

B A L D W I N C O O L A N T F I L T E R S

Performance

PURE

BALDWIN
FILTERS®

a CLARCOR company

2394

BALDWIN
FILTERS

FLEETSTRIP
Heavy-Duty Coolant Test Kit
CTK5029-4

EACH STRIP TESTS:
• Freeze Point (EG & PG Coolants)
• Molybdate
• Nitrite

4 TEST STRIPS

For reliable results, follow directions carefully.

% GLYCOL / FREEZE POINT (°F)

25%
33%
40%
50%
60%
70%
80%
90%
100%

+10° +5

MOLYBDATE LEVEL (Middle Pad)

Row 1	0.0	1.0
Row 2	0.0	1.7
Row 3	0.0	1.4
Row 4	0.0	1.2
Row 5	0.0	1.0
Row 6	0.0	0.6
Row 7	0.0	0.3
Row 8	0.0	0.3

BALDWIN
FILTERS

FLEETSTRIP
Heavy-Duty Coolant Test Kit
CTK5029-4

FOR MEASURING

- Freeze
- Molybdate
- Nitrite

50 TEST STRIPS

Store at temperatures below 50°F

BALDWIN
FILTERS

The Heavy-Duty People

5007

BTA PLUS

ANTIFREEZE FOR DCA4

ANTIFREEZE SYSTEMS

- GUARDS
- CORROSION
- FOAM
- OIL FOULING
- SCALE FORMATION

BALDWIN
FILTERS

People

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FILTERS

People

BALDWIN
FILTERS

BW5137

ETC

BALDWIN FILTERS

FOR MEASURING

Freeze

Molybdate

Nitrite

50 TEST STRIPS

Store at temperatures below 50°F

WARNING:
CONTAINS SODIUM HYDROXIDE
INHALATION:
REMOVING AFFECTED PERSONS
INGESTION:
DRINK LARGE AMOUNTS OF WATER
PHYSICIAN
SKIN EYE CONTACT:
FLOOD WITH WATER

BALDWIN
FILTERS
BW5136
ETC



Poor maintenance can lead to costly damage

A diesel engine depends on its cooling system for protection from damaging temperature extremes, lubrication of engine components and prevention of scale, sludge and corrosion.

In fact, leading engine manufacturers estimate that poor maintenance of the cooling system causes 40 percent or more of all premature engine failures.

- A heavy-duty diesel engine turns only about one-third of the heat it generates into mechanical energy — energy for driving the shafts and turning the wheels.
- Another 30 percent of the engine's power goes straight out as exhaust.
- About seven percent of the heat radiates directly into the atmosphere.
- Finally, 30 percent of all the engine's heat seeps into the cooling system and must be dissipated by this system.

A heavy-duty diesel can produce engine temperatures in excess of 3,000 degrees Fahrenheit. If the heat is not transferred, serious damage will occur. The engine's cooling system bears a major responsibility in this transfer.

And yet, Baldwin research suggests that only four fleet operators in 10 treat their cooling systems with Supplemental Coolant Additives (SCAs), as OEM specifications direct. Only three operators in 10 perform cooling system maintenance beyond routine flushing and replacement of coolant — and then only at intervals measured in years.





Baldwin: The Basics of Coolant Filtration

As one of the six major components of the cooling system, coolant filters are critical to the long-term, productive life of diesel engines.

- These filters purify the coolant fluid in its course through the engine.
- They trap contaminants and prevent them from damaging the cooling system.
- In perhaps the most important function performed by these filters, they distribute Supplemental Coolant Additives (SCAs) and then work with these SCA chemicals to maintain pH, fight corrosion and resist both cavitation erosion and deposit build-up.

An effective SCA contains:

- Inhibitors to prevent cavitation erosion and corrosion.
- Polymers to inhibit the deposit of hard-water scale on engine surfaces.
- Buffers to reduce coolant acidity.

Coolant, which is a mixture of water and antifreeze in the engine's cooling system:

- Carries away heat.
- Helps lubricate the water pump.
- Prevents the system from freezing up in cold weather.

SCAs must then protect the cooling system and other engine components from corrosion and prevent the formation of sludge and scale. These SCAs can be added to an engine's cooling system in one of two ways.

- They can be poured directly into the engine's radiator as liquids, a task that requires precise measuring and even more careful scheduling.
- They can be introduced through the coolant filters, a process that disperses SCAs into the system to deliver optimum protection.



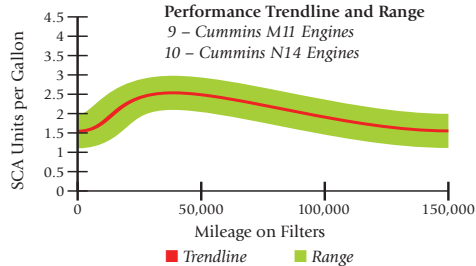
Pure Performance: tested time & again

Baldwin Filters uses the latest technology in cooling system care. Patented coolant filters containing Controlled Release Supplemental Coolant Additives in both BTE and BTA PLUS formulations protect diesel engine cooling systems for one year, 150,000 miles or 4,000 hours of service.

