



Coolant analysis can identify the onset of several problems that can lead to potential cooling system failure. Corrosion, Supplemental Coolant Additive (SCA) deficiencies or excesses and inadequate freeze point protection are just a few of the many destructive conditions that can cause major systems damage.

The POLARIS Coolant Analysis Report is easy to read and offers detailed conclusions and maintenance recommendations that will enable you to reduce major repairs and increase equipment uptime, productivity and safety.

TECHNICAL BULLETIN

Equipment and Coolant information tells your lab when the sample was taken and how many miles/hours are on both the unit and the coolant. Referencing the **Lab Sample Number** indicates the lab location where testing was completed and will expedite any questions

POLARIS analysts provide you with maintenance recommendations based on in-depth analysis, taking the guesswork out of interpreting

The **Current Sample** is listed first. As many as four preceding samples may also be included.

Gradual buildup of **Total Dissolve Solids (TDS)** such as inhibitor chemicals, silicates, contaminants and water hardness compounds can lead to water pump leakage. TDS levels should not exceed 4%. Should leakage occur, drain coolant and flush pump with tap water.

Adequate **Glycol** levels must be maintained to ensure proper freeze point protection. High glycol can cause additive drop out and decrease coolant life. A glycol range of 40% to 60% is recommended

Adequate **pH** range is vital to corrosion inhibition and should remain between 7.5 and 11.0.

UNIT ID: 42 PP RADIATOR
SECOND ID: CT PP
UNIT TYPE: COOLANT - CONVENTIONAL EG USED
APPLICATION: GAS-OIL FIELD

ACCOUNT NUMBER: 12345600000000
DATE SAMPLED: 04/28/09
DATE RECEIVED: 05/15/09
DATE COMPLETED: 05/20/09

TRACKING #: 12345600000000
MANUFACTURER/MODEL: DETROIT DIESEL 6V92
FLUID MFR: FLEETGUARD
FLUID TYPE: ES COMPLEAT
MICRON RATING: 0
FILTER TYPE: S
SUMP CAPACITY: 0.00
HYD SYSTEM PRESSURE: 0
FLUID ADDED:

OVERALL SEVERITY OF REPORT
based on comments, not individual flags

0	1	2	3
NORMAL	ADNORMAL	ADNORMAL	CRITICAL

LAB #: 176574
LOCATION: I
ANALYST: ENC

Data Analyst Initials

Corrosion occurs when buffers are no longer able to counter acid formation due to thermal degradation.
Typical Corrosion Product Sources:
Iron—liner, water pump, cylinder block/head
Aluminum—radiator tanks, coolant elbows, piping, spacer plates, thermostat housings
Copper—radiator, oil cooler, aftercooler, heater core
Lead—radiator solder, oil cooler, aftercooler, heater core

COMMENTS: Suggest cleaning this system with a cleaner designed to remove deposits from a cooling system, then flush 3-5 times with water, and install new (recommended coolant; Copper is at a SEVERE level, copper can attack the other metals in the cooling system; SIGNIFICANT amount of non-magnetic precipitate, which can cause the system to become plugged; SCA IS UNDERCONCENTRATED. Resample in 60 days;

SAMPLE #	CORROSION METALS - PPM				SCALE POTENTIAL PPM				CORROSION INHIBITORS - PPM				PPH/10				VISUALS SEE COOLANT REFERENCE TABLE						
	ALUMINUM	COPPER	IRON	SILICON	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS	SILICATE	PHOSPHORUS				
2	1	0	11	6	0	0	1	3	0	52	689	29	223	203	84	NONE	CR GY	NONE	NO NE	NO NE	NO NE	NO NE	
3	2	0	16	13	0	0	2	6	0	63	1171	292	296	258	198	SL	CR GY	NONE	NO NE	NO NE	NO NE	NO NE	
4	47	0	10	52	1	0	8	14	2	72	733	167	188	193	90	NONE	OP YB	MNOT	NO NE	NO NE	MD FF	OT	
5	2	0	58	9	0	0	5	2	0	77	178	330	22	236	67	NONE	CR GY	MNOT	NO NE	NO NE	MN FL	SG FL	NONE

Without adequate phosphate and borate **Buffers**, acids form, corrosion begins and rapid additive depletion will occur due to reduced pH values. Cylinder liner pitting will result.

Silicon protects cooling system metals. Sudden introduction of large amounts of antifreeze or SCAs high in silicates can clog radiators and heaters as well as restrict engine coolant passages. Rapid failure of water pump seals may result. For accurate silicate level evaluation, also test new

Excessive **Nitrite** levels can lead to solder corrosion. The maximum acceptable is 3333 ppm (parts per million).

An **SCA (Supplement Coolant Additive)** Level of 1.2 is the minimum required for adequate liner pitting protection. A level of 2.5 is ideal for extending coolant life.