

SAFETY DATA SHEET

in accordance with 2015/830/EU (REACH, Annex II) 29 CFR 1910.1200, WHMIS 2015 and Safe Work Australia

Revision date: 16 October 2019

Initial date of issue: 7 October 2011

SDS No. 449A-6

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

ARC HT-S (Part A) (BLU, GY)

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

ARC Polymer Composite to be mixed with ARC HT-S (Part B) to provide a corrosion resistant coating for hot water/steam environment.

1.3. Details of the supplier of the safety data sheet

Company:

A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel. +1 978-469-6446 Fax: +1 978-469-6785
(Mon. - Fri. 8:30 - 5:00 PM EST)
SDS requests: www.chesterton.com
E-mail (SDS questions): ProductSDSs@chesterton.com
E-mail: customer.service@chesterton.com

Supplier:

Canada: A.W. Chesterton Company Ltd., 889 Fraser Drive,
Unit 105, Burlington, Ontario L7L 4X8 – Tel. 905-335-5055
EU: Chesterton International GmbH, Am Lenzenfleck 23,
D85737 Ismaning, Germany – Tel. +49-89-996-5460

1.4. Emergency telephone number

24 hours per day, 7 days per week
Call Infotrac: 1-800-535-5053
Outside N. America: +1 352-323-3500 (collect)
NSW Poisons Information Centre (Australia): 13 11 26

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP] / 29 CFR 1910.1200 / WHMIS 2015 / GHS

Serious eye damage, Category 1, H318
Skin irritation, Category 2, H315
Skin sensitization, Category 1, H317
Hazardous to the aquatic environment, Chronic, Category 3, H412

2.1.2. Australian statement of hazardous nature

Hazardous according to criteria of Safe Work Australia.

2.1.3. Additional information

For full text of H-statements: see SECTIONS 2.2 and 16.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 [CLP] / 29 CFR 1910.1200 / WHMIS 2015 / GHS

Hazard pictograms:



Signal word:

Danger

Hazard statements:	H318	Causes serious eye damage.
	H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H412	Harmful to aquatic life with long lasting effects.
Precautionary statements:	P260	Do not breathe mist/spray.
	P264	Wash hands thoroughly after handling.
	P272	Contaminated work clothing must not be allowed out of the workplace.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P305/351/338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P310	Immediately call a POISON CENTER or doctor.
	P302/352	IF ON SKIN: Wash with plenty of soap and water.
	P333/313	If skin irritation or rash occurs: Get medical advice/attention.
	P362/364	Take off contaminated clothing and wash it before reuse.
	P501	Dispose of contents/container to an approved waste disposal plant.

Supplemental information: None

2.3. Other hazards

The safety and health hazards are detailed separately by part. The final cured material is considered nonhazardous. Upon machining, refer to the precautions in the safety data sheets for Part A and Part B.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Hazardous Ingredients ¹	% Wt.	CAS No./ EC No.	REACH Reg. No.	CLP/GHS Classification
Epoxy resin (number average molecular weight <= 700)	15-24	28064-14-4, 9003-36-5/ 500-006-8	NA	Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 2, H411
1,4-bis(2,3-epoxypropoxy)butane	5-10	2425-79-8 219-371-7	NA	Acute Tox. 4, H302, H332, H312 Eye Dam. 1, H318 Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 3, H412
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	5-9	2530-83-8 219-784-2	NA	Eye Dam. 1, H318
Other ingredients:				
Calcium carbonate	10-20	1317-65-3	NA	Not classified*
Aluminum oxide	10-20	1344-28-1 215-691-6	NA	Not classified*
Silica (Quartz)	1-5	14808-60-7 238-878-4	NA	Not classified*
Titanium dioxide	1-5	13463-67-7 236-675-5	NA	Not classified*

For full text of H-statements: see SECTION 16.

*Substance with a workplace exposure limit.

¹ Classified according to: • 29 CFR 1910.1200, 1915, 1916, 1917, Mass. Right-to-Know Law (ch. 40, M.G.L..O. 111F)
• 1272/2008/EC, GHS, REACH
• WHMIS 2015
• Safe Work Australia

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: Remove to fresh air. If not breathing, administer artificial respiration. Contact physician.

Skin contact: Remove contaminated clothing. Wash skin with soap and water. Contact physician if irritation persists.

Eye contact: Flush eyes for at least 15 minutes with large amounts of water. Contact physician if irritation persists.

Ingestion: Do not induce vomiting. Contact physician immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. Avoid contact with the product while providing aid to the victim. Avoid breathing mist. See section 8.2.2 for recommendations on personal protective equipment.

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

Causes serious eye damage. May cause skin sensitization as evidenced by rashes or hives: High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation, headache, dizziness, nausea and other central nervous system effects.

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

Treat symptoms.

