

Technical Bulletin

A POLARIS Laboratories Publication



Vol. 1, No. 4

How to Read a POLARIS Coolant Analysis Report

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.

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 concerning the sample.

UNIT ID: 423011 D					
SECOND ID					
FLUID TYPE	COOLANT - CONVENTIONAL PG USED				
APPLICATION	WASTE HANDLING/LANDFILL				
FLUID MFR	FLEET GUARD				
PRODUCT	FLUID TIME	7337	DATE SAMP.	06/20/2005	SEVERITY: 4
SUMP CAPACITY	UNIT TIME	7337	DATE REC.	06/06/2005	ACCOUNT No.
FILTER TYPE	FLUID ADD		DATE COMP.	06/09/2005	Loc: Lab No. DA 1-759841 EFN

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

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

COMMENTS
 SCA IS UNDERCONCENTRATED. VERY HIGH COPPER LEVEL INDICATES CORROSION PROBLEMS. RECOMMEND DRAIN AND FLUSH SYSTEM. REFILL WITH FRESH 50/50 COOLANT MEETING TMC RP 329 OR RP 330 SPECIFICATIONS AND ADD A SERVICE FILTER.

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.

COOLANT ANALYSIS REPORT - 877-808-3750																									
VALUES EXPRESSED IN PARTS PER MILLION (PPM) BY WEIGHT																									
CORROSION METALS				SCALE POTENTIAL		CORROSION INHIBITORS				VISUALS															
Fe	Al	Cu	Pb	Sn	Ag	Zn	Ca	Mg	Si	K ₂ HPO ₄	BORATE	MoO ₄	Na	K	F	C	O	I	L	U	M	P	N	O	
AM	LR	EL	EL	EL	AGT	AGT									SL	CRDG	MINEN	NONE	NONE	MDFC	NONE				
0	1	4	2		0		1	1	52	548	1158	641	105	243											
0	0	9	0		0		0	0	77	4662	958	608	101	368											
0	0	24	0		0		0	0	79	5035	972	606	116	316											
0	0	65	0		2		13	1	99	4600	1126	651	142	376	SL	CRDG	MINEN	NONE	NONE	MDFC	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.

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

TEST DATA		F		R		P		O		I		P		H		S		C		C		G		O		
DATE	LUBE UNIT	CHL	UA	IN	ZN	DET	BO	IN	REC	EE	Z	PH	RD	NE	SS	TDS	SCA	CA	RB	OX	YAL	CL	LL	NIT	TR	IT
SAMPLED RECEIVED		DG	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET	IN	DET
03/20/2002		394	U	-26		47	8.6		1677		2.3		1029													
04/03/2002		2375																								
03/05/2003		3971	U	-26		47	9.5		1845		2.5		1316													
03/19/2003		3971																								
05/27/2004			U	-16		45	7.8		1510		1.9		645													
06/14/2004		5808																								
05/28/2005		7337	U	-22		224	48	7.4	36	1451	2740	0.0	110													
06/06/2005		7337																								

Silicates protect 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 antifreeze.

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

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

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.

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.

PLEASE VISIT <http://www.eoilreports.com/coolantref.cfm> FOR HELP WITH THE "VISUALS" SECTION OF REPORT
Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing lube or unit time limits the evaluation. No warranty is expressed or implied.