

SECTION 1: IDENTIFICATION

Product Identifier:	MagneGas 2 [®] , MG2, M2, 2
Recommended Use:	A flammable gaseous fuel
Company Details:	Taronis Fuels 24980 N. 83 rd Ave, Suite 100 Peoria, AZ 85383 Tel No: 866-370-3835 Email: IR@taronisfuels.com Website: http://www.taronisfuels.com
Emergency Phone:	For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300 Outside USA and Canada: +1 703-527-3887 (Collect calls accepted)

SECTION 2: HAZARD IDENTIFICATION
Classification of MagneGas 2[®]

GHS Classification:	Flammable Gas – 1 Compressed Gas Acute Toxicity, Inhalation – 4 Skin Corrosion / Irritation – 3 Serious Eye Damage / Eye Irritation – 2B
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GHS Label Elements
Pictograms:

Flame

Gas Cylinder

Exclamation Mark

Signal Word: Danger

Hazard Statements:	Code	Description
	H220	Extremely Flammable Gas
	H280	Contains gas under pressure; may explode if heated
	H316	Causes mild skin irritation
	H320	Causes eye irritation
	H332	Harmful if inhaled

Precautionary Statements:	Code	Description
	P202	Do not handle until all safety precautions have been read and understood
	P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
	P242	Use only non-sparking tools.
	P261	Avoid breathing gas.
	P264	Wash thoroughly after handling
	P271	Use only outdoors or in well ventilated area.
	P280	Wear protective clothing, protective gloves, eye protection, face protection
	P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely
	P381	Eliminate all ignition sources if safe to do so
	P403	Store in a well-ventilated area.
	CGA-PG02	Protect from sunlight when ambient temperature exceeds 52°C (125°F).
	CGA-PG05	Use a back-flow preventive device in the piping.
	CGA-PG06	Close valve after each use and when empty.
	CGA-PG10	Use only with equipment rated for cylinder pressure.
	CGA-PG12	Do not open valve until connected to equipment prepared for use.

Other Hazards: May cause asphyxia.
May cause frostbite upon sudden release of compressed gas.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Component Name	CAS#	% (Vol/Vol)
Hydrogen	1333-74-0	55-45 %
Carbon Monoxide	630-08-0	27-20%
Ethyne	74-86-2	14-9%
Methane	74-82-8	7-4%
Ethylene	74-85-1	6-4%
Propylene	115-07-1	1-0%
Carbon Dioxide	124-38-9	1-0%

SECTION 4: FIRST AID MEASURES

- Inhalation:** Remove person to fresh air and keep comfortable for breathing. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
- Skin Exposure:** Wash exposed skin with soap and water. If skin irritation occurs, get medical attention. If frostbite or freezing occur, immediately flush with plenty of lukewarm water 105-115° F (41-46° C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.
- Eyes Exposure:** Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing and flush eyes with plenty of water for at least 15 minutes. Call a doctor/physician if eye irritation persists.
- Ingestion:** MagneGas 2® is a gas at normal temperatures and atmospheric pressure, ingestion is an unlikely method of exposure.
- Note to physicians:** For inhalation, consider oxygen.
- Symptoms – Immediate:** Frostbite or burns due to expanding gases. Suffocation
- Symptoms – Delayed:** No information on significant adverse effects.

SECTION 5: FIRE-FIGHTING MEASURES

- Suitable Extinguishing Media:** Carbon dioxide, regular dry chemical, water, halon.
- Unsuitable Extinguishing Media:** None known.
- Specific Hazards Arising from Substance or Mixture**
- Fire Hazard:** Extremely flammable gas. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.
- Explosion Hazard:** Cylinders contain gas under pressure, gas/air mixture is explosive. Pressurized containers may rupture and/or explode if exposed to enough heat. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.
- Fire Fighting Measures:** Evacuate all personnel from the danger area, keep all unnecessary people away, isolate hazardous area and deny entry. In the case of high-risk event let burn and evacuate area to safe distance. Move cylinders from fire area if it can be done safely and without risk. Use water spray to keep cylinder and/or other containers cool if exposed to fire. Continue to cool containers with water spray until well after the fire is out. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible, without personal risk. Let burn if leak cannot be stopped immediately. Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance.



SAFETY DATA SHEET MagneGas 2[®]

Rev. G

Avoid inhalation of product or by-products. Stay upwind and keep out of low areas.

MagneGas 2[®] is lighter than air and will disperse rapidly in an open environment. Gas may pool at the roof peak in unventilated areas.