SECTION 5: FIREFIGHTING MEASURES**5.1. Extinguishing media**

Suitable extinguishing media: Carbon dioxide, dry chemical, foam or water fog

Unsuitable extinguishing media: None known

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon Monoxide, aldehydes and other toxic fumes. See section 10.6 for additional information.

5.3. Advice for firefighters

Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Flammability Classification: –

HAZCHEM Emergency Action Code: 2 Z

SECTION 6: ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

Avoid skin contact. Utilize exposure controls and personal protection as specified in Section 8.

6.2. Environmental Precautions

Keep out of sewers, streams and waterways.

6.3. Methods and material for containment and cleaning up

Scoop up and transfer to a suitable container for disposal.

6.4. Reference to other sections

Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE**7.1. Precautions for safe handling**

Utilize exposure controls and personal protection as specified in Section 8. Wash hands thoroughly after handling. Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated work clothing must not be allowed out of the workplace. Contaminated leather including shoes cannot be decontaminated and should be discarded. Avoid creating and breathing dust during removal, drilling, grinding, sawing or sanding.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry area.

7.3. Specific end use(s)

No special precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters****Occupational exposure limit values**

Ingredients	OSHA PEL ¹		ACGIH TLV ²		UK WEL ³		AUSTRALIA ES ⁴	
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³
Epoxy resin (number average molecular weight <= 700)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,4-bis(2,3-epoxypropoxy)butane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calcium carbonate	(total) (resp.)	15 5	N/A	N/A	(inhal.) (resp.)	10 4	N/A	10
Aluminum oxide	N/A	15	(resp.)	1	(inhal.) (resp.)	10 4	(insp.)	10
Silica (Quartz)	(resp.) (total)	0.05 0.3	(resp.)	0.025	N/A	0.1	(resp.)	0.1
Titanium dioxide	N/A	15	N/A	10	(inhal.) (resp.)	10 4	N/A	10

*Recommended exposure limit: 5 ppm (8-hr TWA), 10 ppm (STEL).

¹ United States Occupational Health & Safety Administration permissible exposure limits

² American Conference of Governmental Industrial Hygienists threshold limit values

³ EH40 Workplace exposure limits, Health & Safety Executive

⁴ Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants

Biological limit values

Not available

Derived No Effect Level (DNEL) according to Regulation (EC) No 1907/2006:**Workers**

Substance	Route of exposure	Potential health effects	DNEL
Epoxy resin (CAS no. 9003-36-5)	Inhalation	Acute effects, local / Acute effects, systemic	no data available
		Chronic effects, local	no data available
		Chronic effects, systemic	29.39 mg/m ³
	Dermal	Acute effects, local	0.0083 mg/cm ²
		Acute effects, systemic Chronic effects, local	no data available
		Chronic effects, systemic	104.15 mg/kg bw/day
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Inhalation	Acute effects, systemic	147 mg/m ³
		Chronic effects, systemic	147 mg/m ³
	Dermal	Acute effects, systemic	21 mg/kg bw/day
		Chronic effects, systemic	21 mg/kg bw/day
Titanium dioxide	Inhalation	Chronic effects	10 mg/m ³

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No 1907/2006:

Substance	Environmental protection target	PNEC
Epoxy resin (CAS no. 9003-36-5)	Fresh water	0.003 mg/l
	Marine water	0.0003 mg/l
	Water, intermittent release	0.0254 mg/l
	Freshwater sediments	0.294 mg/kg
	Marine sediments	0.0294 mg/kg
	Microorganisms in sewage treatment	10 mg/l
	Soil (agricultural)	0.237 mg/kg
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Fresh water	1 mg/l
	Marine water	0.1 mg/l
	Freshwater sediments	0.79 mg/kg
	Marine sediments	0.079 mg/kg
	Microorganisms in sewage treatment	> 10 mg/l
	Soil (agricultural)	0.13 mg/kg
Titanium dioxide	Fresh water	0.184 mg/l
	Marine water	0.0184 mg/l
	Water	0.193 mg/l
	Freshwater sediments	1000 mg/kg
	Marine sediments	100 mg/kg
	Microorganisms in sewage treatment	100 mg/l
	Soil (agricultural)	100 mg/kg

8.2. Exposure controls**8.2.1. Engineering measures**

Provide sufficient ventilation to keep the vapor concentrations below the exposure limits. If necessary, provide local exhaust. If it is necessary to alter the final cured product such that dust may be generated, use adequate dust extraction or damp down.

8.2.2. Individual protection measures

Respiratory protection: Not normally needed. In case of insufficient ventilation, utilize an approved organic vapor respirator (e.g., EN filter type A/P). During spraying, wear suitable respiratory equipment.

Protective gloves: Chemical resistant gloves (e.g., butyl rubber, nitrile)

Eye and face protection: Safety goggles.

Other: Impervious clothing as necessary to prevent skin contact.

