MESSER
Gases for Life

Hydrocarbon Mixtures

Tailor made for your application

Hydrocarbon mixtures are mostly used in connection with the extraction of crude oil or natural gas, the further transport, processing and use of these products.
They mainly serve as calibration gases in the analytical monitoring of processes and the quality of the products, e.g. in refineries and the petrochemical industry, in natural gas plants, when monitoring the natural gas network by the grid operators, in biogas plants or as test gases in the manufacture of burners.

Due to the complex composition of the natural products, the requirements for the hydrocarbon mixtures are therefore often very complex.
These can consist of more than 20 different components in one mixture and different carrier gases.

Messer produces complex hydrocarbon mixtures as standard mixtures or individual gas mixtures on demand.

Natural gas pipelines

Natural gas

Natural gas is a fossil fuel which was formed millenniums ago from plant and animal decomposition in the absence of oxygen, deep under the surface of the earth.
The main component of natural gas is methane, but it also contains other hydrocarbons (ethane, propane, butane, pentane, etc.), and nonhydrocarbon contaminants, such as carbon dioxide, nitrogen, hydrogen sulfide, water vapor, or even helium. The composition significantly varies from source to source.
Natural gas processing plants purify the raw natural gas by removing the impurities and produce pipeline-quality dry natural gas.

Hydrocarbon calibration gas mixture in quality control

Pipeline transmission and distribution companies define the quality standards regarding the calorific value and the residual impurities. The calorific value indicates the amount of energy released when a known volume of gas is completely combusted (energy content). It serves as a basis for all trading activities dealing with natural gas and for billing gas consumers.

The composition of natural gas is determined with gas chromatographs, which have to be calibrated at regular intervals using calibration gas mixtures.

Messer offers a wide range of high purity gases and customized hydrocarbon calibration gas mixtures in order to ensure maximum reliability and accuracy in gas quality measurements.
All calibration mixtures are supplied with a certificate of analysis providing information on their exact composition according to ISO 6974 (Natural gas - Determination of composition and associated uncertainty by gas chromatography).

Based on the gas chromatographic composition, the Wobbe Index is calculated according to ISO 6976 (Natural gas - Calculation of calorific values, density, relative density and Wobbe Index from composition) and is stated on our certificates.

Optionally, Messer also offers calibration gases with a certificate from a laboratory accredited according to ISO 17025.

Test of gas appliances

All gas appliances with atmospheric burners distributed in Europe, including household appliances, e.g. cooking stoves, heaters or boilers, are tested on their operational performance during manufacture.
The standard EN 437 and the Dutch NTA 8837 specify the pressures and gases to be applied during testing (G-mixtures).

Messer provides the required test gases in order to ensure safe and efficient testing of the gas burning appliances.

Biogas

In order to meet the increasing global energy demand of humankind in the near future it is inevitable to establish novel strategies to use renewable energy sources.
A sustainable and promising approach is the production and use of biogas.

Biogas is the product of a biological process which is widely spread in nature. Under humid conditions and in absence of oxygen (anaerobic), such as in swamps, at the bottom of a lake or in the digestive tract of ruminants, a lot of different microorganisms break down organic material whereby biogas is produced. The main product of this process is methane. Thus, biogas can be used for any purpose currently satisfied by conventional natural gas. Biogas also contains carbon dioxide, small amounts of hydrogen, hydrogen sulfide, water and ammonia as the most relevant by-products.

In biogas plants, this multi-stage decomposition process takes place in an anaerobic digester and is affected by numerous parameters. Based on the application of biogas, different treatment/purifications steps are necessary to realize the required composition and quality.

Messer offers an extensive range of calibration gas mixtures for different biogas applications including certified mixtures according to ISO 17025.

Petrochemistry

Crude oil is a highly complex mixture of gaseous and liquid hydrocarbons, inorganic compounds containing sulfur, nitrogen, oxygen, carbon dioxide and metals / salts.
The refinery process usually comprises desalting and distilling of crude oil mixtures into different fractions. Every fraction finds different industrial uses and specific applications, respectively.
hese processes are very demanding and require highly accurate, reliable monitoring measures.

Gas chromatography (GC) is a core analytical technique in the petrochemical sector as it is not only used to analyze the main components of the process stream in production, but also to detect trace impurities that can impact the production process and final quality of the product.
Thus, the required calibration gas mixtures are often very demanding due to the high number of different components as well as the different balance gases.

Calibration gas mixtures, which also contain heavier, liquid hydrocarbons, are widely used in the petrochemical industry. In order to avoid condensation in the cylinders, the filling pressure of these mixtures need to be reduced. If this is not possible, the mixtures are filled as “liquid gas mixtures”, containing a liquid and gaseous phase in the cylinder. Messer produces these mixtures in cylinders equipped with dual port cylinder valves and helium overpressure. Due to a change in liquid-vapor equilibrium during liquid withdrawal, these calibration mixtures mainly tend to alter from its originally certified composition.

Messer assesses and determines such phase characteristics of gas and liquid mixtures by providing customers with concentration change to pressure diagrams.

Service and support

Based on the enormous diversity of analytical tasks and corresponding calibration gas mixture, we gladly support you in choosing the optimal solution for your specific requirements and provide valuable information on storage and safe handling of gases.

Messer also offers high purity gases, standard gas mixtures and the required gas supply systems.

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