Safety Data Sheet

Argoshield Heavy 52

SECTION 1: Identification of the hazardous chemical and of the supplier

1.1. Product identifier

Product form: Mixture

Trade name: 23% Carbon Dioxide Balance Argon

1.2. Relevant identified uses of the substance or mixture and uses advised against

No additional information available

1.3. Supplier's details

Linde Malaysia Sdn Bhd (100783-W)
No 1, Jalan Graphite 3, Kaw. Perindustrian Bdr Mahkota Banting,
42700 Banting Selangor Darul Ehsan - Malaysia
Toll Free: 1800 883 888
csc.lg.my@linde.com

1.4. Emergency telephone number

Emergency phone number (24h): 1800 883 888
Poison center : Unit HAZMAT Malaysia, tel: 999

SECTION 2: Hazards identification

2.1. Classification of the hazardous chemical

Classification according to Industry Code of Practice on chemicals classification and hazard communication (2014)

Press. Gas (Comp.) H280

2.2. Label elements

Labelling according to Industry Code of Practice on chemicals classification and hazard communication (2014)

Hazard pictograms (GHS MY) :

GHS04

Signal word (GHS MY) : Warning

Hazard statements (GHS MY) : H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (GHS MY)

- Storage : P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards not contributing to the classification

Other hazards which do not result in classification: Asphyxiant in high concentrations,In high concentrations CO2 causes rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Argon	(CAS-No.) 7440-37-1	77 – 100
Carbon dioxide	(CAS-No.) 124-38-9	0 – 23

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. See section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other medical advice or treatment : None.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray or fog.

Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

Hazardous combustion products : None.

5.3. Special protective equipment and precautions for fire-fighters

Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Try to stop release. Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan. Stay upwind. Oxygen detectors should be used when asphyxiating gases may be released.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe handling of the gas receptacle : Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect containers from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the content of the container. Suck back of water into the container must be prevented. Open valve slowly to avoid pressure shock.

Safe use of the product : Do not breathe gas. Avoid release of product into work area. The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not smoke while handling product. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Use only oxygen approved lubricants and oxygen approved sealings. Avoid suck back of water, acid and alkalis.

7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities : Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon dioxide (124-38-9)		
Malaysia	Local name	Karbon dioksida # Carbon dioxide
Malaysia	PEL (OEL TWA) [1]	9000 mg/m³
Malaysia	PEL (OEL TWA) [2]	5000 ppm
Germany	AGW (OEL TWA) [1]	9100 mg/m³
Germany	AGW (OEL TWA) [2]	5000 ppm
Germany	Remark	DFG,EU
New Zealand	Local name	Carbon dioxide
New Zealand	WES-STEL (OEL STEL)	54000 mg/m³
New Zealand	WES-STEL (OEL STEL) [ppm]	30000 ppm
New Zealand	WES-TWA (OEL TWA) [1]	9000 mg/m³
New Zealand	WES-TWA (OEL TWA) [2]	5000 ppm
United Kingdom	WEL TWA (OEL TWA) [1]	9150 mg/m³
United Kingdom	WEL TWA (OEL TWA) [2]	5000 ppm
United Kingdom	WEL STEL (OEL STEL)	27400 mg/m³
United Kingdom	WEL STEL (OEL STEL) [ppm]	15000 ppm
USA - ACGIH	ACGIH OEL TWA [ppm]	5000 ppm

Carbon dioxide (124-38-9)		
USA - ACGIH	ACGIH OEL STEL [ppm]	30000 ppm
USA - ACGIH	Remark (ACGIH)	Asphyxia
China	OEL PC-TWA	9000 mg/m³
China	OEL PC-STEL	18000 mg/m³

Exposure limit values for the other components

No additional information available

8.2. Monitoring

No additional information available

8.3. Appropriate engineering controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Oxygen detectors should be used when asphyxiating gases may be released. Consider the use of a work permit system e.g. for maintenance activities.

8.4. Personal protective equipment

Wear safety shoes while handling containers.

Wear safety shoes while handling containers. Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

Hand protection:

Wear working gloves when handling gas containers. Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.