8.2.3. Environmental exposure controls

Refer to sections 6 and 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Physical state	viscous liquid	Odour	mild
Colour	gray	Odour threshold	not determined
Initial boiling point	not determined	Vapour pressure @ 20°C	not determined
Melting point	not determined	% Aromatics by weight	0%
% Volatile (by volume)	< 1%	pH	not applicable
Flash point	113°C (236°F)	Relative density	1.8 kg/l
Method	PM Closed Cup	Weight per volume	14.96 lbs/gal.
Viscosity	7,000 cps @ 25°C	Coefficient (water/oil)	< 1
Autoignition temperature	not applicable	Vapour density (air=1)	> 1
Decomposition temperature	not determined	Rate of evaporation (ether=1)	< 1
Upper/lower flammability or explosive limits	not applicable	Solubility in water	insoluble
Flammability (solid, gas)	not applicable	Oxidising properties	not applicable
Explosive properties	not applicable		

9.2. Other information

None

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

[3-(2,3-epoxypropoxy)propyl]trimethoxysilane: hydrolyzes in water or moist air, releasing methanol and organosilicons.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

No dangerous reactions known under conditions of normal use.

10.4. Conditions to avoid

Open flames and high temperatures.

10.5. Incompatible materials

Strong acids/bases and strong oxidizers like liquid Chlorine and concentrated Oxygen.

10.6. Hazardous decomposition products

Carbon Monoxide, aldehydes and other toxic fumes. May generate Formaldehyde at temperatures greater than 150°C (300°F). Hydrolyzes in water or moist air, releasing methanol and organosilicons.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects**

Primary route of exposure under normal use: Inhalation, skin and eye contact. Personnel with pre-existing skin or lung allergies may be aggravated by exposure.

Acute toxicity -

Oral: ATE-mix = 13141 mg/kg. Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LD50, rat	> 5,000 mg/kg
Aluminum oxide	LD50, rat	> 5,000 mg/kg
1,4-bis(2,3-epoxypropoxy)butane	LD50, rat	1,163 mg/kg
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LD50, rat	8,025 mg/kg
Titanium dioxide	LD50, rat	> 10,000 mg/kg

Dermal: ATE-mix = 12768 mg/kg. Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LC50, rabbit	> 3,000 mg/kg
1,4-bis(2,3-epoxypropoxy)butane	LD50, rabbit	1,130 mg/kg
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LD50, rabbit	4,248 mg/kg
Titanium dioxide	LC50, rabbit	> 10,000 mg/kg

Inhalation: High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation, headache, dizziness, nausea and other central nervous system effects. ATE-mix = 124.3 mg/l (vapor), 16.95 mg/l (mist). Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin	LC50 inhalation, rat	> 1.7 mg/l/4 h
1,4-bis(2,3-epoxypropoxy)butane	LC50 inhalation, rat, 6 h	> 250 ppm
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	LC50 inhalation, rat, 4 h, Aerosol	5.3 mg/l

Skin corrosion/irritation: Causes skin irritation.

Substance	Test	Result
Epoxy resin	Skin irritation, rabbit	Moderate irritation
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Skin irritation, rabbit	Mild irritation

Serious eye damage/irritation: Causes serious eye damage.

Substance	Test	Result
Epoxy resin	Eye irritation, rabbit	Slightly irritating
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Eye irritation, rabbit	Corrosive

Respiratory or skin sensitisation: May cause an allergic skin reaction.

Substance	Test	Result
Epoxy resin	Skin sensitization, guinea pig	Sensitizing
1,4-bis(2,3-epoxypropoxy)butane	Skin sensitization, guinea pig	Sensitizing
[3-(2,3-epoxypropoxy)propyl]trimethoxysilane	Skin sensitization, human, guinea pig	Not sensitizing

Germ cell mutagenicity: Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

Carcinogenicity: The International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) have classified inhaled silica as a human carcinogen. IARC has designated inhaled titanium dioxide as possibly carcinogenic to humans (group 2B). Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

Reproductive toxicity: Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

STOT – single exposure: Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met.

STOT – repeated exposure: Epoxy resin, [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: based on available data, the classification criteria are not met. 1,4-bis(2,3-epoxypropoxy)butane: 28-day oral subchronic study (4 weeks) rat male / female, NOAEL = 200 mg/kg. Repeated inhalation of respirable free silica may cause scarring of the lungs with cough and shortness of breath. Silicosis, a delayed lung injury that is a disabling, progressive and sometimes fatal pulmonary fibrosis, may result.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	Sub-chronic NOAEL, oral, 90 days, rat, male / female (OECD 408)	250 mg/kg

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: The silica and titanium dioxide in this product do not separate from the mixture or in of themselves become airborne, therefore, do not present a hazard in normal use.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

12.1. Toxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

12.2. Persistence and degradability

Unreacted components (Parts A and B), improperly released to the environment, can cause ground and water pollution. Epoxy resin, 1,4-bis(2,3-epoxypropoxy)butane: not readily biodegradable. [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: hydrolyzes in water or moist air, releasing methanol and organosilicons.

