ARTEK Refrigerant Jakarta, Indonesia
Phone +62 21 769 2778 Fax +62 21 769 2778
Emergency Phone Number +62 21 769 2778

MATERIAL SAFETY DATA SHEET

Date Issued July 1998

IDENTIFICATION

PRODUCT NAME: AR 22 Refrigerant Gas **UN Number**: 1075
Other Names: Hydrocarbon / (pure propane) **Hazchem Code:** 2WE
Dangerous Goods Class: 2.1 **Subsidiary Risk :** None
Emergency Procedure Guide: 2A2 **Manufacturers Code :** AR 22
Poisons Schedule: None Allocated

USE: A flammable gas used as refrigerant, normally stored under pressure in liquid form.

PHYSICAL DESCRIPTION/PROPERTIES:

Appearance: Rapidly evaporating liquid or gas without odour
Initial Boiling point: -42*C - 0*C Vapour Pressure at 20*C: 800kPag
Melting Point: Not Applicable Flash Point: -104*C to 60*C
Density @ 15*C: Approximately equal to 0.50 Solubility in Water: Very slight
Lower Flammability Limit: 1.9 % in air Upper Flammability Limit: 9.5% in air

OTHER PROPERTIES:

Evaporating Rate: Rapid Vapour Density: 1.5 to 2.0 air = 1
Auto Ignition Point: 550*C % Volatilise: 100%

INGREDIENTS:

Chemical Entity	BS/DIN Number	Proportion
C_3H_8		97.5%
iC_4H_{10} & Other HC		2.45%

HEALTH HAZARD INFORMATION

HEALTH HAZARDS

Inhaled: May cause irritation of the respiratory tract. May also cause headaches or dizziness at moderate exposures.
Asphyxiant: Causes unconsciousness and respiratory arrest at elevated exposures.
Eye: Irritating if the liquid gets into the eyes, with a possible hazard from freezing due to rapid evaporation. Vapours in high concentration may also be irritating.
Skin: Excessive prolonged contact to the liquid can cause skin irritation and frostbite due to rapid evaporation.
Swallowed: Unlikely to be a problem, owing to high evaporation rate.
Chronic: No effects reported from long term industrial exposure to this product.

FIRST AID

Inhaled: Avoid breathing vapours and fumes as much as possible. If someone is overcome by fumes, removes them to fresh air immediately. Rescuers should avoid becoming a casualty by wearing suitable respiratory protection. If the affected individual is not breathing , administer artificial respiration. Seek medical advice promptly in serious cases of over exposure.
Eye : Avoid contact with the product, Remove any contact lenses carefully. Hold eyelids open and flush eyes with tepid water for 15 minutes. Seek medical advice immediately for all eye contact .
Where significant splashing of AR 22 liquid may occur, eyewash facilities stations should be installed.
Skin : Avoid skin contact with the liquid. Removes contaminated clothing and wash the exposed areas with plenty of soap and water . Seek medical advice if irritation or frostbite (see below) occurs.
Swallowed : Unlikely to be a problem , owing to high evaporation rate.
Frostbite: Obtain medical assistance. If medical advice is not available immediately , place casualty in a warm area as soon as possible and allow the injured area to warm gradually (further damage may occur if if the area of injury warms too rapidly) **DO NOT EXPOSE THE INJURED AREA TO EXCESS HEAT OR COLD** (such as heat lamps, hot water, snow or ice)

Gently cover or drape the injured area with clean material such as dressing or sheet. To relieve pain, immerse the injured area in water which is near or at body temperature (35 - 40 * C). If possible get the casualty to exercise the injured area gradually. Give them something warm to drink , BUT NO ALCOHOL. Seek medical advice as soon as posible.

PRECAUTION FOR USE

EXPOSURE STANDARDS

Worksafe has been established comments and exposure Standards for the following ingredients of this product:
AR 22 : Simple asphyxiant 800 ppm (1900mg/m3) as an 8 hour Time Weighted Average.

ARTEK AR 22 is odourless and is detectable to 20 % of its LEL.

ENGINEERING CONTROLS

Ensures there is good ventilation of the area in which the product is used to keep concentrations below the exposure standard or lower explosive limit. While dilution by air may be sufficient in most cases, an exhaust ventilation may be required. In such cases use spark proof equipment if possible . A ventilation velocity of a least 0.3m/s is recommended.

PERSONAL PROTECTION

Avoid contact with eyes and skin . Overalls or long sleeved shirt and closed in shoes or safety footwear should be worn as a general precaution.
Eye protection: Eye protection is required (faceshield, chemical safety glasses or side shield glasses) where splashing is likely. Eye protection should comply with British Standard or DIN Germany Standard
Gloves : Imperious oil and cold resistant gloves should be worn when using this product. Gloves made of PVC are preferred, although gloves made of nitrile and chloroprene should also be satisfactory.
Respiratory Protection: If ventilation of the area is not sufficient, respiratory protection may be required. This should be at least approved air supplied or self contained breathing apparatus where the exposures standard is likely to be exceeded or if works is required close to large gas leaks Respiratory protection should comply with British Standard or DIN Standard

FLAMMABILITY

ARTEK AR22 is gaseous and highly flammable at normal temperature and pressures. The gas is normally stored under pressure in the liquid form. Release of pressure is associated with rapid cooling, the intensity of which is dependent on the rate of release. Containers of AR 22 are explosive hazards, when exposed to excessive heat.

SAFE HANDLING

STORAGE AND TRANSPORT

ARTEK AR 22 is classified under the British Standard Code for the Transportation of Dangerous Goods by Road and Rail as a FLAMMABLE GAS (Class 2.1)
Storage: ARTEK AR 22 should be stored in approved areas only. Minimum conditions of storage include dry, cool , secure storage away from heat, sources of ignition and oxidising substances. Keep containers closed and upright when not in use.
Transport: ARTEK AR 22 must be transported in accordance with the latest Local safety standard of Transportation of Flammable gas.
Large volumes must be transported in approved tankers, and smaller volumes in approved pressure containers.

SPILLS AND DISPOSAL

Spills: Cut off source of leak. If the release is large, cut off all ignition sources and evacuate all non essential personnel from the area. If possible , ventilate the area, If the incident is significant seek immediate assistance from local fire authorities and police. If possible , monitor the vapour concentration until dissipated.
Disposal : If possible allow to evaporate. Large volumes should be removed by tanker or by controlled burning. ARTEK AR 22 can be disposed of by approved incineration methods. Contact local supplier or fire brigade for further advice on disposal.

FIRE / EXPLOTION HAZARD

Hazchem code : 2WE
Extinguisher : Water spray or BC fire extinguisher.
Procedure : Stay out of gas or vapour. Use water to dispense unignited gas or vapour. Allow to burn out if posibble.
Special precautions: Fire- Fighters should wear full protection and breathing apparatus.
ARTEK AR 22 is heavier than air, and vapours will tend to flow downwards and accumulate in low - lying areas such as drains and pits at ground level.
Containers : Cool fire exposed containers with water spray. If ignition has occurred and water is not available, tank metal may weaken from overheating.
Reactivity : Stable
Incompatibilities : Oxidisers
Combustion Products : Hazardous combution products of carbon dioxide (carbon monoxide under poor conditions of combustion) and smoke may be produced.
Hazardous polymerisation will not occur.

US NFPA Classification: Health : 1 Flammability : 3 Reactivity : 0

OTHER INFORMATION

Contact Name : Aceng Gunawidjaya Title : Safety Officer Phone : +62 21 769 2778
Fax : +62 21 769 2778