

SAFETY DATA SHEET



Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Section 1. Identification

- GHS product identifier** : Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials
- Other means of identification** : Not available.
- Part number** : Part Numbers containing 'HCLP', 'HBRP', and 'CDAP'
- Product type** : Solid-Article.

Identified uses

Hydrogen Chloride (HCl)
Hydrogen Bromide (HBr)
Air (CDA)
Carbon Dioxide (CO₂)
Helium (He)
Nitrogen (N₂)
Neon (Ne)
Argon (Ar)
Krypton (Kr)
Xenon (Xe)
Chlorosilanes (SiCl₄, SiH₃Cl, SiH₂Cl₂, SiHCl₃, and SiCl₄)
Some mixtures of the above materials (contact Pall Scientific and Laboratory Services, SLS, for technical assistance)

Not suitable for reactive fluoride gases such as F₂, HF, or BF₃.
Please refer to the appropriate Gaskleen purifier product data sheet from Pall Corporation for gas specific part numbers.
The data included in this Safety Data Sheet (SDS) is applicable to a welded metal assembly containing AresKleen HCLP, HBRP, or CDAP Purification Material—generally referred to as 'AresKleen HCLP-HBRP-CDAP purification material' throughout the SDS. Once the Gaskleen Purifier Assembly is installed and exposed to a process gas, the SDS for that gas must be consulted in conjunction with this SDS to determine the possible hazards.
Purifiers are shipped under slight pressure of 5 – 15 psig purified argon.

- Supplier** : Pall Corporation
25 Harbor Park Drive
Port Washington, NY 11050
Phone: (516) 484-5400
Web: www.Pall.com
- e-mail address of person responsible for this SDS** : reach_coordinator@pall.com
- Emergency telephone number (with hours of operation)** : CHEMTREC, U.S. : 1-800-424-9300
International: +1-703-527-3887
24 hours/day, 7 days/week
- Country of Origin:** : Made in USA.



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Page: 2/11

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified.

GHS label elements

Signal word : No signal word.

Hazard statements : No known significant effects or critical hazards.

Precautionary statements

General : Read Pall Instructions for use, prior to installing. Keep out of reach of children. If medical advice is needed, have product label and this document at hand.

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture (Article)

Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.

Product code : Part Numbers containing 'HCLP', 'HBRP', and 'CDAP'

Ingredient name	%	CAS number
Stainless Steel 316	80 - 100	
Activated Carbon.	0 - 20	7440-44-0
Magnesium chloride	<1	7786-30-3
Magnesium bromide	<1	7789-48-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.



Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification
Materials

SAFETY DATA SHEET

Page: 3/11

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Unlikely route of exposure if used under recommended conditions. Wash with water, continuing for 10 minutes. Remove contact lenses and raise eyelid first. Seek medical attention if adverse symptoms are experienced.
- Inhalation** : Unlikely route of exposure if used under recommended conditions. If dust resulting from damage to the unit is inhaled, remove casualty to fresh air. Seek medical attention if adverse symptoms experienced.
- Skin contact** : Unlikely route of exposure if used under recommended conditions. If experiencing irritation, wash with soap and water. Seek medical attention if irritation or other symptoms are experienced.
- Ingestion** : Unlikely route of exposure if used under recommended conditions. Rinse mouth with water and give plenty of water to drink. Do not induce vomiting unless instructed to do so by medical personnel.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

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 treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

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 : No specific fire or explosion hazard.

Pall Corporation provides the information contained herein in good faith and states that it represents the best information currently available. However, no warranties or representations are expressed or implied and Pall Corporation assumes no liabilities resulting from its use. Users should make their own investigations to determine the suitability of the information for their applications. In no way shall Pall Corporation be responsible for losses or damages resulting from the use or reliance upon this information.



Pall Corporation

SAFETY DATA SHEET

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification
Materials

Page: 4/11

Section 5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
halogenated compounds
metal oxide/oxides
- Special protective actions for fire-fighters** : Please note the assembly contains a reactive solid material. Contact of that material with water and/or air will generate heat. Contact of the material with skin or eyes will cause burns and/or severe irritation. AresKleen HCLP, HBRP, and CDAP purification Material is sold contained within a sealed assembly and no fire hazard is present under ordinary conditions. If the material is released from the assembly, it should be handled according to the guidelines set forth for bulk purification material containing magnesium metal.
- 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.

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. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. 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 non-emergency personnel".

- Environmental precautions** : 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).

Note the assembly contains a reactive solid material. Contact of AresKleen HCLP, HBRP, and CDAP purification materials with water or air will generate heat. Contact of the material with skin or eyes will cause severe irritation.

Serious harm from accidental release during handling of the undamaged, unused article is unlikely due to the form of the product and the quantity of hazardous materials present. Dust resulting from damage to the unit is potentially water - reactive and must be disposed of as hazardous waste.

Eliminate sources of ignition and other combustible materials. Wear protective clothing as indicated in Section 8. Place in a dry container. Use care in handling container as product and container may become sufficiently hot to burn the skin. Place container in a well ventilated area free of sources of ignition and other combustible materials and let stand until material is spent.

Handling must take into consideration any contaminants on the Gaskleen Purifier assembly as a result of use.

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Wear gloves while handling and all PPE appropriate for any of the contaminants/materials used in contact with the article, as the result of use. Ensure any areas are clear of gases. Remove purifier assembly and contain in a labeled box. Dispose of via a licensed waste disposal contractor.



Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification
Materials

Page: 5/11

SAFETY DATA SHEET

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8).
- 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. 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 original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

When not in use and before installation, store the Gaskleen Purifier assembly in a cool, clean, dry, well ventilated place in the unopened packaging as supplied.

Take precautions to maintain the integrity of the protective argon covering

Keep product in packaging as supplied until ready for use

Keep container tightly closed. Do not expose purification material to the atmosphere

Keep dry

Store assemblies at ambient temperature

Do not puncture container

The AresKleen HCLP, HBRP, and CDAP purification materials in the assembly will react with strong oxidizing agents. Avoid contact with these types of compounds except as per intended use as outlined in the product literature.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- 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.

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.

Pall Corporation provides the information contained herein in good faith and states that it represents the best information currently available. However, no warranties or representations are expressed or implied and Pall Corporation assumes no liabilities resulting from its use. Users should make their own investigations to determine the suitability of the information for their applications. In no way shall Pall Corporation be responsible for losses or damages resulting from the use or reliance upon this information.



Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification
Materials

Page: 6/11

SAFETY DATA SHEET

Section 8. Exposure controls/personal protection

- 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.
- 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.
- 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, particulate filter 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** : Solid. [Stainless Steel Gas Purifier.] Article contains AresKleen HCLP, HBRP, and CDAP purification materials - Small, round, black beads which are not visible unless the unit is damaged, as when supplied the beads are fully encased in a welded stainless steel assembly.
- Color** : Outer assembly metallic
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : AresKleen HCLP, HBRP, and CDAP purification material will combust or decompose before melting. Melting point of stainless steel 1400°C.
- Boiling point** : Not available.
- Flash point** : Not applicable.
- Evaporation rate** : Not applicable.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Relative density** : Not available.
- Solubility** : Insoluble in the following materials: cold water and hot water.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not applicable.

Pall Corporation provides the information contained herein in good faith and states that it represents the best information currently available. However, no warranties or representations are expressed or implied and Pall Corporation assumes no liabilities resulting from its use. Users should make their own investigations to determine the suitability of the information for their applications. In no way shall Pall Corporation be responsible for losses or damages resulting from the use or reliance upon this information.



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Page: 7/11

Section 9. Physical and chemical properties

Viscosity : Not available.

Section 10. Stability and reactivity

Reactivity : If the AresKleen HCLP, HBRP, and CDAP Purification Material in an assembly is exposed to toxic or corrosive gases or gases containing toxic elements, the material may contain these toxic materials or reaction products thereof. It may exhibit the characteristic of toxicity as defined in the hazardous waste regulations 40 CFR 261 Subpart C or D. Refer to applicable SDS for the specific toxic or corrosive gas in use to determine appropriate containment and disposal requirements.

Chemical stability : The purification material in the Assembly will react with strong oxidizing agents. Avoid contact with these types of compounds except as per intended use as outlined in the product literature.

Possibility of hazardous reactions : Under recommended conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : Strong oxidizing agents. Moisture.

Hazardous decomposition products : Under recommended conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

There is no data available.

Irritation/Corrosion

There is no data available.

Sensitization

There is no data available.

Carcinogenicity

There is no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Magnesium bromide	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Page: 8/11

Section 11. Toxicological information

Information on the likely routes of exposure : Dermal contact.

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

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

Short term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
- Potential delayed effects** : No known significant effects or critical hazards.

Long term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
- Potential delayed effects** : No known significant effects or critical hazards.

Potential chronic health 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 effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	280000 mg/kg



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Page: 9/11

Section 12. Ecological information

Toxicity

There is no data available.

Persistence and degradability

There is no data available.

Bioaccumulative potential

There is no data available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.
Additional information	-	-	-

AERG : Not applicable

Pall Corporation provides the information contained herein in good faith and states that it represents the best information currently available. However, no warranties or representations are expressed or implied and Pall Corporation assumes no liabilities resulting from its use. Users should make their own investigations to determine the suitability of the information for their applications. In no way shall Pall Corporation be responsible for losses or damages resulting from the use or reliance upon this information.



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification Materials

Page: 10/11

Section 14. Transport information

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 Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

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.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Magnesium bromide	0.1 - 1	No.	No.	No.	Yes.	No.

State regulations

Massachusetts : None of the components are listed.

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

Pall Corporation provides the information contained herein in good faith and states that it represents the best information currently available. However, no warranties or representations are expressed or implied and Pall Corporation assumes no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their applications. In no way shall Pall Corporation be responsible for losses or damages resulting from the use or reliance upon this information.



SAFETY DATA SHEET

Pall Corporation

Gaskleen® Purifier Assemblies employing AresKleen™ HCLP, HBRP, and CDAP Purification
Materials

Page: 11/11

Section 15. Regulatory information

No products were found.

Section 16. Other information

History

Date of issue mm/dd/yyyy : 06/30/2014
Date of previous issue : 02/15/2014
Version : 1.1
Revised Section(s) : 1, 5, 6, 7, 9, 10, 16.
Prepared by : KMK Regulatory Services Inc.
Key to abbreviations : 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

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Pall,  AresKleen and Gaskleen are trademarks of Pall Corporation.

® indicates a trademark registered in the USA.

©Pall Corporation, 2014