12.3. Bioaccumulative potential

Epoxy resin, 1,4-bis(2,3-epoxypropoxy)butane: has the potential to bioaccumulate. [3-(2,3-epoxypropoxy)propyl]trimethoxysilane: low potential for bioaccumulation.

12.4. Mobility in soil

Viscous liquid. Insoluble in water. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). Epoxy resin: if product enters soil, it will be mobile and may contaminate groundwater.

12.5. Results of PBT and vPvB assessment

Not available

12.6. Other adverse effects

None known

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Combine resin and curative. The final cured material is considered nonhazardous. Unreacted components are a special waste. Incinerate waste product when in liquid form with a properly licensed facility. Check local, state and national/federal regulations and comply with the most stringent requirement. This product is classified as a hazardous waste according to 2008/98/EC.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

ADG/ADR/RID/ADN/IMDG/ICAO: UN3082

TDG: UN3082

US DOT: UN3082

14.2. UN proper shipping name

ADG/ADR/RID/ADN/IMDG/ICAO: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)

TDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)

US DOT: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)

14.3. Transport hazard class(es)

ADG/ADR/RID/ADN/IMDG/ICAO: 9

TDG: 9

US DOT: 9

14.4. Packing group

ADG/ADR/RID/ADN/IMDG/ICAO: III
TDG: III
US DOT: III

14.5. Environmental hazards

MARINE POLLUTANT

14.6. Special precautions for user

NO SPECIAL PRECAUTIONS FOR USER

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

NOT APPLICABLE

14.8. Other information

US DOT: ERG NO.171,

May be shipped as NON-RESTRICTED in non-bulk packagings (119 gallons or less) by motor vehicle, rail car or aircraft.
 (49 CFR 171.4(c))

IMDG: EmS. F-A, S-F

May be shipped as NON-RESTRICTED in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less. (IMDG CODE Amendment 37-14, 2.10.2.7)

ICAO/IATA: May be shipped as NON-RESTRICTED in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less. (IATA Dangerous Goods Regulation 56th edition, 4.4 Special Provisions A197)

ADR: Classification code M6 Tunnel restriction code (E)

May be shipped as NON-RESTRICTED in single or combination packagings containing a net quantity per single or inner packaging of 5 L or less. (ADR 2015 Volume 1, Chapter 3.3 Special Provisions 375)

ADG HAZCHEM CODE: ●3Z **HIN:** 90

SECTION 15: REGULATORY INFORMATION**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****15.1.1. EU regulations**

Authorisations under Title VII: Not applicable

Restrictions under Title VIII: None

Other EU regulations: Directive 94/33/EC on the protection of young people at work.

15.1.2. National regulations**US EPA SARA TITLE III****312 Hazards:**

Serious eye damage
 Skin irritation
 Skin sensitization

313 Chemicals:

None

Other national regulations: National implementation of the EC Directive referred to in section 15.1.1.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms: ADG: Australian Dangerous Goods Code
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
 ATE: Acute Toxicity Estimate
 BCF: Bioconcentration Factor
 cATpE: Converted Acute Toxicity point Estimate
 CLP: Classification Labelling Packaging Regulation (1272/2008/EC)
 ES: Exposure Standard
 GHS: Globally Harmonized System
 ICAO: International Civil Aviation Organization
 IMDG: International Maritime Dangerous Goods
 LC50: Lethal Concentration to 50 % of a test population
 LD50: Lethal Dose to 50% of a test population
 LOEL: Lowest Observed Effect Level
 N/A: Not Applicable
 NA: Not Available
 NOEC: No Observed Effect Concentration
 NOEL: No Observed Effect Level
 OECD: Organization for Economic Co-operation and Development
 PBT: Persistent, Bioaccumulative and Toxic substance
 (Q)SAR: Quantitative Structure-Activity Relationship
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (1907/2006/EC)
 REL: Recommended Exposure Limit
 RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
 SDS: Safety Data Sheet
 STEL: Short Term Exposure Limit
 STOT RE: Specific Target Organ Toxicity, Repeated Exposure
 STOT SE: Specific Target Organ Toxicity, Single Exposure
 TDG: Transportation of Dangerous Goods (Canada)
 TWA: Time Weighted Average
 US DOT: United States Department of Transportation
 vPvB: very Persistent and very Bioaccumulative substance
 WEL: Workplace Exposure Limit
 WHMIS: Workplace Hazardous Materials Information System
 Other abbreviations and acronyms can be looked up at www.wikipedia.org.