The following tests illustrate Baldwin's superior performance.

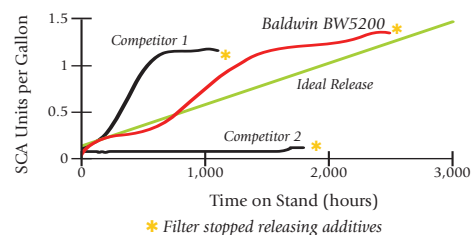
BW5200 FIELD TESTING

Performance Trendline and Range
9 - Cummins M11 Engines
10 - Cummins N14 Engines



SIMULATED SERVICE TEST

Release Patterns with No SCA Pre-Charge



Baldwin Coolant Filters with SCAs

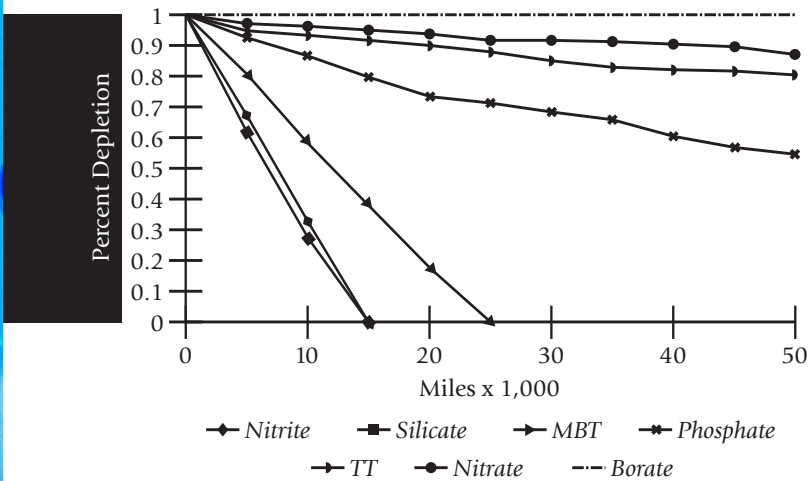
Baldwin offers a full line of coolant filters for heavy-duty applications, with two formulations of SCAs to meet specific engine needs.

- Baldwin Filters' Balanced Treatment for Ethylene Glycol (BTE) is a borate/nitrite-based inhibitor, designed specifically for 30 percent to 60 percent ethylene/propylene glycol solutions. BTE provides superior protection against cavitation erosion, liner pitting, corrosion, scale and foaming.
- Baldwin Filters' Balanced Treatment Additive (BTA PLUS) is a phosphate/molybdate/nitrite-based coolant inhibitor, designed for use in plain water or in antifreeze solutions up to 60 percent. BTA PLUS provides excellent protection against cavitation erosion, liner pitting, corrosion, scale and foaming.
- Baldwin does not recommend the operation of engines using only plain water as a coolant.
- Baldwin coolant filters are available without SCAs for owners and shops who prefer to add liquid additives to their cooling systems.

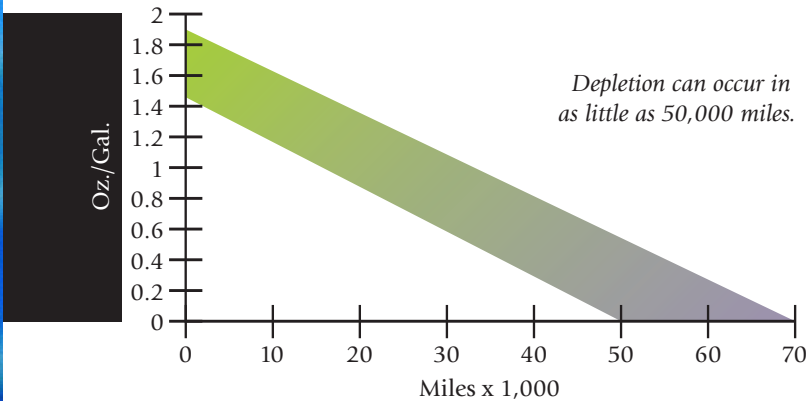
Depletion of Supplemental Coolant Additives


SCAs do a wonderful job protecting your cooling system, but engine by-products, starting and stopping and liner movement deplete them. To keep SCAs at their proper level, where they provide the protection your system requires, you should test your system frequently and follow an established maintenance schedule.

