•O•S℠ Coolant Analysis Program is used regularly, safe operation with **Cat ELC** may extend beyond 12 000 hours.

With **Cat ELC** you can inventory one coolant for your entire fleet. Contact your nearest Cat dealer for further information concerning coolants and lubricants.

Cat® ELC™ Characteristics*

Appearance		Strawberry Red
Specific gravity	ASTM D1122	1.110
pH (33% solution)	ASTM D1287	8.3
Reserve alkalinity	ASTM D1121	5.5
Ash content, % max.	ASTM D1119	5.0
Boiling protection, 1 bar pressure cap		
50% (Cat ELC premixed)		129°C
60% (Cat ELC concentrate)		132°C
Freezing protection		
50% (Cat ELC premixed)		-37°C
60% (Cat ELC concentrate)		-54°C
Nitrites		550 ppm
Molybdates		950 ppm
Silicate, %		0
Phosphate, %		0
Amine, %		0
Borate, %		0
Nitrates, %		0

* The values shown are typical values and should not be used as quality control parameters either to accept or reject product. Specifications are subject to change without notice.

Full Compatibility

Your entire fleet can benefit from the protection of Cat ELC. It is fully compatible with all brands of diesel and gasoline engines. After nine years of extensive testing and commercial experience, there have been no documented failures of cooling system components, gaskets, seals or hoses with proper use of Cat ELC.

CATERPILLAR®

Cat ELC (Extended Life Coolant)

Better protection for longer life

Bemco (the Caterpillar dealer in Botswana) observed engine component life by comparing Cat ELC to a mixture of water and SCAs. The liner on the left - from a Cat 3406 HEUI engine - operated 5300 hours at the Gaborone Mine with this conventional coolant. It had pitting, which penetrated the liner wall. The liner on the right from the same engine ran 10 013 hours with Cat ELC. The coolant side of the liner is like new.

Injector sleeves from the same Bemco engine showed similar success for Cat ELC. Note the deposits and severe pitting after 5300 hours with conventional coolant (left) compared with the excellent condition of the injector sleeve with ELC after 10 013 hours of operation (right).

New chemical technology for long life

Cat ELC incorporates an advanced formula technology with organic additive corrosion inhibitors. Instead of nitrates, silicates, phosphates, borates, and amines, **Cat ELC** contains mono- and dibasic organic acid salts for maximum protection of the six basic metal alloys-copper, solder, brass, steel, cast iron, and aluminum-found in most heat transfer systems. Some nitrites and molybdates are added to help protect the iron components in the cooling system, reducing steel corrosion and pitting effects.

Cat ELC contains no phosphates or silicates so hard water deposits are practically eliminated. The low level of total dissolved solids and absence of silicates extends water pump seal life.

Coolant life in heavy-duty diesel engines is limited by the depletion of corrosion inhibitors. In conventional coolants, supplemental coolant additives (SCAs) deplete, so you must add SCAs at every oil change. With **Cat ELC**, however, additives deplete very slowly-so you don't need to add any SCAs. Coolant samples indicate that **Cat ELC** maintains its nitrite levels up to 20 times better than conventional coolants.

The presence of ethylene glycol in **Cat ELC** protects cooling systems in cold climates because it lowers the freezing point. It is also important in all climates because it raises the coolant boiling temperature.

Caterpillar EC-1 Specification

The world's most stringent standard for heavy duty coolant performance is the Caterpillar **EC-1 Specification.**

This specification requires that the coolant pass extensive tests including:

- Physical and chemical testing
- Compatibility characteristics with other coolants
- Bench performance testing
- Field testing

The **EC-1 tests** go far beyond the usual ASTM and other industry standard tests. Unlike other coolant standards, EC-1 requires field testing. To qualify as EC-1, a coolant must be operated for a minimum of 7000 hours (450 000 km) in at least six Caterpillar engines. Coolant samples are required every 500 hours (40 000 km). The sample results must conform to stringent limits concerning pH, reserve alkalinity, metallic corrosion, contaminants and inhibitor concentration.

At the conclusion of the EC-1 testing, each engine is disassembled and components must meet strict condition requirements. In particular, the EC-1 test requires no corrosion or pitting, scale or deposits on the cylinder liners, radiator core, water pump parts, cylinder head water passages and thermostat housing.

Proper use for optimum results

Mixing Cat ELC with other antifreeze/coolants

While Cat ELC is compatible with conventional antifreeze/coolants, we recommend you do not mix the two. Cat ELC is ethylene-glycol based for anti-boil and freeze protection, but its corrosion chemical system is different than that of conventional antifreeze/coolants.

If they are mixed, don't add more than 10% of the conventional coolant. If you exceed 10%, treat the system as if it contains conventional coolant or drain and flush the system and refill with ELC.

Using test kits for Cat ELC

The Contamination Test Kit (172-8851) for Cat ELC provides a pass/fail result based on inhibitors present in the coolant sample.