Key literature references and sources for data: Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
 Chemical Classification and Information Database (CCID)
 European Chemicals Agency (ECHA) - Information on Chemicals
 Hazardous Chemical Information System (HCIS)
 National Institute of Technology and Evaluation (NITE)
 Swedish Chemicals Agency (KEMI)
 U.S. National Library of Medicine Toxicology Data Network (TOXNET)

Procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008 [CLP] / GHS:

Classification	Classification procedure
Eye Dam. 1, H318	Calculation method
Skin Irrit. 2, H315	Calculation method
Skin Sens. 1, H317	Calculation method
Aquatic Chronic 3, H412	Calculation method

Relevant H-statements: H302: Harmful if swallowed.
 H312: Harmful in contact with skin.
 H315: Causes skin irritation.
 H317: May cause an allergic skin reaction.
 H318: Causes serious eye damage.
 H319: Causes serious eye irritation.
 H332: Harmful if inhaled.
 H411: Toxic to aquatic life with long lasting effects.
 H412: Harmful to aquatic life with long lasting effects.

Hazard pictogram names: Corrosion, exclamation mark

Further information: None

Date of last revision: 16 October 2019

Changes to the SDS in this revision: Sections 1.1, 1.3, 2.1, 2.2, 3, 8.1, 9.1, 15.1.2, 16.

This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user's particular purpose. The user must make their own determination as to suitability.

SAFETY DATA SHEET

in accordance with REACH (1907/2006/EC, as amended by 2015/830/EU) 29 CFR 1910.1200 and WHMIS 2015

Revision date: 24 September 2018

Initial date of issue: 11 October 2011

SDS No. 449B-8

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

ARC HT-S (Part B) (BLU, GY)

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

ARC Polymer Composite to be mixed with ARC HT-S (Part A) to provide a corrosion resistant coating for hot water/steam environment.

1.3. Details of the supplier of the safety data sheet

Company:

A.W. CHESTERTON COMPANY
860 Salem Street
Groveland, MA 01834-1507, USA
Tel. +1 978-469-6446 Fax: +1 978-469-6785
(Mon. - Fri. 8:30 - 5:00 PM EST)
SDS requests: www.chesterton.com
E-mail (SDS questions): ProductMSDSs@chesterton.com
E-mail: customer.service@chesterton.com

Supplier:

Canada: A.W. Chesterton Company Ltd., 889 Fraser Drive,
Unit 105, Burlington, Ontario L7L 4X8 – Tel. 905-335-5055
EU: Chesterton International GmbH, Am Lenzenfleck 23,
D85737 Ismaning, Germany – Tel. +49-89-996-5460

1.4. Emergency telephone number

24 hours per day, 7 days per week
Call Infotrac: 1-800-535-5053
Outside N. America: +1 352-323-3500 (collect)
NSW Poisons Information Centre (Australia): 13 11 26

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]

Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318
Acute toxicity, Category 4, H302/332
Skin sensitization, Category 1, H317
Specific target organ toxicity – repeated exposure, Category 2, H373 (kidneys, liver, muscles)
Hazardous to the aquatic environment, Chronic, Category 3, H412

2.1.2. Classification according to 29 CFR 1910.1200 / WHMIS 2015

Same as section 2.1.1.

2.1.3. Australian statement of hazardous nature

Hazardous according to criteria of Safe Work Australia.

2.1.4. Additional information

For full text of H-statements: see SECTIONS 2.2 and 16.

2.2. Label elements**2.2.1. Labelling according to Regulation (EC) No 1272/2008 [CLP]****Hazard pictograms:****Signal word:**

Danger

Hazard statements:

H314 Causes severe skin burns and eye damage.
 H302/332 Harmful if swallowed or if inhaled.
 H317 May cause an allergic skin reaction.
 H373 May cause damage to the kidneys, liver and muscles through prolonged or repeated exposure.
 H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

P260 Do not breathe spray.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/clothing and eye/face protection.
 P303/361/353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P305/351/338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P301/330/331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P310 Immediately call a POISON CENTER or doctor/physician.
 P363 Wash contaminated clothing before reuse.

Supplemental information: None**2.2.2. Labelling according to 29 CFR 1910.1200 / WHMIS 2015****Hazard pictograms:** Same as section 2.2.1.**Signal word:** Same as section 2.2.1.**Hazard statements:** Same as section 2.2.1.**Precautionary statements:**

P260 Do not breathe spray.
 P264 Wash hands thoroughly after handling.
 P270 Use only outdoors or in a well-ventilated area.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/clothing and eye/face protection.
 P303/361/353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P304/340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 P305/351/338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P301/330/331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P310 Immediately call a POISON CENTER or doctor/physician.
 P363 Wash contaminated clothing before reuse.
 P501 Dispose of contents/container to an approved waste disposal plant.

