

Application Data Sheet

No. **SSI-053**

System Gas Chromatograph

Analysis of Gaseous Impurities in Chlorine

Keywords: ASTM E1746, Chlorine, Fixed Gases, Permanent Gas, ADS-053

Chlorine is a widely used component in a variety of industrial and manufacturing processes, ranging from industrial gases to disinfectants to common polymers such as polyvinyl chloride (PVC). During production and capture, trace to major amounts of hydrogen, oxygen, nitrogen, methane, and carbon dioxide may be incorporated into the bulk chlorine. A major challenge to analysis of impurities in chlorine gas is the corrosive nature of chlorine, which is a strong oxidizer and will corrode system components. This gas chromatograph is constructed of corrosion resistant alloys or otherwise treated to minimize degradation.

For analysis, a sample of chlorine gas is loaded into the sample loop. The sample is injected onto a backflush column that retains the chlorine matrix and allows the light permanent gases to elute to the analytical columns. The retained components are backflushed to vent to protect the system from the corrosive matrix. The analytical columns separate the individual permanent gas species, A single TCD using argon carrier gas is used detection.

System Configuration

- One 10-port valve
- One 6-port valve
- Four packed columns
- One TCD

Analytes

Hydrogen, Oxygen, Nitrogen, Methane, Carbon dioxide, Carbon monoxide

Concentration Range

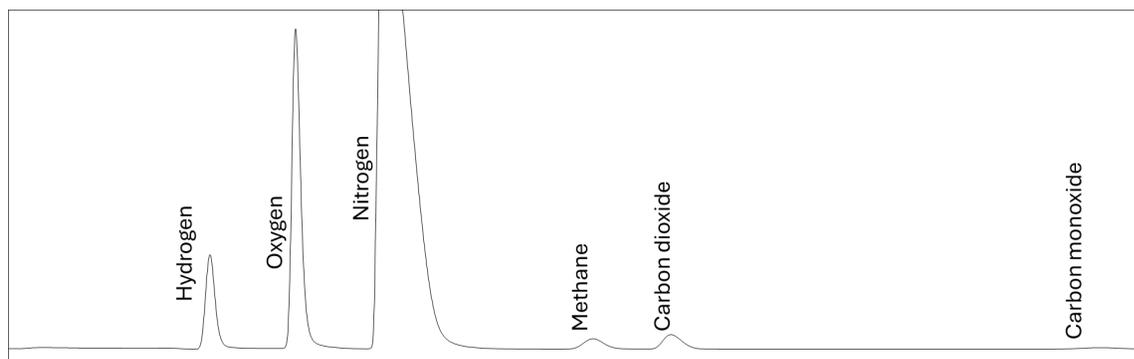
No.	Name of Compound	Concentration Range	
		Low Conc.	High Conc.
1	Hydrogen	50 ppm	5%
2	Oxygen	200 ppm	5%
3	Nitrogen	300 ppm	5%
4	Methane	600 ppm	5%
5	Carbon dioxide	600 ppm	5%
6	Carbon monoxide	1000 ppm	5%

Detection limit may vary depending on the sample. Please contact us for more consultation.

System Features

- Rugged and corrosion-resistant design with all packed columns
- Compatible with gas samples

■ Typical Chromatogram



TCD1 Chromatogram for a standard for Permanent Gas

Part number: 220-90465-30

Global Reference: ADS-053

SGC-SSI-0053 First Edition: October 2025



SHIMADZU SCIENTIFIC INSTRUMENTS

7102 Riverwood Drive, Columbia, MD 21046

www.ssi.shimadzu.com

For Research Use Only. Not for use in diagnostic procedures.

This publication may contain references to products that are not available in your country. Please contact us to check the availability of these products in your country.

The content of this publication shall not be reproduced, altered or sold for any commercial purpose without the written approval of Shimadzu. See <http://www.shimadzu.com/about/trademarks/index.html> for details. Third party trademarks and trade names may be used in this publication to refer to either the entities or their products/services, whether or not they are used with trademark symbol "TM" or "®". Shimadzu disclaims any proprietary interest in trademarks and trade names other than its own.

The information contained herein is provided to you "as is" without warranty of any kind including without limitation warranties as to its accuracy or completeness. Shimadzu does not assume any responsibility or liability for any damage, whether direct or indirect, relating to the use of this publication. This publication is based upon the information available to Shimadzu on or before the date of publication, and subject to change without notice.

Copyright © 2025 Shimadzu Corporation and/or its affiliates. All rights reserved.