

The PSSC Pipeline

Fall 2010

Petroleum Systems Services Corporation

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Welcome aboard Dan Moore !

Dan Moore has joined the staff at PSSC . Dan brings his experience from his years at Intertek, Petrolab, Ametek and Texon.

Dan's most recent adventures have been with online fuel blending and is the most experienced technician, handling the Grabner online RVP and VL units from Grabner Instruments in Austria and the Bartec online RVP and D86 units from Bartec in Germany.

Dan has been factory trained at Grabner, Bartec & Petrotest. He has extensive knowledge of the Grabner instrument line along with Petrotest instruments from Germany.

You've talked with Dan in the past. Now he has a new number and is available to solve your problems with the dedication PSSC has shown for all your service needs. Give Dan a call at 518-538-2423.



Now Servicing :

Grabner VPXpert

Grabner On-Line VPS

PSSC offers calibration services as well as lab instrumentation and glassware sales. We are a small company with a big reputation for "customer service".



Trace Metal Analysis in Hydrocarbons

HD Maxine assures precise determination of trace metals in crudes, lubricants and used oils without extensive sample preparation or expensive consumables.

HD Maxine

New From XOS !

Silicon Analysis in Petroleum and Bio Fuels

From gasoline to ethanol and toluene, the signal bench-top analyzer delivers unprecedented precision and accuracy in quantitative analysis of silicon.



Signal Silicon Analyzer



Service Reminder

RVP Season is like Christmas, it's here before you know it !

Recommended Calibration Frequency For XOS Instruments.

(XOS) recommends that all it's instruments be calibrated on a quarterly calibration schedule. Please contact PSSC if you need more information on calibrations, Standards, or Preventive Maintenance Contracts.

Ask Rick

Our Service Manager

Rick,

We are running out of bench-space in the lab. Do you offer any small printers that will work with our Vapor Pressure Tester ?

Answer:

We now offer a small 4 x 6 inch printer , who's printout is similar to what you would find on a retail sales receipt.

Be sure to visit our website to view our new updated Glassware Catalog - <http://www.pssc.org.com>

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Avoid silicon-based antifoams in manufacturing ethanol

by Ronald Tharby of Tharby & Associates



In the spring of 2009, PARTS OF THE NORTHEAST AND MIDWEST United States experienced widespread vehicle failures, which were eventually proven to have been caused by silicon from fuel ethanol.

Any level of silicon in automotive gasoline is unacceptable since combustion results in silica deposits on the oxygen sensor in the engine exhaust, which can lead to a breakdown in the closed loop electrical feedback to the engine electronic control unit, resulting in a complete loss of vehicle driveability! Previous incidents occurred in the U.S. Southwest in 1996, when high levels of silicon caused tens of thousands of light-duty cars and pick-up trucks to experience complete engine failure within a few days. Silicon levels of up to 200 ppm were found and were traced back to a cargo of toluene which had been used to wash silicon chip and other electronic components during manufacturing. The spent toluene was subsequently used in routine gasoline blending as a high octane component. As a result, ASTM Subcommittee A recommended a maximum limit of 4 ppm silicon for spark ignition engine fuels. However, this is not the maximum for satisfactory engine operation.

In the United Kingdom, there was a similar incident in 2007 when a sudden outbreak of complete engine failures in thousands of cars around the Southeast was traced back to silicon. It was found again that toluene previously used to wash electronic components had been blended into automotive gasoline at the West Thurrock terminal in Essex. In the current incidents, a major fuel marketer in the U.S. Northeast found more than 10ppm silicon in the samples taken from the affected gasoline stations. The BOB (Blendstock for Oxygenated gasoline Blending) had 0.05 ppm silicon, whereas the fuel ethanol itself had greater than 100 ppm silicon. While there were some inconsistencies in the analytical results, it was clear that fuel ethanol contaminated with soluble silicon was the culprit. It is suspected that an ethanol recycler who utilizes spent ethanol from the cosmetics industry-where ethanol is a major constituent in all sorts of cosmetics-and who supplied this fuel marketer was the source of the contaminated ethanol. Furthermore, it was suspected that the silicon came from antifoam agents used in many cosmetics, and in ethanol manufacturing itself.

In the U.S. Midwest, two major fuel marketers were involved in similar widespread vehicle failures that affected thousands of cars within a few days. One of these marketers with very sophisticated GC/MS analytical equipment showed that the fuel ethanol in question had around 49ppm silicon in the form of three degradation products of polydimethylsiloxane, a widely used silicon-based antifoam also used in ethanol manufacturing. The major degradation product from the silicon antifoam was a cyclic siloxane, octamethylcyclotetrasiloxane. This was the dominant silicon species detected (90+%).

It was also shown that the natural gasoline used to denature the fuel ethanol had less than 1 ppm silicon. As a result of these incidents, in March, the Renewable Fuels Association(RFA) issued a notice to fuel ethanol manufacturers recommending that they desist from using silicon-based antifoams in their manufacturing operations.

RFA has also recommended that an oversight program be set up to monitor manufacturing processes for fuel ethanol and ethanol recycling procedures, especially the use of adjunct chemicals such as antifoams which are used throughout the processes.

Within ASTM Subcommittee A, there is the Balanced Technical Advisory Panel (BTAP) composed equally of producers and equipment manufacturers. BTAP will be developing a robust cautionary statement for gasoline with ethanol blends regarding silicon issues, which will be incorporated in both ASTM D4814 and D 4806. BTAP will also request ASTM Subcommittee 3 and 4 to address improved analytical methods so that lower levels of silicon can be detected and measured.

Fun Facts

**A car traveling 100 mph would take more than 29 million years to reach the nearest star.
In Cleveland, Ohio it is illegal to catch mice without a hunting license.**

PSSC • 2789 Route 9 • Malta, NY 12020 • (518) 581-0189
sales@pssc.org • www.pssc.org

2789 Route 9
Malta, NY 12020-4357
USA
Phone : 518-581-0189
Fax : 518-581-0201
e-mail : sales@pssc.org

Petroleum Systems Ser-
vices Corporation

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