Protective Equipment and Precautions for Firefighters:

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

SECTION 6: ACCIDENTAL RELEASE MEASURES

General: Forms an explosive mixture with air. Immediately evacuate all personnel from the risk area.

MagneGas 2[®] is lighter than air and will disperse rapidly in an open environment. However, gas may pool at the roof peak in unventilated areas. Shut off gas flow and ventilate area using explosion-proof equipment and methods if it safe to do so.

Personal Precautions: Wear personal protective clothing and equipment.

Environmental Precautions: Avoid release to the environment.

Methods for Containment: Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition if it can be done without risk. Ventilate closed spaces before entering.

Cleanup Methods: Avoid heat, flames, sparks and other sources of ignition always.
Leaking gas fire: Do not extinguish, unless leak can be stopped quickly and safely without personal risk.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling:

Cylinders: Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use only non-sparking tools and explosion proof equipment. Always protect cylinders and valves from physical damage, do not puncture. Do not pick up cylinders by cap or valve. Always move cylinders with the proper equipment. Empty cylinders retain residual material and can be hazardous. Keep containers closed when not in use. Prevent backflow into cylinders. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations around or near cylinders or containers.

Personnel: Wear the appropriate protective clothing and equipment (steel toe shoes, safety gloves, protective eye wear, face shields, and breathing apparatuses) when handling cylinders and gas.

Equipment: Only use equipment rated for the maximum cylinder pressure and compatible with gas elements.

Storage: Store in a well-drained, dry and well-ventilated place. Cylinders shall be grouped together with like hazard class. Remove all sources of ignition in the storage area and keep away from open flames and high temperatures. Vehicle, enclosure, or other storage areas used to store cylinders shall not be allowed to exceed 125°F (51.7°C). Do not allow cylinders to be exposed to direct sunlight where ambient temperatures can exceed 125°F (51.7°C). Store containers in a fashion that tampering, and damage will not occur. Do not store where heavy moving objects can strike or fall on them. Do not store in walkway, exit routes, or other areas normally used for safe exit of personnel. Do not store near elevators or at unprotected platform edges. Do not allow cylinders to be stored in standing water or mud. Do not allow rolling or falling of the cylinders. Use explosion-proof ventilation system to prevent vapor accumulation. Cylinders should always be transported and stored in an upright position and properly secured.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
COMPONENT EXPOSURE LIMITS

INGREDIENT:	CAS NO.	OSHA PEL-TLV (ppm; mg/m3)	ACGIH TLV-TWA (ppm)
Hydrogen	1333-74-0	None	Asphyxiant
Carbon Monoxide	630-08-0	50; 55 / 8 hours	25 ppm / 8 hours
Ethyne	74-86-2	None	None
Ethylene	74-85-1	None	200 ppm / 8 hours
Methane	74-82-8	None	1000 ppm / 8 hours
Propylene	115-07-1	None	500 ppm / 8 hours
Carbon Dioxide	124-38-9	5,000; 9,000 / 8 hours	5,000 ppm / 8 hours

Engineering Controls: Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits and federal, state, and local regulations.

Hand Protection: Wear working gloves when handling cylinders. Welders' gloves are required for cutting operations.

Eye/Face Protection: Wear safety glasses with side shields when working with cylinders. Wear protective face shields or vapor-proof goggles when changing out cylinders or working closely with gas in cutting, manufacturing, and/or combustion applications. Welders' goggles or similar equipment are required for cutting and welding operations. Select in accordance with OSHA 29 CFR 1910.133.

Skin Protection: Always wear the proper skin protection based on the task being performed. Leather sleeves, leather apron, and other standard protective equipment are required for cutting. Select in accordance with OSHA 29 CFR 1910.132 and 1910.133.

Respiratory Protection: Respiratory equipment must be worn when servicing the cylinders. Equipment selection must be based on anticipated exposure levels. Respiratory equipment must be properly fitted for the personnel performing the task. For use within a confined space, refer to 29 CFR 1910.146

Foot Protection: Always wear steel-toed work shoes/boots when moving cylinders.

