Section 1. Identification

GHS product identifier:	R-404A
Product Use:	HVAC Systems using R404a Refrigerant
Company:	ChemPenn, LLC 351 Camer Dr, Suite B Bensalem, PA 19020
For more information call:	215-638-1111 (Mon-Fri, 9:00am-5:00pm)
In case of emergency call:	**ChemTel (800) 255-3924** (24/7)

Section 2. Hazards Identification

OSHA/HSC status:	This material is considered hazardous by the OSHA Hazard Communication Standard. (29 CFR 1910.1200).
Classification of the: Substance of mixture	GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms:

Signal word:	Warning
Hazard statements:	Contains gas under pressure; may explode if heated. May cause frostbite. May displace oxygen and cause rapid suffocation.

Precautionary statements

General:	Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.
Prevention:	Use and store only outdoors or in a well-ventilated place.
Response:	Not Applicable.

Section 2. Hazards Identification *(continue)*

Storage:	Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.
Disposal:	Not applicable
Hazards not otherwise classified:	Liquid can cause burns like frostbite.

Section 3. Composition/information on ingredients

Substance/mixture: Mixture
Other mean of identification: Refrigerant gas R 404A

CAS number/other identifiers

CAS number: Not Applicable
Product Code: TBA

Component name	% Total	CAS number
1,1,1 - trifluoroethane	52	420-46-2
Pentafluoroethane	44	354-33-6
1,1,1,2 - tetrafluoroethane	4	811-97-2

Section 4. First aid measures

Description of necessary first aid measures

Eye contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do ot rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns like frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Section 4. First aid measures *(continue)*

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: Liquid cause burns like frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Dermal contact with rapidly evaporating liquid could result in freezing of the tissue or frostbite.
Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: Ingestion of liquid can cause burns like frostbite.

Over-exposure sign/symptoms

Eye contact	: Adverse symptoms may frostbite
Inhalation	: No data recorded
Skin contact	: Adverse symptoms may frostbite
Ingestion	: Adverse symptoms may frostbite

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: No specific treatments
Protection on first-aiders	: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire-Fighting measures

Extinguishing media

Suitable Extinguishing media	: Use an extinguishing agent suitable for the surrounding fire.
Unsuitable Extinguishing media	: None Known.
Specific hazards arising from the chemical.	: Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
Decomposition products.	: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, halogenated compounds
Special protective actions for fire-fighters.	: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
Special protective equipment for fire-fighters	: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders:	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Environmental precautions:	Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Section 7. Handling and storage

Methods and materials for containment and cleaning up

Small spill:	Immediately contact emergency personnel. Stop leak if without risk.
Large spill:	Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Precautions for safe handling

Protective measures:	Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Advice on general Occupational hygiene:	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Conditions for safe storage Including any incompatibilities:	Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

1,1,1 – trifluoroethane	**OSHA PEL Z2** (United States, 2/2013). TWA: 2.5 mg/m³ 8 hours. Form: Dust **AIHA WEEL** (United States, 7/2018). TWA: 1000 ppm 8 hours. **ACGIH TLV** (United States, 3/2019). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** 1989 (United States, 3/1989). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** (United States, 5/2018). TWA: 2.5 mg/m³, (as F) 8 hours.
Pentafluoroethane	**AIHA WEEL** (United States, 7/2018). TWA: 1000 ppm 8 hours. **OSHA PEL Z2** (United States, 2/2013). TWA: 2.5 mg/m³ 8 hours. Form: Dust **ACGIH TLV** (United States, 3/2019). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** 1989 (United States, 3/1989). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** (United States, 5/2018). TWA: 2.5 mg/m³, (as F) 8 hours.
1,1,1,2 – tetrafluoroethane	**OSHA PEL Z2** (United States, 2/2013). TWA: 2.5 mg/m³ 8 hours. Form: Dust **AIHA WEEL** (United States, 7/2018). TWA: 1000 ppm 8 hours. **ACGIH TLV** (United States, 3/2019). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** 1989 (United States, 3/1989). TWA: 2.5 mg/m³, (as F) 8 hours. **OSHA PEL** (United States, 5/2018). TWA: 2.5 mg/m³, (as F) 8 hours.
Appropriate engineering Controls	**:** Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
Environmental exposure Controls	**:** Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side shields.

Section 8. Exposure controls/personal protection *(continue)*

Skin protection

Hand protection	**:**Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	:Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	:Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	:Gas. [Liquefied gas]
Color	:Colorless.
Boiling/condensation point	: Not Available.
Melting/freezing point	: -103°C (-153.4°F) This is based on pentafluoroethane.
Critical temperature	: 72.4°C (162.3°F) (pentafluoroethane)
Odor	: Faint ethereal odor
Odor threshold	: Not available.
pH	: Not available.
Flash point	: Not available.
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability(solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: 182.1 psia at 25 deg C (77 deg F)
Vapor density	: 4.2 (Air = 1) (pentafluoroethane)
Gas Density (lb/ft^3)	: 0.31
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: Not available.