SCA Chemical Depletion Rates



Typical Depletion of SCAs vs. Mileage



A high-angle photograph of a male mechanic wearing safety glasses and a dark blue shirt, focused on working on a large, complex engine. The engine is mounted on a red surface, possibly a vehicle chassis. Various pipes, hoses, and mechanical components are visible. In the background, a red toolbox with multiple drawers is partially visible. The lighting is dramatic, with strong highlights and shadows.

Properly maintained cooling system protects engine

A properly maintained cooling system is important in protecting engine components against cavitation erosion and corrosion.

Cavitation erosion occurs when tiny vapor bubbles form and implode on the inside surface of the liners — pitting and wearing out the cylinder liners.

Corrosion indicates improper care of the cooling system and appears in several forms:

- Oxidation — appears on aluminum components as a white powder and is caused by the corrosive action of combustion by-products introduced into the system.
- Rust — appears on the cast-iron fluid channel surfaces. Engine combustion by-products increase acidity in the system, making conditions right for rust.
- Solder bloom — appears as a white powder which can cake the radiator, heater core and oil cooler. Solder bloom results when combustion by-products enter the cooling system and degrade the glycol in the antifreeze into organic acids, which corrode the solder.
- Scale — acts as an insulator, creating engine hot spots. Scale is formed when minerals present in hard water precipitate when the engine is shut down. Engine heat then solidifies these particles to form scale. Scale build-up can lead to cracks in the cylinder head, even with sufficient coolant in the system.

If problems in the cooling system persist, an examination of the coolant filter may offer some diagnostic clues.

- A Plugged Filter — can indicate the presence of oil in the cooling system, excessive SCAs, dirty water or the presence of stop leak products.
- A Rusty Filter — can indicate a low level of SCAs and can plug the filter.
- A Rusty, Leaky Filter — indicates a complete lack of system protection.



Pure prevention: Baldwin products for service and testing

Engine by-products, liner movement, and the wear and tear of starting and stopping the engine combine to deplete SCAs. Keeping SCAs at levels necessary for protection of the cooling system requires frequent testing and a careful maintenance schedule.

- **FleetStrip Coolant Test Kit (CTK5029)** measures freeze point, nitrite and molybdate. Each strip shows all tests; there's no need to mix or measure solutions. A color-coded chart profiles the condition of the SCA. The kit works with any conventional coolant formulation. Smaller kits (CTK5029-4 and CTK5029-1) include four self-contained test strips and one self-contained test strip, respectively, as opposed to the 50 strips in CTK5029 above.
- **Baldwin Cooling System Cleaner (CSC)** is ideal for flushing cooling systems. Baldwin's non-acidic CSC dissolves scale and corrosion particles and removes silica gel and oil. Baldwin CSC is especially important after engine repairs or rebuilds to flush out particles that can be left behind.

Coolant filters trap dirt, scale, rust, core sand left from engine casting and other contaminants. They should be changed at every oil-change interval. Quick, easy maintenance of the cooling system, including new Baldwin filters and the appropriate SCA, will prolong engine life, increase productivity and forestall costly repairs.

