SAFETY DATA SHEET

1. Identification

Product identifier **Helium**

Other means of identification

SDS number WC032

Synonyms HELIUM-4

Recommended use Balloons.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Worthington Industries Incorporated

Address 200 Old Wilson Bridge Road
Columbus, OH 43085
United States

Email: SDSRequest@worthingtonindustries.com

Telephone Number: 877-324-4091

CHEMTREC - 24 HOURS:

Within US and Canada 800-424-9300 (CCN 24850)

Outside US and Canada +1 703-741-5970 (collect calls accepted)

2. Hazard(s) identification

Physical hazards Gases under pressure — Compressed gas
Simple asphyxiants — Category 1

Health hazards Not classified.

Environmental hazards Not classified.

Label elements

Signal word Warning

Hazard statement Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation.

Precautionary statement

Prevention Keep container tightly closed. Use only outdoors or in a well-ventilated area. Wear respiratory protection.

Response Wash hands after handling.

Storage Protect from sunlight. Store in a well-ventilated place.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Other hazards None known.

Supplemental information None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Helium	HELIUM-4	7440-59-7	100

Composition comments Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation — If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if breathing difficulty persists.

Skin contact — Not likely, due to the form of the product. If frostbite occurs, immerse affected area in warm water (not exceeding 105°F/41°C). Keep immersed for 20 to 40 minutes. Get medical attention immediately.

Eye contact — Not likely, due to the form of the product. If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention promptly if symptoms persist or occur after washing.

Ingestion — This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Most important symptoms/effects, acute and delayed — Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). Very high exposure can cause suffocation from lack of oxygen. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themself.

Indication of immediate medical attention and special treatment needed — Provide general supportive measures and treat symptomatically.

General information — Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media — Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media — Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical — Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Special protective equipment and precautions for firefighters — Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions — Move containers from fire area if you can do so without risk. Cool containers with flooding quantities of water until well after fire is out.

Specific methods — Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards — Heat may cause the containers to explode. Ruptured cylinders may rocket.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures — Keep unnecessary personnel away. Ensure adequate ventilation. Avoid breathing gas. In the event of a leak evacuate all personnel until ventilation can restore oxygen concentrations to safe levels. For personal protection, see Section 8 of the SDS.

Methods and materials for containment and cleaning up — Stop the flow of material, if this is without risk. Isolate area until gas has dispersed. For waste disposal, see Section 13 of the SDS.

Environmental precautions — Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling — Do not apply heat or direct sunlight. Do not breathe gas. Provide adequate ventilation. Oxygen concentration should not fall below 19.5 % at sea level (pO2 = 135 mmHg). Handle and open container with care. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities — Contents under pressure. Keep at temperature not exceeding 52 °C. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place. Store in original tightly closed container. Protect containers from damage. Store away from incompatible materials (See Section 10).

8. Exposure controls/personal protection

Occupational exposure limits — No exposure limits noted for ingredient(s).

Biological limit values — No biological exposure limits noted for the ingredient(s).

Exposure guidelines — No exposure standards allocated.

Appropriate engineering controls — General ventilation normally adequate.

Individual protection measures, such as personal protective equipment

Eye/face protection — If contact is likely, safety glasses with side shields are recommended.

Skin protection	
Hand protection	For prolonged or repeated skin contact use suitable protective gloves.
Other	Wear protective clothing appropriate for the risk of exposure.
Respiratory protection	In case of inadequate ventilation or risk of inhalation of gas, use suitable respiratory equipment.
Thermal hazards	Contact with liquefied gas might cause frostbites, in some cases with tissue damage. Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Gas.
Form	Compressed gas.
Color	Colorless.
Odor	Odorless.
Odor threshold	Not applicable.
pH	Not applicable.
Melting point/freezing point	-457.87 °F (-272.15 °C)
Initial boiling point and boiling range	-452.02 °F (-268.9 °C)
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Non-flammable gas
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	0.000165 g/ml @ 21 °C.
Relative density	0.14 g/cm3 @ 21 °C (Air =1)
Solubility(ies)	
Solubility (water)	Negligible in water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Other information	
Molecular formula	He
Molecular weight	4 g/mol
Percent volatile	100 % v/v

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat and direct sunlight.
Incompatible materials	None known.

Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.
Skin contact	Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").
Eye contact	Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely.
Symptoms related to the physical, chemical and toxicological characteristics	Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn"). Very high exposure can cause suffocation from lack of oxygen. Victim may not be aware of asphyxiation. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themself.

Information on toxicological effects

Acute toxicity	Not expected to be acutely toxic.
Skin corrosion/irritation	Not classified.
Serious eye damage/eye irritation	Not classified.

Respiratory or skin sensitization

Canada - British Columbia OELs: Simple asphyxiant

Helium (CAS 7440-59-7)	Simple asphyxiant.

Canada - Manitoba OELs Hazard: Asphyxiant

Helium (CAS 7440-59-7)	Simple asphyxiant.

Canada - Ontario OELs: Asphyxiant

Helium (CAS 7440-59-7)	Simple asphyxiant.

Canada - Quebec OELs: Asphyxiant

Helium (CAS 7440-59-7)	Simple asphyxiant.

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Chronic effects are not expected when this product is used as intended.

12. Ecological information

Ecotoxicity	The product is not expected to be hazardous to the environment.
Persistence and degradability	Not applicable.
Bioaccumulative potential	Not applicable.
Mobility in soil	Not relevant, due to the form of the product.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose waste and residues in accordance with applicable federal, state, and local regulations.
Local disposal regulations	Dispose of in accordance with local regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose in accordance with all applicable regulations.
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

UN number	UN1046
UN proper shipping name	HELIUM, COMPRESSED
Transport hazard class(es)	
Class	2.2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN1046
UN proper shipping name	Helium, compressed
Transport hazard class(es)	
Class	2.2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No
ERG Code	2L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1046
UN proper shipping name	HELIUM, COMPRESSED
Transport hazard class(es)	
Class	2.2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No
EmS	F-C, S-V
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.

15. Regulatory information

Canadian regulations This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date 17-July-2016

Revision date -

Version # 01

Further information The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available.

References
ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer All information in this Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user's responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.