

Ethylene (C₂H₄, Ethene, R-1150)

CAS: 74-85-1 UN: 1962

Characteristics

- Flammable
- Colourless gas with slight odour.

Health Risks

- Asphyxiant at high concentrations.

Transport

ADR Class 2, 2F



DOT Class 2,1



| Product Description | Size (kg) | Material Number | Recommended Regulator |
|---------------------|-----------|-----------------|-----------------------|
| Ethylene N3.0 | 16,7 | 541202-SH-C | W019120 or W019220 |
| Ethylene N3.5 | 18,5 | 541301-SO-C | W019120 or W019220 |

Standard Specifications

Ethylene (N3.0)

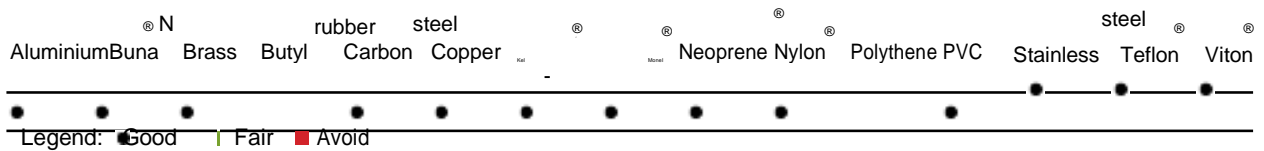
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|--------------------------|---------------------------------------------------------------------------------|------|
| Purity | >99,9% | |
| Maximum Impurities (ppm) | CH ₄ , C ₂ H ₆ , C ₃ H ₈ | <900 |
| | C ₃ H ₆ & heavier | <20 |
| | C ₂ H ₂ | <20 |
| | CO | <5 |
| | CO ₂ | <10 |
| | H | <10 |
| | O ₂ | <10 |
| | Total sulphur (as S) | <3 |
| H ₂ O | <5 | |

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|--------------------------------------|------------------------------|
| Stability Period (years) | 5 |
| Material Code | 541202-SH-C |
| Valve | 5/8" BSP LH female |
| Pressure | 91,1 bar |
| Cylinder | 50 l WC CrMo steel cylinder |
| Mass of Gas in Cylinder | 16,7 kg |
| Volume of Gas @ 101,3 kPa (absolute) | 14,0 m ₃ |
| Flammability in Air | 3,1 - 32% |
| Applications | Polymer manufacture |
| Precautions | Flammable gas under pressure |

| | | |
|--------------------------------------|---------------------------------------------------------------------------------|------|
| Standard Specifications | CH ₄ , C ₂ H ₆ , C ₃ H ₈ | <200 |
| Ethylene N3.5 | Polymer Grade | |
| Purity (%) | >99,95% | |
| Maximum Impurities (ppm) | C ₂ H ₂ | <6 |
| | CO | <3 |
| | CO ₂ | <10 |
| | O ₂ | <10 |
| | H ₂ O | <5 |
| Stability Period (years) | 5 | |
| Material Code | 541301-SO-C | |
| Valve | 5/8" LH BSP Int | |
| Pressure | 91,1 bar | |
| Cylinder | 50 l WC CrMo steel cylinder | |
| Mass of Gas in Cylinder | 18,5 kg | |
| Volume of Gas @ 101,3 kPa (absolute) | 15,5 m ³ | |
| Flammability in Air | 3,1 - 32% | |
| Applications | Polymer manufacture | |
| Precautions | Flammable gas under pressure | |

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|---------------------------------------------------------|------------|
| Physical Data | |
| Molecular Weight | 28,054 |
| Boiling Point at 1,013 bar [°C] | -103,68 |
| Boiling Point at 14,5 psi [°F] | -154,60 |
| Density at 1,013 bar, 20°C [kg/m ³] | 1,173 |
| Density at 1 atm, 70 °F [lb/ft ³] | 0,073 |
| Vapour Pressure at 0°C [bar] | 40,95 |
| Vapour Pressure at 20°C [bar] | - |
| Vapour Pressure at 32°F [psi] | 593,9 |
| Vapour Pressure at 70°F [psi] | - |
| Flammability Range in Air [% volume] | 2,7 - 36,0 |
| Specific Volume at 1,013 bar, 20°C [m ³ /kg] | 0,859 |
| Specific Volume at 1 atm, 70°F [ft ³ /lb] | 13,7 |

Material Compatibility



Source

- Ethylene is produced by passing ethyl alcohol vapours over dehydrating catalysts at 360 - 470°C.
- It may also be produced by the pyrolysis of ethane.
- Cracking of petroleum is another source.

Applications

- Ethylene is the starting material for several industrial syntheses. It is employed as an intermediate in the chemical industry and for the production of plastics.
- Ethylene is employed for the production of:
 - Acetaldehyde
 - Acetic acid
 - Chloroethane
 - Chloroethene (vinyl chloride)
 - Dichloroethane
 - 1,1-dichloroethene (vinylidene chloride)
 - Epoxyethane (ethylene oxide)
 - Ethanediol (ethylene glycol)
 - Ethanol
 - Ethoxyethane
 - Ethyl benzene
 - Phenylethene (styrene)
 - Polychloroethene (polyvinyl chloride)
 - Polythene
 - Propanoic acid
 - Tetraethyl lead
 - Trichloroethane.
- Ethylene is used as a component in calibration gases for the automotive, gas, oil as well as the chemical industries.
- Ethylene supplied in cylinders is used for controlled ripening of fruit, especially bananas. A concentration of a few ppm in the warehouse atmosphere is used. Because of flammability considerations, it is strongly recommended to use a mixture of ethene in nitrogen in this application. (see 'Ripegas')
- Ethylene has also been used in agriculture to promote crop growth. In this case the gas is injected directly into the soil.
- It is used as a refrigerant especially in the petrochemical