

MATERIAL SAFETY DATA SHEETS
A-172/E-1

DATE: 29Apr2011

SUPPLIER ADDRESS: Air Liquide
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EMERGENCY PHONE NUMBER: (215) 766-8860

1. CHEMICAL PRODUCT

PRODUCT NAME: FID FUEL H2/HE

Helium, Flame

SYNONYMS: Hydrogen in

Ionization Fuel Mixture

2. COMPOSITION, INFORMATION ON

INGREDIENTS

| | | | | | | Exposure | |
|--------------|------|-------|-----------------|---------|-----------|---------------|-----|
| | | | | | | ACGIH | |
| Limits (PPM) | OSHA | Other | Ingredient Name | Formula | CAS# | Concentration | TLV |
| | PEL | MAC | STEL | | | | |
| | | | HYDROGEN | H2 | 1333-74-0 | 40% | S/A |
| | S/A | S/A | S/A | | | | |
| | | | HELIUM | He | 7440-59-7 | 60% | S/A |
| | S/A | S/A | S/A | | | | |

Note: S/A = SIMPLE ASPHYXIANT

3. HAZARD IDENTIFICATION

*** EMERGENCY OVERVIEW ***

Flammable, high pressure gas.
Can form explosive mixtuers with air.
Burns with an invisible flame.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation

ACUTE EFFECTS: Mixture can act as a simple asphyxiant by displacing
air

necessary for life. Symptoms include rapid respiration, muscular
incoordination,
fatigue, dizziness, nausea, vomiting, unconsciousness, and death.

CHRONIC EFFECTS: None known

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US Only):

NTP - No
IARC MONOGRAPHS - No
OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.
EYE CONTACT: None
SKIN CONTACT: Non
INGESTION: None
IN EVENT OF EXPOSURE, CONSULT A PHYSICIA
NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: N/Av
AUTOIGNITION TEMPERATURE: N/Av
FLAMMABLE LIMITS: Vol. % for Hydrogen
LOWER: 4
UPPER: 75
EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, or halogenated gas.
SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Fires in cylinders and storage tanks should be allowed to burn until nearly empty. Keep fire exposed cylinders cool with water spray.
HAZARDOUS COMBUSTION PRODUCTS: None
UNUSUAL FIRE AND EXPLOSION HAZARDS: Severe when exposed to heat or flame. Burns with an invisible flame.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Check for invisible flame with tissue paper. Remove leaking cylinder to exhaust hood or safe outdoor area.
Remove sources of ignition and combustibles. Shut off source if possible and remove source of heat.
SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from

falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store in well ventilated areas. Keep valve protection cap on cylinders when not in use. Keep away from oxidizing agents.

8. EXPOSURE CONTROLS/ PERSONAL

PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to

maintain concentrations below flammable limits and to avoid asphyxiation.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Safety glasses

SKIN PROTECTION: None

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Odorless

PHYSICAL STATE: Gas

VAPOR PRESSURE: N/Ap

VAPOR DENSITY (AIR=1): 0.104-0.134

BOILING POINT (C): N/Ap

SOLUBILITY IN WATER: 0.0068

SPECIFIC GRAVITY (H2O=1): Gas

EVAPORATION RATE: Gas

ODOR THRESHOLD: N/Ap

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas.

MATERIALS TO AVOID: Oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not

occur.
HAZARDOUS DECOMPOSITION: None

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): NONE ESTABLISHED
LETHAL DOSE 50 (LD50): N/Ap
TERATOGENICITY: N/Ap
REPRODUCTIVE EFFECTS: N/Ap
MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14. TRANSPORT INFORMATION

CONCENTRATION: 40-60%
DOT DESCRIPTION (US ONLY):
PROPER SHIPPING NAME: Compressed gases, flammable, n.o.s.
HAZARD CLASS: 2.1 (flammable)
IDENTIFICATION NUMBER: UN1954
REPORTABLE QUANTITIES: None
LABELING: FLAMMABLE GAS
ADR/RID (EU Only): Class 2,1F
SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Materials are not listed in appendix A of 29

CFR 1910.119 as highly hazardous chemicals.

TSCA: Mixture is not listed in TSCA inventory.

SARA: The threshold planning quantity for this mixture is 10,000 lbs.

EU NUMBER: N/Ap

NUMBER IN ANNEX 1 OF DIR 67/548: Mixture is not listed in annex 1.

EU CLASSIFICATION: N/Av

R: 12,20,36/37/38

S: 9,15

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS:

N/Ap - Not Applicable

N/Av - Not Available

SA - Simple Asphyxiant

NE - None Established

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