

# Is Hydrogen Safe to Use as a GC/MS Carrier Gas?



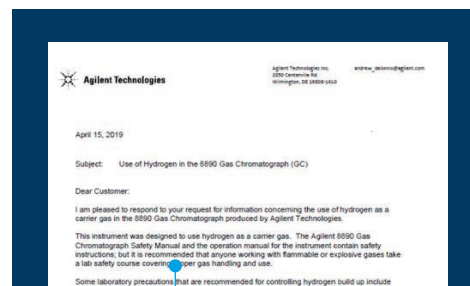
Global helium shortages have reduced the availability of helium gas. Hydrogen is a renewable, low-cost alternative for many GC/MS applications—however, safety is always the most important consideration.

Agilent GC and GC/MS systems are designed with safety in mind, and include features like these:

- **Hydrogen shutdown.** When gas pressure setpoints are not met, the valves and heaters shut off, keeping hydrogen out of the oven.
- **Flow limiting frit.** If a valve fails in the open position, an inlet frit limits the flow.
- **Oven on/off sequence.** A fan purges the oven before turning on the heater, removing any collected hydrogen.
- **Low-voltage differential signaling (LVDS) communication between the MSD and GC.** If the MSD is vented or turned off, the carrier gas will be shut down.
- **Hydrogen sensor.** This optional sensor shuts down the system if a hydrogen leak is detected in the oven.
- **Excessive flow shutdown.** If a zone has excessive flow, even if it can maintain pressure, then the zone will initiate a shutdown.
- **Emergency parts containment.** The GC and MS are designed to keep components contained in the unlikely event of an explosion.






## Affirmation of safety

This letter, written by an Agilent safety engineer, describes the hydrogen safety features of the Agilent 8890 GC.



*"The Agilent 8890... has built-in safety features to reduce the risk of and the potential for injury from oven explosions when used in a standard laboratory environment."*

## Resources for safe hydrogen use

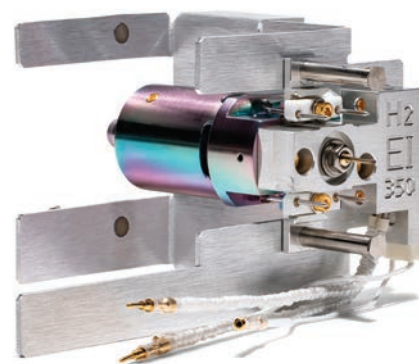
-  [Helium to hydrogen conversion guide](#)
-  [Hydrogen safety technical overview \(Agilent 8860 GC system\)](#)
-  [Hydrogen safety technical overview \(Agilent 8890 GC system\)](#)
-  [Hydrogen safety technical overview \(Agilent Intuvo 9000 GC system\)](#)
-  [Hydrogen safety manual](#)

## Use hydrogen carrier to analyze more compounds: Agilent Hydrolnert source

Because it is not inert, hydrogen can chemically react with some compounds such as semivolatile organic compounds (SVOCs) like those described in methods such as EPA 8270.

The new Agilent Hydrolnert source for GC/MS hydrogen carrier gas is designed to drastically reduce chemical interaction and improve chromatographic efficiencies with a hydrogen carrier, allowing you to:

- Reduce sensitivity loss and spectral anomalies.
- Minimize downtime caused by system maintenance and ion source cleaning.
- Achieve faster, shorter separations.
- Reduce reliance on helium.



[Learn more](#)

### Ordering information

Description	Part Number
<b>Product</b>	
Hydrolnert complete source assembly for 5977 (recommended)	<a href="#">G7078-67930</a>
Hydrolnert GC/MSD upgrade (contains parts needed to upgrade an existing 5977A/B Inert Plus source)	<a href="#">5505-0083</a>
Hydrolnert complete source assembly for 7000 TQ (recommended)	<a href="#">G7006-67930</a>
Hydrolnert GC/TQ upgrade (contains parts needed to upgrade an existing 7000C/D Inert Plus source)	<a href="#">5505-0084</a>
<b>Instrument</b>	
5977C Inert Plus main frame with the Hydrolnert source	<a href="#">G7077C #011</a>
5977C Inert Plus bundle with the Hydrolnert source	<a href="#">G7077CA #011</a>
7000E GC/TQ with the Hydrolnert source	<a href="#">G7010CA #011</a>
<b>Accessories</b>	
Install kit for GCs, stainless steel (contains 1/8" stainless steel tubing, fittings, Big Universal Trap for hydrogen, and tool kit)	<a href="#">19199S</a>
J&W HP-5ms Ultra Inert GC column, 20 m, 0.18 mm, 0.18 µm	<a href="#">19091S-577UI</a>
Hydrogen sensor module for 8860 GC and 8890 GC	<a href="#">G6598A</a>
<b>CrossLab Application Services</b>	
Method and application services	<a href="#">H2149A</a>
	<a href="#">R1736A</a>
Method optimization	<a href="#">R1736C</a>
	<a href="#">R-21H-501</a>

### Need help with method optimization? [Partner with Agilent CrossLab](#)

Our global team of experts can address your application needs by harnessing their deep knowledge of hydrogen best practices.

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This information is subject to change without notice.

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