Supplemental information:**2.3. Other hazards**

The safety and health hazards are detailed separately for Part A and Part B. The final cured material is considered nonhazardous. Upon machining, refer to the precautions in the safety data sheets for Part A and Part B.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.2. Mixtures**

Hazardous Ingredients ¹	% Wt.	CAS No./ EC No.	REACH Reg. No.	CLP/GHS Classification
Methyleneoxide, polymer with benzenamine, hydrogenated	45-55	135108-88-2 603-894-6	01-211998 3522-33	Acute Tox. 4, H302 Skin Corr. 1C, H314 Skin Sens. 1, H317 STOT RE, H373 (oral, kidneys) Aquatic Chronic 3, H412

4,4'-Methylenebis(cyclohexylamine)	40-50	1761-71-3 217-168-8	01-211954 1673-38	Acute Tox. 4, H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1B, H317 STOT RE 2, H373 (liver, muscles)
Diethylenetriamine*	1-5	111-40-0 203-865-4	01-211947 3793-27	Acute Tox. 2, H330 Acute Tox. 4, H302/312 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335 Skin Sens. 1, H317

Other ingredients: di-"Isononyl" phthalate	0-0.7	28553-12-0 249-079-5	NA	Not classified
---	-------	-------------------------	----	----------------

*This component is toxic by inhalation if sprayed or if aerosol/mist is created. Refer to section 11 for additional toxicity information. For full text of H-statements: see SECTION 16.

¹ Classified according to:

- 29 CFR 1910.1200, 1915, 1916, 1917, Mass. Right-to-Know Law (ch. 40, M.G.L.O. 111F)
- 1272/2008/EC, GHS, REACH
- WHMIS 2015
- Safe Work Australia

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation: Remove to fresh air. If not breathing, administer artificial respiration. Contact physician.

Skin contact: Flood area with water while removing contaminated clothing. Wash clothing before reuse. Consult physician.

Eye contact: Flush eyes for at least 30 minutes with large amounts of water. Consult physician.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Contact physician immediately.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. Avoid contact with the product while providing aid to the victim. Do not breathe mist. See section 8 for recommendations on personal protective equipment.

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

Direct contact will cause burns to skin, eyes and mucous membranes. High vapor concentrations and mist can cause severe eye and respiratory tract irritation. May cause skin sensitization as evidenced by rashes or hives.

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

Treat symptoms.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide, dry chemical, alcohol-resistant foam

Unsuitable extinguishing media: No data available

5.2. Special hazards arising from the substance or mixture

Incomplete combustion may form carbon monoxide. May generate: ammonia gas, toxic nitrogen oxide gases.

5.3. Advice for firefighters

Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Flammability Classification: –

HAZCHEM Emergency Action Code: 3 Z

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. Provide adequate ventilation. Avoid skin contact. Utilize exposure controls and personal protection as specified in Section 8.

6.2. Environmental Precautions

Keep out of sewers, streams and waterways.

6.3. Methods and material for containment and cleaning up

Contain spill to a small area. Scoop up and transfer to a suitable container for disposal.

6.4. Reference to other sections

Refer to section 13 for disposal advice.

SECTION 7: HANDLING AND STORAGE**7.1. Precautions for safe handling**

Do not breathe spray. Utilize exposure controls and personal protection as specified in Section 8. Do not contaminate with sodium nitrite or other nitrosating agents, which could cause the formation of cancer-causing nitrosamine. Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated and should be discarded. Avoid creating and breathing dust during removal, drilling, grinding, sawing or sanding.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry area.

7.3. Specific end use(s)

No special precautions.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters****Occupational exposure limit values**

Ingredients	OSHA PEL ¹		ACGIH TLV ²		UK WEL ³		AUSTRALIA ES ⁴	
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³
Methyleneoxide, polymer with benzenamine, hydrogenated	–	–	–	–	–	–	–	–
4,4'-Methylenebis(cyclohexylamine)	–	–	–	–	–	–	–	–
Diethylenetriamine	–	–	1 (skin)	4.2	1	4.3	1 (skin)	4.2
di-"Isononyl" phthalate	–	–	–	–	–	5	–	–

¹ United States Occupational Health & Safety Administration permissible exposure limits

² American Conference of Governmental Industrial Hygienists threshold limit values

³ EH40 Workplace exposure limits, Health & Safety Executive

⁴ Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003]

Derived No Effect Level (DNEL) according to Regulation (EC) No 1907/2006:**Workers**

Not available Not available

3951 Predicted No Effect Concentration (PNEC) according to Regulation (EC) No 1907/2006:

Not available Not available

8.2. Exposure controls**8.2.1. Engineering measures**

Provide sufficient ventilation to keep the vapor concentrations below the exposure limits. If necessary, provide local exhaust. If it is necessary to alter the final cured product such that dust may be generated, use adequate dust extraction or damp down.

8.2.2. Individual protection measures

Respiratory protection: Not normally needed. In case of insufficient ventilation, utilize an approved organic vapor respirator (e.g., EN filter type A/P2). During spraying, wear suitable respiratory equipment.

Protective gloves: Chemical resistant gloves (e.g. neoprene, nitrile).

Eye and face protection: Safety goggles.

Other: Impervious clothing as necessary to prevent skin contact.

