

[illegible]

[illegible]

[illegible]

[illegible]

DOCUMENT REGISTER - MSDS Data Sheets								<div>MsC MARS SPACE CONSTRUCTION, LLC</div>				
CLIENT					PROJECT #							
					REV NO #							
PROJECT TITLE Mars Colony					DATE							
					MSDS Data Sheet	MSDS DESCRIPTION	TEMPERATURES	LATEST REVISION		IFA	IFD	IFC
7				NO	DATE							
1	MSDS-Ammonia	NH3 - Gas / Liquid (flammable)	Molecular Weight: 17,031 Specific Volume @ 20°C & 101,325 kPa 1405,6 ml/g Boiling point @ 101,325 kPa -33,4°C density (Air = 1) @ 101,325 kPa 0,599 Flammability levels in air: 16 - 25% (by vol.) Autoignition temperature: 651°C Colour: None Taste: Alkaline Odour: Pungent						100%		Complete	
1	MSDS-Carbon Dioxide	CO2 - Gas / Liquid (refrigerant)	Molecular weight: 44.01 g/mole Molecular formula: C-O2 Melting/freezing point: Sublimation temp.: -79°C (-110.2 to °F) Critical temperature: 30.9°C (87.6°F) Vapor pressure: 830 (psig) Vapor density: 1.53 (Air = 1) Liquid density@BP: Solid density = 97.5 lb/ft3 (1562 kg/m3) Specific Volume (ft 3/lb): 8.7719 Gas Density (lb/ft 3): 0.114						100%		Complete	
1	MSDS-Hydrogen	H2 - Gas / Liquid (cryogenic), flammable	Gas Density 21.1°C & 1 atm: 0.08342 kg/m3 (0.00521 lb/ft3) Specific Gravity @ 0°C and 1 atm (air = 1): 0.069 Triple Point: -259°C (-434.6°F) Solubility in Water v/v @ 15.6°C: 0.019 Boiling Point(@ 1 atm.): -252.8 °C (-423.0°F) Evaporation Rate (nBuAc = 1): Not applicable. Ratio: Approximately 850. Threshold: Not applicable. Pressure (psia): Not applicable. Volume @ 21.1°C & 1 atm: 192 ft3/lb (11.99 m3/kg) Weight: 2.016 Water/Oil Distribution: Not applicable. Appearence and Color: Hydrogen is a colorless, odorless gas.						100%		Complete	
1	MSDS-Methane	CH4 - Gas / Liquid (flammable)	Color: colorless Odor: odorless Molecular Weight: 16.04 Molecular Formula: C-H4 Boiling Point: -162°C Freezing Point: -183°C Vapor Pressure: 760 mmHg@ -161°C Vapor Density (air=1): 0.555 Specific Gravity: Not applicable Density: 1.242 g/L @ 25 C 0.717g?L@0°C Water Solubility: 4.7% @ 20 C 3.5% @17°C PH: Not applicable Volatility: 100% Viscosity: 0.00852 cP @ 0 C 0.01118cP@27°C Solvent Solubility: Soluble: benzene, ethanol, alcohol, ?????, organic solvents						100%		Complete	

1

[MSDS-Nitrogen](#)

N2 - Gas/Liquid (Cryogenic), non-flammable

Vapor Density: 1.153 kg/m3 (0.072 lb/ft3)
Evaporation Rate (nBuAc = 1): Not applicable.
Gravity (air = 1): 0.967
Point: -210°C (-345.8°F)
Solubility in Water (v/v): 1.49%
Boiling Point @1 atm: -320.4°F (-195.8°C)
Expansion Ratio: 696.5 (cryogenic liquid)
Not applicable.
Odor Threshold: Not applicable. Odorless.
Vapor Pressure (psia): Not applicable.
Water/Oil Distribution: Log Kow = 0.92
(ft3/lb): 13.8
Coefficient
Specific Volume
pH:
Freezing
Appeareance and Color: Nitrogen is a colorless, odorless gas or a colorless and odorless, cryogenic liquid.

100%

Complete

1

[MSDS-Oxygen](#)

O2 - Gas/Liquid (Cryogenic), flammable

Physical state: Gas. [Compressed gas.]
Color: Colorless. Blue
Odor: Odorless
Melting Point: -218.4°C (-361.1°F)
Boiling point: -183°C (-297.4°F)
Critical temperature: -118.15°C (-180.7°F)
Flash point Evap. rate: Product does not sustain combustion.
Flammability (solid, gas): Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
Vapor pressure Vapor density: 1.1 (Air = 1)
Specific Volume (ft 3/lb): 12.0482
Gas Density (lb/ft 3): 0.083
Partition coefficient: 0.65
Auto-ignition temperature: 0.65
Molecular weight: 32 g/mole

100%

Complete

1

[MSDS-Water](#)

H2O - Gas/Liquid

Appeareance: Colorless
Physical State: Liquid (Clear)
Molecular Weight: 18.02
Chemical Formula: H2O
Odor: Odoravity (water = 1.0): 0.9982 g/ml @ 20 °
pH: ~7.0 Point: 100°C (212°F)
Melting Pressure: 17.54 Torr @ 20°C
Vapor Density (Air = 1.0): 0.46

100%

Complete

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]