Using this kit confirms whether ELC inhibitors are within an acceptable limit for continued use of the coolant. If the coolant has had water or standard coolant added, there may not be enough of the ELC additives present for adequate protection.

We recommend testing annually for freeze/anti-boil protection in case water (rather than ELC) has been used for top off.

Cleaning your cooling system

When draining ELC from your cooling system, just flush the system with clean water-no cleaning agents are required when you drain Cat ELC for a new batch.

Converting to Cat ELC

It's easy to convert to Cat ELC. If you've been using a conventional heavy-duty, low-silicate antifreeze/coolant, first clean your system with Cat Cooling System Cleaner 6V4511 or 4C4611 or a similar commercial cleaner at the change interval.

After draining the cleaner, flush the system thoroughly with water three times to remove the cleaning agent. It is imperative to remove all the cleaning agent from the system.

Less old coolant for disposal

Used coolant disposal requirements have become more stringent and costly in recent years. Disposal of used coolants can be difficult and expensive and must be done in accordance with local or national laws. Cat ELC reduces coolant disposal volume by 50% or more - cutting disposal costs.

Cat Extender for maximum coolant life

Cat Diesel Engine Antifreeze/Coolant

Cat SCA Every 250 Hours or 25 000 km

Cat ELC (Machines and Commercial Engines)

Cat Extender Every 6000 Hours

Cat ELC (Truck Engines)

Cat Extender Every 500 000 km

- Exceeds Cat EC-1 performance requirements.
- Contains nitrites and molybdates to protect against cylinder liner/block pitting and cavitation erosion.
- Cat Extender should be added at 500 000 km for Cat on-highway trucks and 6000 hours for Cat machines and commercial engines.
- Cat ELC performance ensured to 1 000 000 km or 12 000 hours.

Quantity of Extender Needed at Cat Extended Life Coolant Half-Life*

Cooling System Capacity	Approximate Amount at 500,000 km or 6000 Hours**
Liters	Quantity (Bottle: 119-5152)
22-30	0.5
30-49	1.0
49-83	1.5
83-114	2.0
114-155	3.0
155-197	4.0
197-243	5.0

* Cat Extender is not required for initial fill or top-off since Cat ELC already contains the appropriate level of all inhibitors.
** A clear view strip on the side of the bottle makes measurement easier.

Cat ELC & Extender ordering information

Part No.	Package Size	Description
206-7831	Bulk (10 000 Liters)	Premixed (50/50)
205-6614	1000 Liter Container	Premixed (50/50)
205-6613	210 Liter Drum	Premixed (50/50)
205-6612	25 Liter Canister	Premixed (50/50)
205-6611	5 Liter Jug	Premixed (50/50)
205-6615	5 Liter Jug	Concentrate*
119-5152	Quart Bottle	Coolant Extender**

* ELC Concentrate is used to adjust the coolant for temperatures below -37°C.
** ELC Extender is added at the half life of the coolant (500,000 km for truck engines and 6,000 hours for other engines).

S·O·S SM Coolant Analysis

Protect your investment with S•O•S Coolant Analysis. **Level 1 Analysis** provides a close look at the condition of your coolant, including nitrite level, pH, conductivity, visual and odor characteristics, freeze protection and water hardness (if conventional coolant is used).

Level 2 Analysis includes all level 1 tests plus spectrographic and electrophoresis analysis. It can detect metal corrosion, build-up of impurities, scaling and other problems before they cause downtime and major repairs. Level 2 Analysis is especially important if you are using conventional coolants which offer less protection than Cat ELC. Ask your nearest Cat dealer about S•O•S coolant services.

Proper use for health and safety

According to toxicology information, Cat ELC has little or no adverse effects if handled and used properly. It contains an embittering agent to assume that it will not be swallowed by humans or animal. No special precautions are suggested beyond attending to good personal hygiene and avoiding prolonged, repeated skin contact. For more information, refer to the Material Safety Data Sheet, located on the Caterpillar website at *www.catmsds.com*

Benefits of Cat ELC

- Maximizes water pump seal life.
- Eliminates gel formation.
- Contains no silicates, phosphates, or borates.
- Allows you to inventory one coolant for entire mixed fleet (can be used in most OEM diesel, gasoline, and natural gas engines).
- Requires no SCAs (one maintenance intervention required using Cat Extender at coolant mid-life).
- Provides excellent protection for all cooling system metals, including aluminum.
- Offers outstanding protection against cylinder liner cavitation corrosion.
- Ensures quality make-up water (Premixed).
- Ensures correct antifreeze-to-water mix (Premixed).
- Eliminates hard water scale.
- Requires no coolant conditioner test kit to check nitrite level.
- Lets you adjust coolant freeze point temperature.
- Anti-boil properties reduce damage from steam in cooling system.
- Reduces disposal volume and is recyclable.
- Reduces engine coolant and additives costs from a minimum of **42% to as much as 80%** over Cat DEAC.
- May be used as top-off with traditional coolants.

CATERPILLAR®