

# Calibration Gas Simulants

For practicality and convenience, MSA finds it necessary to standardize on a limited number of calibration gas cylinders by assembling calibration kits matched to instruments and applications. MSA keeps gas cylinders stocked for all of our standard calibrations and most new or unique applications. Here we will discuss the use of simulants and how calibration set point values are derived.

Calibration gas simulants are necessary due to the wide variety of materials used in industry, as maintenance of an unlimited number of gas cylinders is highly impractical. Other determining factors include:

- instability of some gases within cylinders.
- gases with vapor pressures too low to fill cylinders with any useful amount.
- gases that are difficult to obtain or too expensive to purchase in small quantities.

Set point values are determined experimentally first by calibrating instruments for the actual component of interest. MSA can generate almost any sample required using a variety of traceable methods. MSA also maintains certified cylinders for more common calibrations. Using this inventory, MSA sets up customer instrumentation for the specific gas or vapor requested. Once the monitor is calibrated for the gas of interest, simulant gas is introduced to the instrument and the calibration set point recorded for future use.

Currently MSA publishes a list of 81 combustible materials detected by catalytic combustible sensors, 59 additional gases, specific gases for Chemgard® Gas Monitors, 26 Chillgard® Gas Monitor refrigerants, and a number of toxic substances detected by electro-chemical sensors. Even if all of these materials were available as calibration gases, maintenance of such large inventories would be cost-prohibitive, an economic reality necessitating the use of simulants.

MSA has determined a 0.6% value for propane in air to allow catalytic combustible sensor sensitivity adjustment for a particular gas of interest. For example, to monitor for toluene vapors within a process area, instrument propane response should be set to 39% of scale with proper MSA calibration

equipment. To monitor for boiler room natural gas leaks, the same calibration gas can be used with sensors set to read 20% of scale for propane. This procedure provides the correct sensitivity for each application. MSA's factory defaults and exact calibration settings for Ultima X Gas Monitor sensors can be found in the controller/calibrator sections of corresponding instruction manuals.

Chemgard Gas Monitors and Chillgard Infrared Gas Monitors are calibrated with certified cylinders containing gases of interest to provide correct factory-adjusted linearization. Similar gases available from calibration cylinder stock are checked on calibrated instruments with response values recorded. Values unique to instruments are listed on labels placed inside instruments. Slight variations exist among instruments; numbers listed may not be the same on duplicate calibrations, as numbers may reflect valid settings for only that particular instrument. If numbers are erased or lost, users must contact the factory to retrieve numbers from MSA records. Serial numbers are required to obtain appropriate information.

The most accurate calibration of any gas monitoring system is achieved using the actual gas of interest; however, for convenience, other gases may be used for equipment set-up. Simulants may be used for calibration of certain materials using MSA's simulant gas database and corresponding set points. If instrument calibration is attempted using samples other than the gas of interest, users must contact the factory for proper set point values to ensure that instrument sensitivity is correct for the specific application.



Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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