General Hygiene: Thoroughly wash hands, fore-arms, and face after handling the product and prior to eating, smoking, and/or using restrooms.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Gas
Appearance:	Colorless Gas
Odor:	Distinct Hydrocarbon Odor
Odor Threshold:	20 ppm
Molecular Weight:	12 – 16
Auto-Ignition Point:	739°F
Lower Explosion Limit:	3.7%
Upper Explosion Limit:	53%
Density:	0.04 - 0.05 lbs./ft3 (.6-.7 g/liter @20° C)
Specific Gravity:	0.53 - 0.69 (air dry at 70°F – 1 atm)
Percent Volatile:	100%

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	No specific data available.
Chemical Stability:	Stable at normal temperatures and pressure.
Possibility of Hazardous Reactions:	Will react with Copper, Silver, Mercury, Brass, with >65% Copper to form shock and temperature sensitive explosives. Possible polymerization at elevated pressures in the presence of a catalyst.
Conditions to Avoid:	Storage in excess of 2,500 scf should be outdoors or in well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.
Incompatible Materials:	Oxidizing Lithium, Halogens, Oxygen, Copper, Silver, Mercury, Brass with >65% Copper
Hazardous Decomposition Products:	None under normal operating conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity:	Not available.
Irritation/Corrosion:	Not available.
Sensitization:	Not available.
Mutagenicity:	Not available.
Carcinogenicity:	Not available.
Reproductive Toxicity:	Not available.
Specific Target Organ Toxicity (single exposure):	Not available.
Specific Target Organ Toxicity (repeated exposure):	Not available.
Aspiration Hazard:	Not available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity:	Not available.
Persistence and Degradability:	Not available.
Bio accumulative Potential:	Not available.
Mobility in Soil:	Not available.
Other Adverse Effects:	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Methods:	Waste should be avoided or minimized at all times. Disposal of this product and any by-products must comply with local, regional, and national level requirements. Any non-recyclable waste material should always be disposed of via a licensed waste disposal provider. Return empty or unused MagneGas 2 [®] cylinders to Taronis Fuels or authorized distributor for proper disposal and/or refilling.
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SECTION 14: TRANSPORT INFORMATION
U.S. Department of Transportation (DOT)
UN Number: UN1954

UN Proper Shipping Name: COMPRESSED GAS, FLAMMABLE, N.O.S.
 (Hydrogen, Carbon Monoxide)

Hazard Class: 2.1 – Class 2.1 – Flammable gas

Special Transport Precautions:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards. Ensure personnel transporting product is aware of all danger and what to do in case of an accident or emergency.

Other Information: Shipment of compressed gas cylinders that have been filled without the owner's consent is a violation of federal law [49 CFR 173.301(b)].

SECTION 15: REGULATORY INFORMATION
U.S. Federal Regulations: None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312 Hazardous Categories:
Immediate Acute Health: Yes

Chronic Health: No

Fire Hazard: Yes

Pressure Hazard: Yes

Reactive: No

SARA 313 Reportable Ingredients:

Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372, not listed.

TSCA (Toxic Substance Control Act):

Not Applicable.

CERCLA (Comprehensive Response Compensation, and Liability Act):

Not Applicable.

U.S. State Regulations: The following components appear on one or more of the following state hazardous substances lists:

Component	CAS#	CA	MA	MN	NJ	PA	RI
Hydrogen	1333-74-0	Yes	Yes	Yes	Yes	Yes	Yes
Carbon Monoxide	630-08-0	Yes	Yes	Yes	Yes	Yes	Yes
Ethyne	74-86-2	Yes	Yes	Yes	Yes	Yes	Yes
Ethylene	74-85-1	No	Yes	Yes	Yes	Yes	No
Methane	74-82-8	No	Yes	Yes	Yes	Yes	No
Propylene	115-07-1	Yes	Yes	Yes	Yes	Yes	Yes
Carbon Dioxide	124-38-9	Yes	Yes	Yes	Yes	Yes	Yes

SECTION 16: OTHER INFORMATION
Revision History:

Date	Description	Revision
4/10/2014	Initial MSDS Release	A
3/10/2015	SDS Format Update, Chemical make-up updated	B
2/2/2016	Update Shipping Name in Section 14	C
1/3/2017	Update Gas Composition based on results from lab testing. New manufacturing location.	D
9/18/2017	Updated Gas Composition, based on new feedstock and variations between reactors.	E
4/26/2019	Updated Section 14 Shipping Name	F
03/10/2020	Update Gas Composition, new logo and update company information, Update Handling and Storage to clarify storage requirements. Update Physical and Chemical Properties to clarify lower explosion limit and metric density information, Update Transport Information to update Shipping Name, Update Cylinder Handling to clarify the never exceed temperature. Update Section 10 Stability and Reactivity to clarify verbiage regarding the lack of hazardous decomposition products under normal conditions, Update Disposal Considerations to include registered trademark as well as verbiage to direct the return of empty gas cylinders, Update Disclaimer	G

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