Eye protection:

Wear safety glasses with side shields. Standard EN 166 - Personal eye-protection - specifications

Respiratory protection:

Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known. Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Gas filters do not protect against oxygen deficiency. Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres. Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks . Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

Thermal hazard protection : None in addition to the above sections.

Environmental exposure controls : None necessary.

SECTION 9: Physical and chemical properties

Physical state : Gas

Appearance : No data available

Colour : Mixture contains one or more component(s) which have the following colour(s): Colourless.

Odour : Odourless.

Odour threshold : Odour threshold is subjective and inadequate to warn of overexposure.

pH : Not applicable for gases and gas mixtures.

Melting point, Freezing point : Melting point: Not applicable for gas mixtures.

Boiling point : Not applicable for gas mixtures.

Flash point : Not applicable for gases and gas mixtures.

Auto-ignition temperature : Non flammable.

Decomposition temperature : Not applicable.

Flammability (solid, gas) : Non flammable.

Vapour pressure	:	Vapour pressure: Not applicable. Vapour pressure at 50 °C: Not applicable.
Evaporation rate	:	Relative evaporation rate (ether=1): Not applicable for gases and gas mixtures.
Explosive limits	:	Non flammable.
Lower explosive limit (LEL)	:	No data available
Upper explosive limit (UEL)	:	No data available
Explosive properties	:	Not applicable.
Minimum ignition energy	:	No data available
Solubility	:	No data available
Density	:	No data available
Relative density	:	Relative vapour density at 20 °C: Not applicable. Relative gas density: Heavier than air.
Viscosity	:	Viscosity, dynamic: No reliable data available. Viscosity, kinematic: Heavier than air.No reliable data available.
Gas group	:	Compressed gas
Partition coefficient n-octanol/water (Log Pow)	:	Not applicable for gas mixtures.
Molecular mass	:	Not applicable for gas mixtures.
Oxidising properties	:	Not applicable.
Additional information	:	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

Chemical stability	:	Stable under normal conditions.
Conditions to avoid	:	Avoid moisture in installation systems. this mixture contains components that have the following conditions to avoid: None.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Incompatible materials	:	For additional information on compatibility refer to ISO 11114. this mixture contains components that have the following incompatible materials: None.
Reactivity	:	No reactivity hazard other than the effects described in sub-sections below.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	Not classified
Acute toxicity (dermal)	:	Not classified
Acute toxicity (inhalation)	:	Not classified
Skin corrosion/irritation	:	Not classified pH: Not applicable for gases and gas mixtures.
Serious eye damage/irritation	:	Not classified
Respiratory or skin sensitisation	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
STOT-single exposure	:	Not classified
STOT-repeated exposure	:	Not classified
Aspiration hazard	:	Not classified

23% Carbon Dioxide Balance Argon	
Viscosity, kinematic (calculated value) (40 °C)	No reliable data available.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No data available.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

23% Carbon Dioxide Balance Argon	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.

Carbon dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Pow)	0.83

Argon (7440-37-1)	
Partition coefficient n-octanol/water (Log Kow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Pow)	Not applicable for inorganic products.

12.2. Persistence and degradability

23% Carbon Dioxide Balance Argon	
Persistence and degradability	No data available.

Carbon dioxide (124-38-9)	
Persistence and degradability	No data available.

Argon (7440-37-1)	
Persistence and degradability	No data available.

12.3. Bioaccumulative potential

23% Carbon Dioxide Balance Argon	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Bioaccumulative potential	No data available.

Carbon dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Bioaccumulative potential	No ecological damage caused by this product.

Argon (7440-37-1)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Bioaccumulative potential	No data available.

12.4. Mobility in soil

23% Carbon Dioxide Balance Argon	
Mobility in soil	No additional information available
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

Carbon dioxide (124-38-9)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

Argon (7440-37-1)	
Partition coefficient n-octanol/water (Log Pow)	See section 12.1 on ecotoxicology
Partition coefficient n-octanol/water (Log Kow)	See section 12.1 on ecotoxicology
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Other adverse effects

Ozone : Not classified

GWPmix comment : Contains greenhouse gas(es).

Effect on the ozone layer : None.

Other adverse effects : No known effects from this product.

