

# R290 refrigerant grade propane.

High quality and natural.



# Cool by nature. Meet environmental regulations with R290 refrigerant grade propane.

Thanks to our long track record of technical expertise, Linde is able to provide our customers with far reaching benefits while protecting the environment. We have committed ourselves to the responsible use of natural resources, the development of clean technologies and the replacement of harmful substances with eco friendly alternatives.

Whether your application is air conditioning, commercial refrigeration, process chilling or heat extraction, we can help you meet environmental regulations.

Our high quality, low moisture content R290 refrigerant grade propane can provide you with a cost efficient solution that perfectly suits your requirements. It's a natural choice.

## Introduction

R290 is the common name for high purity propane ( $C_3H_8$ ) suitable for use in the refrigeration and air conditioning industry. It is also known as CARE<sup>®</sup> 40.

Linde has been a leading supplier of refrigerants for over 40 years, operating in 40 countries on 5 continents. We have long experience working with natural refrigerants including hydrocarbons, and can provide technical and product stewardship support. Our industrial gases heritage provides extensive experience in logistics and a wide product range including leak detection, cutting and welding gases.

The product typically is at least 99.5% pure with minimal levels of critical impurities including moisture and unsaturated hydrocarbons. This makes it ideal for use in all types of refrigeration systems. Linde R290 – cool by nature.

## Background

Along with other natural refrigerants, hydrocarbons such as R290 were used in refrigeration from the mid 1800s through to the 1930s. Due to its low environmental impact, R290 has been regaining popularity since the 1990s and is now a common alternative to fluorocarbons in a wide range of applications.

## Advantages of R290

- Zero ozone depletion potential
- Very low global warming potential (<20)\*
- Excellent thermodynamic properties leading to high energy efficiency
- Good compatibility with system components
- Low charges allowing smaller heat exchangers and piping dimensions

## Common applications

R290 has a wide range of applications. This includes commercial refrigeration, chill cabinets and vending machines, cold storage and food processing, industrial refrigeration, transport refrigeration, small air conditioning systems, large air conditioning and chiller systems, heat pumps and water heaters.

## Product safety

R290 has some different chemical properties than fluorocarbon refrigerants; the primary difference is its classification as extremely flammable.

Therefore the handling and use of R290 requires adequate safety measures. This is especially true if a system is being considered for retrofitting – replacing a non-flammable fluorocarbon refrigerant with R290. Our highly experienced experts are available to provide advice on how to handle and use our products in the safest way.



R290 – suitable for use in vending machines, display cases and chill cabinets.

## Purity

The quality of commercially available propane (LPG) is very often not suitable for refrigeration. The composition varies substantially, generally having between 60 and 95% propane. It can have high levels of moisture and unsaturated hydrocarbons.

Impurities such as other hydrocarbons can impact the vapour pressure of the product, lowering overall system efficiency. Sulfur can cause corrosion and unsaturated hydrocarbons can react with system components. Moisture leads to hydrolysis, corrosion and compressor failure.

## Linde advantage: high quality R290

Linde can provide you an assured level of quality. Our R290 is at least 99.5% pure with minimal levels of critical impurities including moisture (typically\*\* <10ppm), unsaturated hydrocarbons (typically <0.5%) and sulphur. This makes it ideal for use in all types of refrigeration and air conditioning systems.

On request, Linde can produce UL Classified R290 for manufacturers producing equipment to the UL471 standard.

## Product specifications

R290 is commonly available in a variety of sizes of packages to meet your needs. This includes returnable cylinders and drum tanks. R290 is also available in larger volumes in some countries.

### Typical specifications\*\*

Purity	>99.5%
Moisture	<10ppm (weight)
Contents (kg)	
Cylinders	3-50 kg
Drum tanks	300-500 kg
Bulk supply	

## Further information

For local specifications, or to order, please contact your local Linde supplier.

Alternatively visit [www.linde-gas.com/refrigerants](http://www.linde-gas.com/refrigerants)

\*\* Exact specifications vary locally, please refer to your local Linde supplier.

# Getting ahead through innovation.

With its innovative concepts, Linde is playing a pioneering role in the global market. As a technology leader, it is our task to constantly raise the bar. Traditionally driven by entrepreneurship, we are working steadily on new high-quality products and innovative processes.

Linde offers more. We create added value, clearly discernible competitive advantages and greater profitability. Each concept is tailored specifically to meet our customers' requirements – offering standardised as well as customised solutions. This applies to all industries and all companies regardless of their size.

If you want to keep pace with tomorrow's competition, you need a partner by your side for whom top quality, process optimisation and enhanced productivity are part of daily business. However, we define partnership not merely as being there for you but being with you. After all, joint activities form the core of commercial success.

**Linde – ideas become solutions.**

**Linde AG**

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