Section 9. Physical and chemical properties *(continue)*

Partition coefficient n-octano/water	: Not available.
Auto-ignition temperature	
Flash point	: Not available.
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product.
Chemical stability	: The product is stable.
Possibility of hazardous Reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1,1,1 - trifluoroethane	LC50 Inhalation Gas. LC50 Inhalation Vapor	Rat Rat	>54 pph 1080000 ppm	4 hours 1 hours
Pentafluoroethane	LC50 Inhalation Vapor	Rat	2910 g/m³	4 hours
1,1,1,2 - tetrafluoroethane	LC50 Inhalation Vapor	Rat	1500 g/m³	4 hours

Irritation and Corrosion	: Not Available.
Sensitization	: Not Available.
Mutagenicity	: Not Available.
Carcinogenicity	: Not Available.
Reproductive toxicity	: Not Available.
Teratogenicity	: Not Available.
Specific target toxicity (single exposure)	: Not Available.

Section 11. Toxicological information *(continue)*

Specific target toxicity
(repeated exposure) : Not Available.
Aspiration hazard : Not Available.

Potential acute health effects

Eye contact : Liquid can cause burns like frostbite.
Inhalation : No known significant effects or critical hazards.
Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
Ingestion : Ingestion of liquid can cause burns like frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include frostbite
Inhalation : No specific data.
Skin contact : Adverse symptoms may include frostbite.
Ingestion : Adverse symptoms may include frostbite

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic effects

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates : Not available.

Section 12. Ecological information

Toxicity : Not available.
Persistence and degradability : Not available.

Section 12. Ecological information *(continue)*

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
1,1,1 - trifluoroethane	1.73 to 1.74	//	Low
Pentafluoroethane	1.48	//	Low
1,1,1,2 - tetrafluoroethane	1.06	//	Low

Soil/water partition coefficient (K_{OC}) : Not available.
Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : for the disposal of this product refer to the current EPA regulation.

Section 14. Transportation information

	DOT	TDG	Mexico	IMDG	IATA
UN#	UN3337	UN3337	UN3337	UN3337	UN3337
UN proper shipping name	Refrigerant gas R 404A	Refrigerant gas R 404A	Refrigerant gas R 404A	Refrigerant gas R 404A	Refrigerant gas R 404A
Transport hazard class	2.2 	2.2 	2.2 	2.2 	2.2 
Packaging group	n/a	n/a	n/a	n/a	n/a
Environment	No.	No.	No.	No.	No.
Additional information	n/a	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). **Explosive Limit and Limited Quantity Index** 0.125 **Passenger Carrying Road or Rail Index** 75	n/a	n/a	n/a

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 14. Transportation information *(continue)*

Additional information	
DOT Classification	: Limited quantity Yes. Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg. Special provisions T50
TDG Classification	: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). Explosive Limit and Limited Quantity Index 0.125 Passenger Carrying Road or Rail Index 75
IATA	: Quantity limitation Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg
Special precautions for user	: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to IMO instruments	: Not available

Section 15. Regulatory information

U.S Federal regulations	: **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined
Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)	: Not listed.
Clean Air Act Section 602 Class I Substances	: Not listed.
Clean Air Act Section 602 Class II Substances	: Not listed.
DEA List I Chemicals (Precursor Chemicals)	: Not listed.
DEA List II Chemicals (Essential Chemicals)	: Not listed.

SARA 302/304
Composition/information on ingredients

No products were found.

Section 15. Regulatory information *(continue)*

SARA 304 RQ :Not applicable.

SARA 311/312
Classification :Sudden release of pressure.

Composition/information on ingredients

Not Applicable

State regulations

Massachusetts : None of the components are liste
d.
New York : None of the components are listed.
New Jersey : None of the components are listed.
Pennsylvania : None of the components are listed.
California Prop. 65 : This product does not require a Safe Harbor warning under California Prop. 65.

Montreal Protocol

Ingredient name	Status
HFC-143a	Annex F, Group I
HFC-125	Annex F, Group I
HFC-134a	Annex F, Group I

Canada Label Requirements : Class A: Compressed Gas

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health /	1
Flammability	0
Physical hazards	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.
The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health 

Flammability
Instability/Reactivity
Special

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Section 16. Other information *(continue)*

Procedure used to derive the classification

Classification	Justification
Press. Gas Liq. Gas, H280	Basis of test data

History

Date of issue/ revision : 02/20/2020
Previous issue : n/a
Version : 0.02
Key to abbreviation : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations