

# Acetylene for Speciality Chemistry

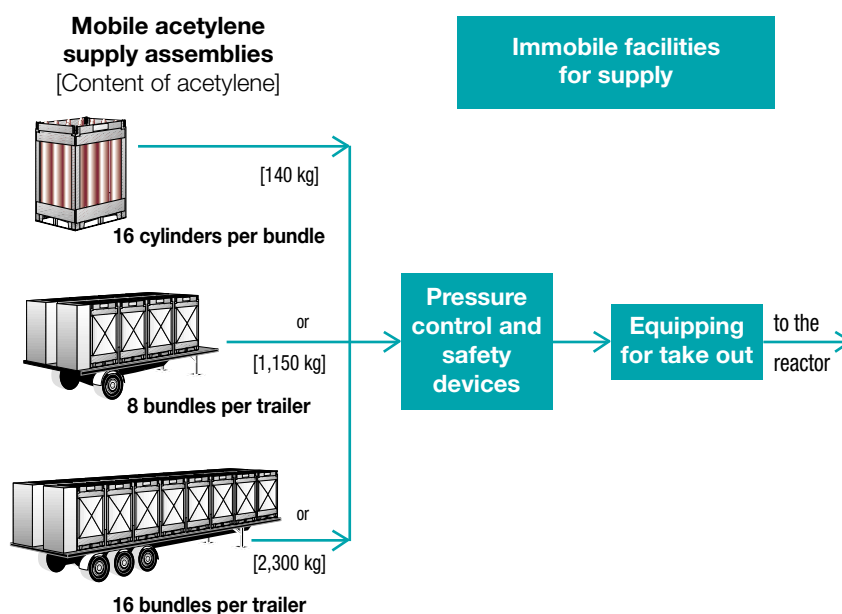
## Options of a Tailored Supply

### Applications

Acetylene is a versatile tool in today's speciality and fine chemical industries, which is due to its high and well controllable reactivity. Based on the characteristic features of acetylene's  $C\equiv C$ -triplebond especially vinylations as well as ethynylations in many cases can be achieved effectively with only minor synthetic effort. Therefore acetylene is used to contribute to the build-up of complex molecular structures e.g. for production of perfume components, vitamins, polymer-additives, solvents for construction industries, surface-active compounds etc.

### Provision of acetylene

In many synthetic applications the needed amounts of acetylene occur in the range between ten and a few hundred kilogram per day. These demands can be satisfied economically by delivery of appropriate amounts of acetylene in gas cylinders arranged in different assemblies for transportation. At the location of acetylene usage an appropriate installation for supply has to be erected. This immobile supply facility and especially its core, a pressure control device, has to be fitted exactly to the necessary acetylene flow conditions:



**Figure 1:**

The delivery of acetylene – flexibly tailored to individual demand – can be accomplished by a variety of gas cylinder bundle assemblies.

### Safety

Acetylene is an unstable gas and inadequate handling can cause its decay within the supply unit, in certain circumstances leading to considerable damage. Nevertheless acetylene can be used in an absolutely safe manner, provided that the prescribed safety instructions concerning

- Handling of cylinders
  - Transportation
  - Choice of material for supply units
  - Keeping of appropriate temperature and pressure conditions
- are being obeyed strictly.

Decades of experience with respect to all supplying aspects of secure acetylene handling recommend Linde as a professional partner to the chemical industries.

**Figure 2:**  
 Typical acetylene supply facility, mainly consisting of the obligatory, immobile pressure control unit (LINDOMATIK®) and two acetylene transport assemblies; in this case two 16-bundle trailers with 16 cylinders per bundle, in total placing an acetylene capacity of 2 x 2300 kilogram at customer's disposal.



**Purity**

Usually the purity of acetylene before charging of the cylinders is 99.5 or higher. Inside the gas cylinders acetylene is dissolved physically in an absorbent – acetone or dimethylformamide (DMF) – by means of pressure. Although the absorbent is adsorbed on a solid of silicate nature, the acetylene taken from these cylinders contains traces of the absorbent as an impurity. Types and amounts of other impurities significantly vary in dependence of the applied technology of acetylene production. For instance the main impurities occurring in acetylene produced in steam-crackers are hydrocarbons of low reactivity. Instead of hydrocarbons impurities like e.g. PH<sub>3</sub> or H<sub>2</sub>S have to be expected up to the low ppm-range when acetylene is produced by hydrolysis of carbide.

Consequently in most cases acetylene quality can be adapted properly to meet the needs of the employed synthetic pathway by appropriate choice and combination of

- Acetylene source
- Absorbent (acetone or DMF)
- Cleaning procedure

**Reliability of supply**

Delivery of the acetylene-containing gas cylinder bundles is accomplished by road transport. Efficient logistics as well as wide-ranged acetylene sources in great parts of Europe are ensuring a high reliability of supply. Usually two equally shaped cylinder assemblies are connected to the supply unit to ensure a steady acetylene flow.

**Range of services**

Besides a flexible and reliable delivery of acetylene the tailored implementation of a stationary supply unit can be performed expertly by Linde. This includes:

- Analysis of the needs for a customized concept of supply
- Planning of the supply facilities
- Production
- Erection
- Test before start up
- Start up
- Introduction of staff
- Maintenance (e.g. as a service in rotation)



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Printed information on all Linde products and services, including „Specifications of acetylene“, is available from our sales offices.

Our specialist staff are on call to advise you.