1

2

3

4

5

6



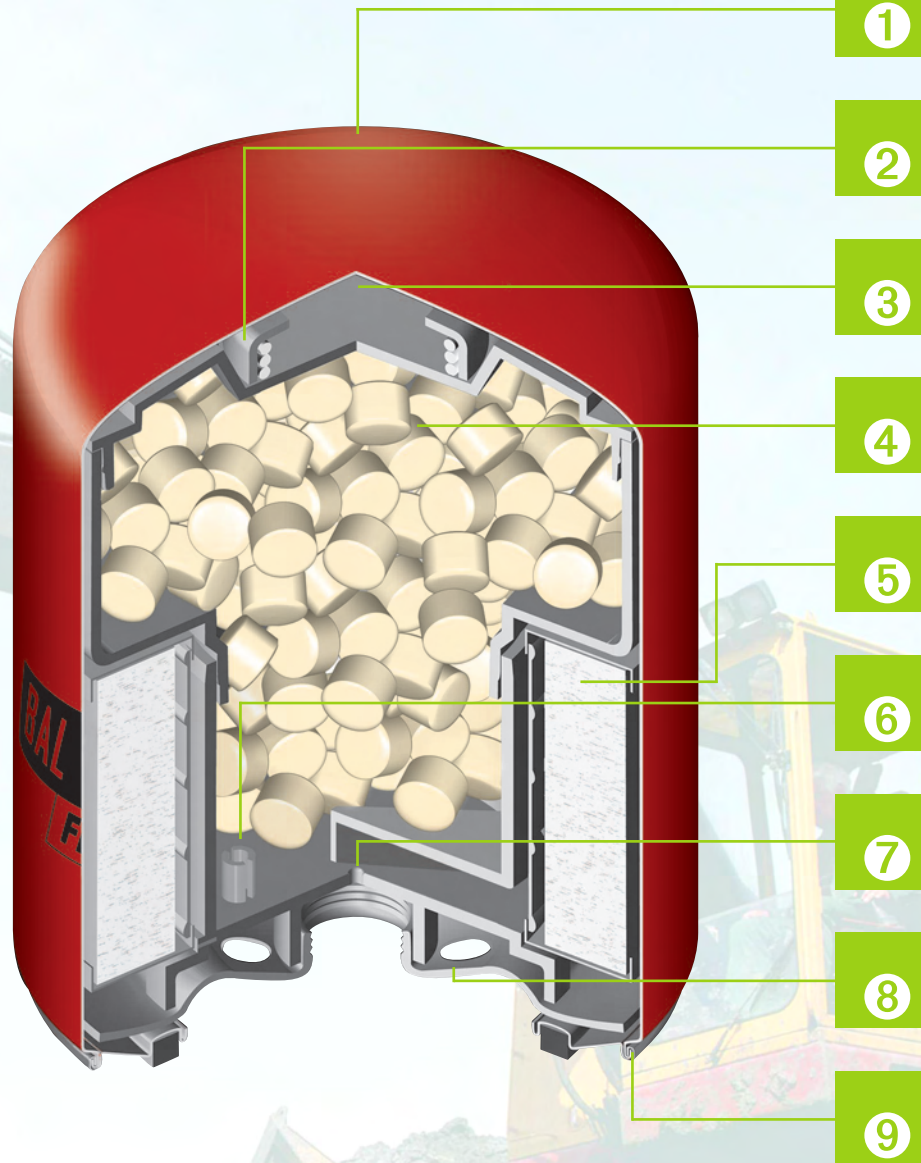
- 1 **Economical System** provides 50 tests per kit and costs less than multi-strip or titration methods.
- 2 **Color-Coded Chart** instantly tells you the condition of your Supplemental Coolant Additives (SCAs) and what you should do next.
- 3 **Simple To Use** — absolutely no mixing or measuring of coolant is needed.
- 4 **Accurate, Easy-To-Read Results** are assured by the latest in diagnostic medical strip technology.
- 5 **One-Step Testing** saves time by measuring freeze point, nitrite and molybdate levels on a single strip.
- 6 **Universal Test Kit** will test all conventional antifreeze containing SCAs.

Protecting Your Cooling System

Coolant filters protect your engine by trapping contaminants and distributing Supplemental Coolant Additives (SCAs) into your cooling system. Baldwin offers coolant filters with two SCA formulations (BTE and B TA PLUS) to meet specific engine needs.

Baldwin Filters also offers a line of controlled release coolant filters. The patented coolant filters contain Controlled Release Supplemental Coolant Additives in both BTE and BTA PLUS formulations to protect diesel engine cooling systems for one year, 150,000 miles or 4,000 hours.

Baldwin coolant filters meet the demands of high-performance diesel engines. For more than 30 years, Baldwin engineers have been refining these filters, to fit the changing demands of today's equipment.



- 1 **Epoxy Coated Can** reduces the possibility of corrosion during extended service intervals.
- 2 **Spring Protector** isolates dissimilar metals to prevent corrosion.
- 3 **Injection Molded Plastic Chamber** contains Controlled Release Coolant Pellets, which are located upstream of the filter media.
- 4 **Controlled Release Coated Pellets** diffuse SCAs into the system (when exposed to heat and coolant flow), which are then filtered, prior to entering the engine. BTE and BTA PLUS Supplemental Coolant Additives provide the best protection from cavitation, scale, rust and other forms of corrosion, while reducing the potential for water pump seal leaks.
- 5 **Synthetic Media** is designed to withstand heat and degradation from long-term exposure to coolant flow. High capacity and efficiency allows media to trap contaminants that could reduce system efficiency.
- 6 **SCA Diffusion Control Orifice** meters diffusion of SCA chemical into the coolant flow (to allow SCAs to be released in the amount required to maintain proper system balance) for up to 150,000 miles of service.
- 7 **Flow Control Orifice** meters flow of the coolant through the filter.
- 8 **Heavy-Duty Baseplate**, made from stamped steel, is designed to withstand extended service intervals.
- 9 **Double-Rolled Tuck Lock Seam** prevents coolant leaks.

Baldwin Filters...known for Quality!



Baldwin is the industry leader in heavy-duty filters. Our multi-million dollar research and testing facility anticipates an ever-increasing demand for filters that meet or exceed original equipment specifications.



Long before the industry adopted the philosophy, Total Quality Management guided our manufacturing and distribution processes. Baldwin continues to earn preferred vendor status, such as the TS 16949 and ISO 9001 certification.



We're committed to giving our customers the best products and services in the filter marketplace. It's a commitment based on continued engineering of our production facilities, ongoing training of our employees, and refinement of already sophisticated research operations.



BALDWIN FILTERS®

a CLARCOR company



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