

# Gas Factsheet

## Helium

**Formula:** He

**CAS:** 7440-59-7

**Source:** Extracted from natural gas

**Detection Method:** GasCheck G & GasCheck Tesla



**Helium (He), chemical element, inert gas of Group 18 (noble gases) of the periodic table.** The second lightest element (only hydrogen is lighter), helium is a colourless, odourless, and tasteless gas that becomes liquid at  $-268.9^{\circ}\text{C}$  ( $-452^{\circ}\text{F}$ ). The boiling and freezing points of helium are lower than those of any other known substance. Helium is the only element that cannot be solidified by sufficient cooling at normal atmospheric pressure.

### He - HELIUM DISPLACES OXYGEN WHEN INHALED

#### Where Does Helium Come From?

While it is the second-most abundant element in the universe (behind hydrogen) and the Sun produces about 600 million metric tons each second, our supply here on Earth is limited. Once it's gone, it's gone. We can't make more, and once used, the lightweight element escapes into space.

The helium atom is smaller than any other element, and only hydrogen is lighter. That makes it a very good lifting gas in applications like balloons and blimps. But helium has far more critical uses than birthday balloons.

Nearly all of our helium is extracted from natural gas, a byproduct of radioactive decay of uranium and thorium. Much of the extraction in the United States and the world comes from underground gas fields between Amarillo, Texas, and Hugoton, Kansas, where a very high concentration, up to 2%, can be found.

#### What Do We Use Helium For?

Helium is used as a cooling medium for the Large Hadron Collider (LHC), and the superconducting magnets in MRI scanners and NMR spectrometers. It is also used to keep satellite instruments cool and was used to cool the liquid oxygen and hydrogen that powered the Apollo space vehicles. Because of its low density helium is often used to fill decorative balloons, weather balloons and airships.

It is also very unreactive, so helium is used to provide an inert protective atmosphere for making fibre optics and semiconductors, and for arc welding. A mixture of 80% helium and 20% oxygen is used as an artificial atmosphere for deep-sea divers and others working under pressurised conditions.

#### What Happens When Helium Is Inhaled?

Inhaling helium is dangerous. The helium gas danger is not that it is poisonous, as helium is an inert gas. The helium gas danger is as an asphyxiant, when inhaled instead of normal air. Inhaling helium is dangerous because it can cause your body's oxygen level to drop to dangerous low levels, initiating Hypoxia. This is known as Inert Gas Asphyxiation. Breathing just helium, or any inert gas, creates a dangerous absence of oxygen. The helium displaces the air, including the required oxygen, in your lungs.

#### Helium Detection Instruments



2	4.003
He	
1s <sup>2</sup>	
helium	