8.2.3. Environmental exposure controls

Refer to sections 6 and 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Physical state	viscous liquid	Odour	amine
Colour	blue and black	Odour threshold	not determined
Initial boiling point	> 215°C (> 420°F)	Vapour pressure @ 20°C	not determined
Melting point	not determined	% Aromatics by weight	None
% Volatile (by volume)	None	pH	not applicable
Flash point	> 100°C (> 212°F)	Relative density	1.000 – 1.019 kg/l
Method	PM Closed Cup	Weight per volume	8.32 - 8.48 lbs/gal.
Viscosity	1500 - 2400 cps @ 25°C	Coefficient (water/oil)	< 1
Autoignition temperature	not determined	Vapour density (air=1)	> 1
Decomposition temperature	not determined	Rate of evaporation (ether=1)	< 1
Upper/lower flammability or explosive limits	not determined	Solubility in water	slightly soluble
Flammability (solid, gas)	not applicable	Oxidising properties	not determined
Explosive properties	not determined		

9.2. Other information

VOC, EPA 24: 0.6 lbs/gal.

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

Refer to sections 10.3 and 10.5.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

No dangerous reactions known under conditions of normal use.

10.4. Conditions to avoid

Open flames and high temperatures.

10.5. Incompatible materials

Mineral and organic acids and strong oxidizers like liquid Chlorine and concentrated Oxygen.

10.6. Hazardous decomposition productsNitric acid, NO_x, Ammonia, Carbon Monoxide, Carbon Dioxide, nitrosamines and other toxic fumes.**SECTION 11: TOXICOLOGICAL INFORMATION****11.1. Information on toxicological effects****Primary route of exposure under normal use:** Inhalation, skin and eye contact.**Acute toxicity -****Oral:** Harmful if swallowed. ATE-mix = 410 mg/kg

Substance	Test	Result
Methyleneoxide, polymer with benzenamine, hydrogenated	LD50, rat	449 mg/kg (estimated)
4,4'-Methylenebis(cyclohexylamine)	LD50, rat	380 mg/kg
Diethylenetriamine	LD50, rat	1080 mg/kg

Dermal: Based on available data on components, the classification criteria are not met. ATE-mix = 2264 mg/kg

Substance	Test	Result
Methyleneoxide, polymer with benzenamine, hydrogenated	LD50, rabbit	2673 mg/kg
4,4'-Methylenebis(cyclohexylamine)	LD50, rabbit	2110 mg/kg
Diethylenetriamine	LD50, rabbit	1045 mg/kg

Inhalation: Harmful if inhaled (aerosol/mist). ATE-mix = 3.43 mg/l (aerosol/mist).

Substance	Test	Result
Diethylenetriamine	LC50, rat, 4 h	> 0.07 - < .3 mg/l (aerosol/mist)
Diethylenetriamine	LC50, rat, 4 h	No mortality at vapor saturation level

Skin corrosion/irritation: Causes burns.

Substance	Test	Result
Formaldehyde, polymer with benzenamine, hydrogenated + 4,4'-Methylenebis(cyclohexylamine)	In vitro test	Corrosive
Diethylenetriamine	Skin irritation, rabbit	Corrosive

Serious eye damage/irritation: Causes serious eye damage.

Substance	Test	Result
Diethylenetriamine	Eye irritation	Corrosive

Respiratory or skin sensitisation: May cause skin sensitization as evidenced by rashes or hives.

Substance	Test	Result
Diethylenetriamine	Skin sensitization, guinea pig	Sensitizing

Germ cell mutagenicity: Diethylenetriamine: based on available data, the classification criteria are not met.

Carcinogenicity: This product contains no carcinogens as listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the Occupational Safety and Health Administration (OSHA) or Regulation (EC) No 1272/2008.

Reproductive toxicity: Diethylenetriamine: Not expected to cause toxicity.

STOT – single exposure: Diethylenetriamine: may cause respiratory irritation.

STOT – repeated exposure: May cause damage to the kidneys, liver and muscles through prolonged or repeated exposure, based on data from similar materials (mixed polycycloaliphatic amines).

Aspiration hazard: Based on available data, the classification criteria are not met.

Other information: None known

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. The information given below is based on a knowledge of the components and the ecotoxicology of similar substances.

12.1. Toxicity

Harmful to aquatic life with long lasting effects. Methyleneoxide, polymer with benzenamine, hydrogenated: 48 h EC50 (for daphnia) = 15.4 mg/l.

12.2. Persistence and degradability

Unreacted components (Parts A and B), improperly released to the environment, can cause ground and water pollution. Diethylenetriamine, 4,4'-Methylenebis(cyclohexylamine): expected to be resistant to biodegradation.

12.3. Bioaccumulative potential

Methyleneoxide, polymer with benzenamine, hydrogenated: does not bioaccumulate. 4,4'-Methylenebis(cyclohexylamine): low potential for bioaccumulation (bioconcentration factor < 100, estimated). Diethylenetriamine: bioconcentration in aquatic organisms is not expected to be significant (log Kow: -2.13).

12.4. Mobility in soil

Liquid. Slightly soluble in water. In determining environmental mobility, consider the product's physical and chemical properties (see Section 9). Diethylenetriamine: expected to be highly mobile in soil.

