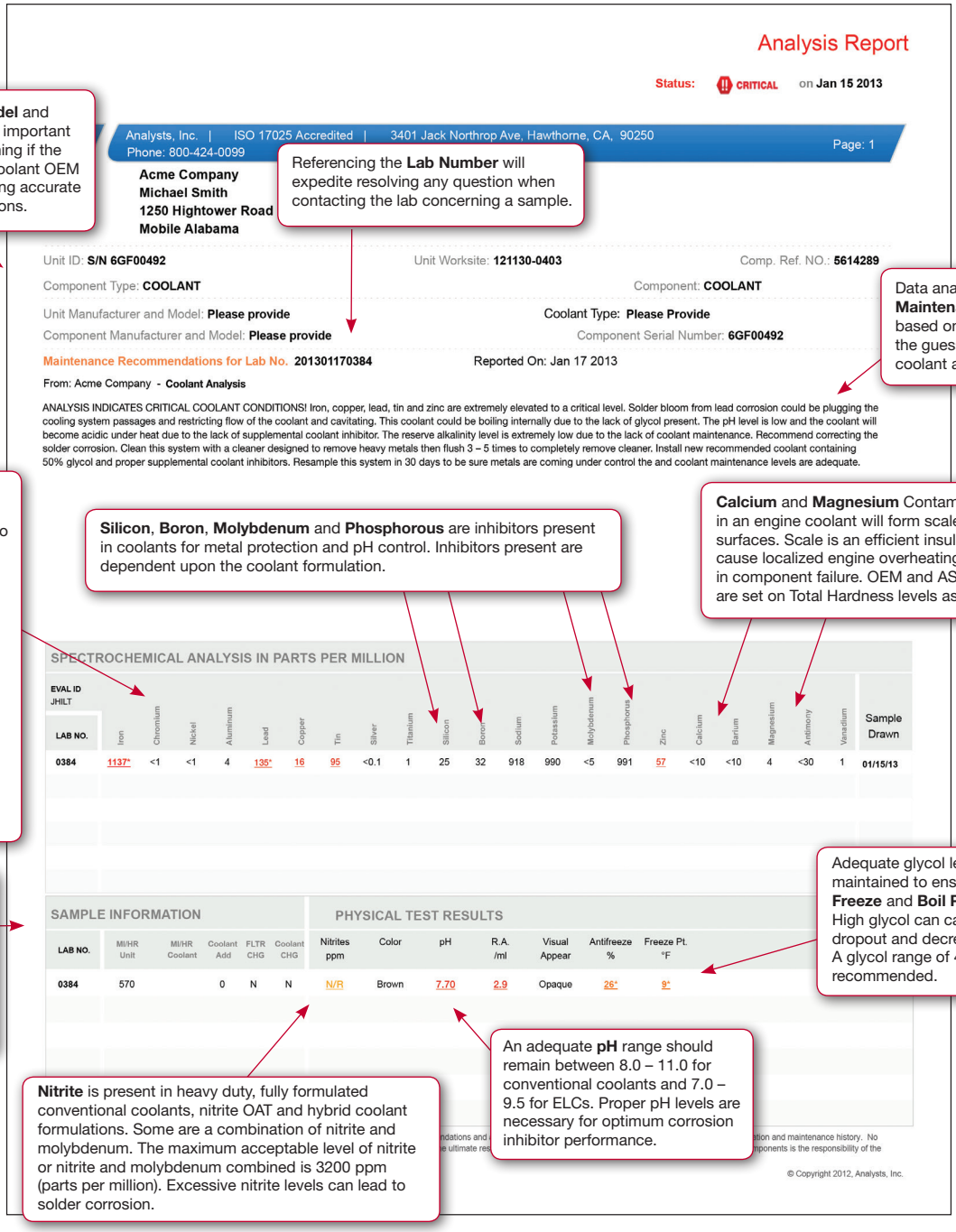
Understanding the Coolant Analysis Report

Coolant analysis can identify the onset of maintenance deficiencies or mechanical issues that can lead to potential cooling system failure. Corrosion, cavitation, localized overheating, electrolysis and lack of coolant maintenance are just a few of the many destructive conditions that can cause major systems damage.

