

# R717 Refrigerant Grade Ammonia

High quality natural refrigerant



# Cool by nature. Meet environmental regulations with R717 refrigerant grade ammonia.

As a world renowned company with far-reaching technical expertise, Linde is ideally positioned to make a valuable contribution to the protection of our environment. We have therefore committed ourselves to the responsible use of natural resources, the development of clean technologies and the replacement of harmful substances with more 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 R717 refrigerant grade ammonia can provide you with a cost efficient solution that perfectly suits your requirements. It's a natural choice.

## Introduction

R717 is refrigerant grade high purity ammonia (NH<sub>3</sub>). The product typically is 99.98% pure with minimal levels of moisture and other impurities (< 200 ppm and < 5 ppm Oil) making it ideal for use in all types of refrigeration systems.

Linde has been a leading supplier of refrigerants for over 40 years, operating in 40 countries in 5 continents. We have long experience working with natural refrigerants including R717 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. Linde R717 – Cool by nature.

## Background

R717 has been used as a refrigerant for over 100 years. Even during the period of strong growth in use of synthetic fluorocarbon refrigerants, it remained popular for a range of applications due to its excellent thermodynamic properties and low cost. However, due to its low environmental impact, R717 is now regaining popularity when an alternative to fluorocarbons is being sought.

Ammonia suitable for use as a refrigerant is commonly named R717 in the refrigeration and air conditioning industry.

## Advantages of R717

- Zero ozone depletion potential
- Zero global warming potential
- Excellent thermodynamic properties leading to a high energy efficiency
- Wide range of operating temperatures (-50 to +15°C)
- Low cost
- 100 year track record of providing efficient refrigeration

## Common applications

R717 has a wide range of applications. It is particularly suited to working in the range approximately 0°C to -30°C and hence is widely used for food preservation. This includes the chilling of liquids such as milk, beer and soft drinks, in large cold storage facilities, meat processing and packing plants, large ice-making plants and commercial refrigeration. Other common applications include large air conditioning systems (chillers), industrial heat extraction and ice rinks.

## Product safety

R717 has some different chemical properties than fluorocarbon refrigerants, being flammable, toxic and corrosive. Therefore the handling and use of R717 requires adequate safety measures. Our highly experienced experts are available to provide advice on how to handle and use our products in the safest way.



R717 – used in large air conditioning systems (chillers).

## Purity and moisture

Water present in Ammonia systems creates a number of problems, including internal system corrosion and creation of sludge that can cause blockages in the systems. The presence of moisture impacts the vapour pressure of the system. This combined with corrosion and sludge, substantially impacts the efficiency of your system – with a notable deterioration even at levels of just 0.5%.

Other impurities such as  $O_2$ ,  $N_2$  and hydrocarbons will have a similar impact, increasing the risk of corrosion, stress corrosion cracking and system performance drops.

## Linde advantage: high quality low moisture R717

Linde can provide you an assured level of quality. Our R717 typically<sup>†</sup> is 99.98% pure with minimal levels of moisture and other impurities (< 200 ppm and < 5 ppm Oil) making it ideal for use in all types of refrigeration systems.

## Product specifications

R717 is commonly available in a variety of sizes of packages to meet your needs. This includes returnable cylinders and drum tanks. R717 is also available in larger packages in some countries.

### Typical specifications<sup>†</sup>

Purity	>99.98%
Moisture	<200ppm (weight)
Contents (kg)	
Cylinders	20–60 kg
Drum tanks	300–500 kg
Bulk supply	

## Further information

For local specifications, or to order, please contact your local Linde supplier. You can also visit us at [www.linde-gas.com/refrigerants](http://www.linde-gas.com/refrigerants)

<sup>†</sup> 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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