

# Balloon Helium

Simple, quick and safe - Balloon helium from Messer



Whether for a wedding, a club celebration, a child's birthday, an advertising medium for a business launch, a publicity event, or a city festival, balloons are not only popular among children and the young at heart, but also attract impressive media attention. Balloons create a fanciful, lively and cheerful atmosphere to boost your event, which you will treasure for a long time to come. With our balloon helium you can be sure that your balloons really do take off!

Balloon helium from Messer is easy and safe to use: It is made of helium and small amounts of air. It is safe, non-toxic, non-flammable and non-explosive. Only the pressure contained in the cylinders requires particular attention. Messer offers balloon helium in a range of practical cylinder sizes meeting all your requirements.

## General advice

- With latex balloons, the gas escapes through the balloon walls within approximately 14 to 16 hours. Therefore latex balloons should only be filled immediately prior to the planned event.
- The use of balloon helium in enclosed rooms is permitted but make sure that there is adequate ventilation.
- Do not inhale balloon helium directly. Although balloon helium is not toxic, it displaces vital oxygen from the lungs!
- The use of hydrogen instead of balloon helium is prohibited due to safety reasons!

Have fun with your balloons - and the balloon helium from Messer.



### Fill your balloons in a few simple steps:



Ensure cylinder is standing securely, unscrew cylinder cap if applicable. Screw inflation valve on to cylinder valve by hand (do not use a tool!)



Open cylinder valve (slowly) and check whether the connection is tight.



Push balloons on to the filling nozzle, bend the valve down slightly and carefully let the gas flow into the balloon until it has reached the desired size (Caution: high pressure).

After use, close the cylinder valve, unscrew the valve and if applicable screw cylinder cap back on.

## Balloon helium

### Properties

Balloon helium is made predominantly of helium. Helium is a colorless, inert gas, much lighter than air.

### How buoyancy is calculated

The specific weight of helium in normal ambient conditions is about 0.18 kg/m<sup>3</sup>, that of air about 1.21 kg/m<sup>3</sup>. The difference between them means that there is a theoretical buoyancy of about 1 g per liter of helium. In practice, adequate buoyancy is guaranteed if the weight of the balloon and attachments (string, cards) is less than about 0.5 to 0.6 g per liter of balloon volume.

The most commonly used measure to indicate the size of balloons is the diameter (d) in cm. The volume (V) in liters is then calculated as follows:  
 $V \text{ (liters)} = (0.524/1000) \times (d \text{ (in cm)})^3$ . Accordingly, a spherical balloon with a diameter of 30 cm has a volume of 14.1 liters and sufficient buoyancy for a weight of about 7 to 8.5 g.

Pear-shaped balloons with an equal diameter have a slightly greater volume.

### How the gas is supplied

Balloon helium is stored in cylinders under a pressure of 200 bar. At least the cylinder shoulder is colored brown. Messer offers balloon gas in the following cylinder sizes:

| Cylinder size  | Gas content | Number of round balloons to be filled with a diameter of |         |        |
|----------------|-------------|--|---------|--------|
|                |             | 30 cm  | 40 cm   | 60 cm  |
| 5 l (200 bar)  | 0,9         | ca. 63   | ca. 27  | ca. 8  |
| 10 l (200 bar) | 1,8         | ca. 127  | ca. 53  | ca. 16 |
| 20 l (200 bar) | 3,7         | ca. 262  | ca. 110 | ca. 32 |
| 30 l (200 bar) | 5,5         | ca. 390  | ca. 164 | ca. 48 |
| 50 l (200 bar) | 9,2         | ca. 652  | ca. 274 | ca. 81 |

### Inflation Valve

For safe and convenient filling of latex or foil balloons, Messer also offers special valves, which can be purchased or hired together with the balloon helium.



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