The Analysts 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.



Analysis Report

Status: CRITICAL on Jan 15 2013

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Acme Company
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Unit ID: S/N 6GF00492 Unit Worksite: 121130-0403 Comp. Ref. NO.: 5614289
Component Type: COOLANT Component: COOLANT
Unit Manufacturer and Model: Please provide Coolant Type: Please Provide
Component Manufacturer and Model: Please provide Component Serial Number: 6GF00492
Maintenance Recommendations for Lab No. 201301170384 Reported On: Jan 17 2013
From: Acme Company - Coolant Analysis

ANALYSIS INDICATES CRITICAL COOLANT CONDITIONS! Iron, copper, lead, tin and zinc are extremely elevated to a critical level. Solder bloom from lead corrosion could be plugging the cooling system passages and restricting flow of the coolant and cavitating. This coolant could be boiling internally due to the lack of glycol present. The pH level is low and the coolant will become acidic under heat due to the lack of supplemental coolant inhibitor. The reserve alkalinity level is extremely low due to the lack of coolant maintenance. Recommend correcting the solder corrosion. Clean this system with a cleaner designed to remove heavy metals then flush 3 – 5 times to completely remove cleaner. Install new recommended coolant containing 50% glycol and proper supplemental coolant inhibitors. Resample this system in 30 days to be sure metals are coming under control the and coolant maintenance levels are adequate.

SPECTROCHEMICAL ANALYSIS IN PARTS PER MILLION

EVAL ID JHILT

LAB NO.	Iron	Chromium	Nickel	Aluminum	Lead	Copper	Tin	Silver	Titanium	Silicon	Boron	Sodium	Potassium	Molybdenum	Phosphorus	Zinc	Calcium	Barium	Magnesium	Antimony	Vanadium	Sample Drawn
0384	1137*	<1	<1	4	135*	16	95	<0.1	1	25	32	918	990	<5	991	57	<10	<10	4	<30	1	01/15/13

SAMPLE INFORMATION

PHYSICAL TEST RESULTS

LAB NO.	MI/HR Unit	MI/HR Coolant	Coolant Add	FLTR CHG	Coolant CHG	Nitrites ppm	Color	pH	R.A. /ml	Visual Appear	Antifreeze %	Freeze Pt. °F
0384	570		0	N	N	N/R	Brown	7.70	2.9	Opaque	26*	9*

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Unit ID, **Manufacturer**, **Model** and **Coolant Type** are extremely important to a data analyst in determining if the coolant meets engine and coolant OEM specifications and in providing accurate maintenance recommendations.

Referencing the **Lab Number** will expedite resolving any question when contacting the lab concerning a sample.

Data analysts provide you with **Maintenance Recommendations** based on in-depth analysis, taking the guesswork out of interpreting coolant analysis results.

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

Silicon, **Boron**, **Molybdenum** and **Phosphorous** are inhibitors present in coolants for metal protection and pH control. Inhibitors present are dependent upon the coolant formulation.

Calcium and **Magnesium** Contaminants present in an engine coolant will form scale on hot metal surfaces. Scale is an efficient insulator and can cause localized engine overheating which can result in component failure. OEM and ASTM specifications are set on Total Hardness levels as $CaCO_3$.

Complete and accurate **Sample Information** – number of hours on both unit and coolants and filter and fluid change information – is critical for a data analyst to make a proper maintenance recommendation.

Adequate glycol levels must be maintained to ensure proper **Freeze** and **Boil Point** protection. High glycol can cause additive dropout and decrease coolant life. A glycol range of 45% to 60% is recommended.

Nitrite is present in heavy duty, fully formulated conventional coolants, nitrite OAT and hybrid coolant formulations. Some are a combination of nitrite and molybdenum. The maximum acceptable level of nitrite or nitrite and molybdenum combined is 3200 ppm (parts per million). Excessive nitrite levels can lead to solder corrosion.

An adequate **pH** range should remain between 8.0 – 11.0 for conventional coolants and 7.0 – 9.5 for ELCs. Proper pH levels are necessary for optimum corrosion inhibitor performance.