

# **Laboratory Safety with Scion 436/456 Gas Chromatographs – Explosion Proof Ratings and Hydrogen Leak Sensor**

**by Randall Bramston-Cook  
Lotus Consulting  
5781 Campo Walk  
Long Beach, California 90803  
310/569-0128  
Email – [randy@lotusinstruments.com](mailto:randy@lotusinstruments.com)**

**December 20, 2007**

**Copyright 2020 Lotus Flower, Inc.**





Gas chromatographs have become major instrumentation in analytical laboratories, especially those involved in measuring petrochemicals. Fugitive organics can possibly penetrate into the confines of the instrument. With many possible ignition sources nearby, including open flames with numerous common detectors, such as flame ionization, exposed glowing heater in the column oven, and sparks from electronic components, catastrophic explosion are possible.

ATEX (Apparatus intended for use in EXplosive Atmospheres, [en.wikipedia.org/wiki/ATEX\\_directive](http://en.wikipedia.org/wiki/ATEX_directive)) established protocols in the certification of equipment to be explosion-proof. Procedures involve releasing butane vapors into the interior of the device and then igniting it to detonate. This is separate from CE markings. No portion of any of the exterior covers can be displaced as a result. Successful test permits the manufacturer to mark the device with the label:





Scion Instruments secured ratings from ATAX for Scion 436 and 456 Gas Chromatographs that certify that, in the event of an explosion inside the chromatograph, no part of the instruments can become dislodged from the framework and injure the operator.



  
**Declaration of Conformity**

Issued in accordance with the ATEX Directive 94/9/EC

<b>Date of Issue:</b>	September 1, 2016
<b>Manufacturer:</b>	Scion Instruments Stanleyweg 4 4462 GN Goes The Netherlands
<b>Product:</b>	436-GC, 456-GC Gas Chromatograph
<b>Marking:</b>	 II 3 G e 10-50°C
<b>Harmonized Standards:</b>	MIL-STD-810 G, method 511.5 ANSI NCSL Z540-1 ISO 17025:2005
<b>Quality Assurance Notification:</b>	TUV SUD America, Inc. 46457 Landing Parkway Fremont, CA 94538 U.S.A.
<b>Name:</b>	T. E. Bootsgezel
<b>Title:</b>	Operations Manager



With the pending shortage of helium supplies, hydrogen is often considered as a substitute carrier gas, especially in parts of the world where helium is often expensive or not available. Unfortunately, hydrogen is very explosive (at concentrations greater than about 4%V in air), and any leak in the column oven from loose fittings or broken capillary column can become very hazardous with the close ignition source from the column oven heater coils.

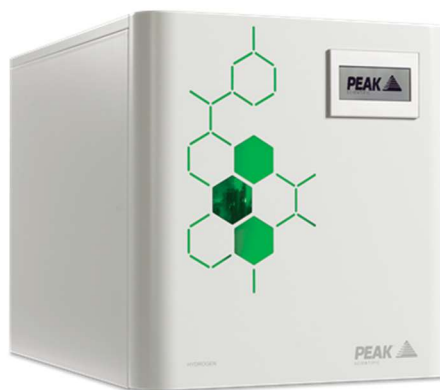
Two accessories are available from Scion Instruments to dramatically reduce the risk. A hydrogen leak sensor mounted in the column oven can be set up to disable power to the instrument and its ignition sources when a hydrogen leak is detected. Available kits from Scion are:

- a) Scion P/N DP-S3-B3-H2-10 Scion Instruments/DVLS3 H2 sensor-bundle for one SCION 436-GC Complete package consisting of: 1 x sensor, 1 x gas selection valve, 1 x controller. Includes tubing and connection material
- b) Scion P/N DP-S3-B5-H2-10 Scion Instruments/DVLS3 H2 sensor-bundle for single SCION 456-GC Complete package consisting of: 1 x sensor, 1 x gas selection valve, 1 x controller. Includes tubing and connection material.



An additional choice is use of a hydrogen generator. This device creates hydrogen gas on demand, and if a sudden dramatic change in column backpressure, the generator faults and turns off hydrogen generation.

- c) Scion P/N PEAK630100 Precision Hydrogen 100cc (110v/230v)



---

**Lotus Consulting**

310/569-0128

Email: [randy@lotusinstruments.com](mailto:randy@lotusinstruments.com)



5781 Campo Walk  
Long Beach, California 90803