SECTION 13: Disposal information

13.1. Disposal methods

Waste treatment methods : May be vented to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous. Return unused product in original container to supplier.

Additional information : External treatment and disposal of waste should comply with applicable local and/or national regulations.

{ Refer to the EIGA code of practice (Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org) for more guidance on suitable disposal methods. Dispose of container via supplier only. Discharge, treatment, or disposal may be subject to national, state, or local laws.

SECTION 14: Transportation information

14.1. UN number

UN-No.(UN RTDG) : 1956

UN-No. (IMDG) : 1956

UN-No. (IATA) : 1956

14.2. Proper Shipping Name

Proper Shipping Name (UN RTDG) : COMPRESSED GAS, N.O.S.

Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.

Proper Shipping Name (IATA) : Compressed gas, n.o.s.

14.3. Transport hazard class(es)

UN RTDG

Transport hazard class(es) (UN RTDG) : 2.2

Danger labels (UN RTDG) : 2.2

:

IMDG

Transport hazard class(es) (IMDG) : 2.2

Danger labels (IMDG) : 2.2

:

IATA

Transport hazard class(es) (IATA) : 2.2

Danger labels (IATA) : 2.2

:

14.4. Packing group

Packing group (UN RTDG) : Not applicable

Packing group (IMDG) : Not applicable

Packing group (IATA) : Not applicable

14.5. Environmental hazards

Dangerous for the environment : No

Marine pollutant : No

Other information : No supplementary information available

14.6. Special precautions for user

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

- UN RTDG

Special provisions (UN RTDG) : 274

Limited quantities (UN RTDG) : 120 ml

Excepted quantities (UN RTDG) : E1

Packing instruction (UN RTDG) : P200

- IMDG

Special provisions (IMDG) : 274

Limited quantities (IMDG) : 120 ml

Excepted quantities (IMDG) : E1

Packing instructions (IMDG) : P200

EmS-No. (Fire) : F-C - FIRE SCHEDULE Charlie - NON-FLAMMABLE GASES

EmS-No. (Spillage) : S-V - SPILLAGE SCHEDULE Victor - GASES (NON-FLAMMABLE, NON-TOXIC)

Stowage category (IMDG) : A

- IATA

PCA Excepted quantities (IATA) : E1

PCA Limited quantities (IATA) : Forbidden

PCA limited quantity max net quantity (IATA)	:	Forbidden
PCA packing instructions (IATA)	:	200
PCA max net quantity (IATA)	:	75kg
CAO packing instructions (IATA)	:	200
CAO max net quantity (IATA)	:	150kg
ERG code (IATA)	:	2L

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

14.8. 14.8. Hazchem or Emergency Action Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Occupational Safety and Health Act 1994 and relevant regulations:

Occupational Safety and Health (Classification, Labeling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.
Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

Environment Quality Act 1974 & regulations:

Environment Quality (Clean Air) Regulations 2014.
Environmental Quality (Scheduled Wastes) Regulations 2005.

15.2. 15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Version	:	2.0
Issue date	:	09/07/2015
Revision date	:	31/01/2023
Supersedes	:	02/07/2020

Abbreviations and acronyms : ATE - Acute Toxicity Estimate

CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006

EINECS - European Inventory of Existing Commercial Chemical Substances

CAS# - Chemical Abstract Service number

PPE - Personal Protection Equipment

LC50 - Lethal Concentration to 50 % of a test population

RMM - Risk Management Measures

PBT - Persistent, Bioaccumulative and Toxic

vPvB - Very Persistent and Very Bioaccumulative

STOT- SE : Specific Target Organ Toxicity - Single Exposure

CSA - Chemical Safety Assessment

EN - European Standard

UN - United Nations

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road

IATA - International Air Transport Association

IMDG code - International Maritime Dangerous Goods

RID - Regulations concerning the International Carriage of Dangerous Goods by Rail

WGK - Water Hazard Class

STOT - RE : Specific Target Organ Toxicity - Repeated Exposure

Training advice : The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Other information : Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at : http://www.eiga.eu. Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Ensure adequate air ventilation. Ensure all national/local regulations are observed. Ensure equipment is adequately earthed. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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