12.5. Results of PBT and vPvB assessment

Not available

12.6. Other adverse effects

None known

SECTION 13: DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Combine resin and curative. The final cured material is considered nonhazardous. Unreacted components are a special waste (classified as hazardous according to 2008/98/EC). Incinerate waste product when in liquid form with a properly licensed facility. Check local, state and national/federal regulations and comply with the most stringent requirement.

SECTION 14: TRANSPORT INFORMATION**14.1. UN number**

ADR/RID/ADN/IMDG/ICAO: UN2735

TDG: UN2735

US DOT: UN2735

14.2. UN proper shipping name

ADR/RID/ADN/IMDG/ICAO: AMINES, LIQUID, CORROSIVE, N.O.S. (CYCLOALIPHATIC AMINE)

TDG: AMINES, LIQUID, CORROSIVE, N.O.S. (CYCLOALIPHATIC AMINE)

US DOT: AMINES, LIQUID, CORROSIVE, N.O.S. (CYCLOALIPHATIC AMINE)

14.3. Transport hazard class(es)

ADR/RID/ADN/IMDG/ICAO: 8

TDG: 8

US DOT: 8

14.4. Packing group

ADR/RID/ADN/IMDG/ICAO: III

TDG: III

US DOT: III

14.5. Environmental hazards

NO ENVIRONMENTAL HAZARDS

14.6. Special precautions for user

NO SPECIAL PRECAUTIONS FOR USER

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

NOT APPLICABLE

14.8. Other information

US DOT: Shipped as Consumer Commodity ORM-D in packaging having a rated capacity gross weight of 66 lb. or less (49 CFR 173.154(c)). ERG NO. 153

IMDG: EmS F-A, S-B, IMDG segregation group 18-Alkalis

ADR: Classification code C7, Tunnel restriction code (E)

SECTION 15: REGULATORY INFORMATION**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****15.1.1. EU regulations**

Authorisations under Title VII: Not applicable

Restrictions under Title VIII: None

Other EU regulations: Directive 94/33/EC on the protection of young people at work.

15.1.2. National regulations

US EPA SARA TITLE III

312 Hazards:

See section 2.1.1.

313 Chemicals:

None

Other national regulations: National implementation of the EC Directive referred to in section 15.1.1.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms: ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE: Acute Toxicity Estimate
BCF: Bioconcentration Factor
cATpE: Converted Acute Toxicity point Estimate
CLP: Classification Labelling Packaging Regulation (1272/2008/EC)
ES: Exposure Standard
GHS: Globally Harmonized System
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
LC50: Lethal Concentration to 50 % of a test population
LD50: Lethal Dose to 50% of a test population
LOEL: Lowest Observed Effect Level
N/A: Not Applicable
NA: Not Available
NOEC: No Observed Effect Concentration
NOEL: No Observed Effect Level
OECD: Organization for Economic Co-operation and Development
PBT: Persistent, Bioaccumulative and Toxic substance
(Q)SAR: Quantitative Structure-Activity Relationship
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (1907/2006/EC)
REL: Recommended Exposure Limit
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
STOT RE: Specific Target Organ Toxicity, Repeated Exposure
STOT SE: Specific Target Organ Toxicity, Single Exposure
TDG: Transportation of Dangerous Goods (Canada)
TWA: Time Weighted Average
US DOT: United States Department of Transportation
vPvB: very Persistent and very Bioaccumulative substance
WEL: Workplace Exposure Limit
WHMIS: Workplace Hazardous Materials Information System
Other abbreviations and acronyms can be looked up at www.wikipedia.org.

Key literature references and sources for data: Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
Chemical Classification and Information Database (CCID)
European Chemicals Agency (ECHA) - Information on Chemicals
Hazardous Chemical Information System (HCIS)
National Institute of Technology and Evaluation (NITE)
Swedish Chemicals Agency (KEMI)
U.S. National Library of Medicine Toxicology Data Network (TOXNET)

Procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008 [CLP]:

Classification	Classification procedure
Skin Corr. 1B, H314	Calculation method
Eye Dam. 1, H318	Calculation method
Acute Tox. 4, H302/332	Calculation method
Skin Sens. 1, H317	Calculation method
STOT RE 2, H373	Calculation method
Aquatic Chronic 3, H412	Calculation method

Relevant H-statements: H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H330: Fatal if inhaled.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H373: May cause damage to organs through prolonged or repeated exposure.
H412: Harmful to aquatic life with long lasting effects.

Hazard pictogram names: Corrosion, exclamation mark, health hazard

Changes to the SDS in this revision: Sections 2.1, 2.2, 3, 8.2.2, 15.1.2.

Date of last revision: 24 September 2018

Further information: None

This information is based solely on data provided by suppliers of the materials used, not on the mixture itself. No warranty is expressed or implied regarding the suitability of the product for the user's particular purpose. The user must make their own determination as to suitability.