

SAFETY DATA SHEET

in accordance with REACH (1907/2006/EC, as amended by 2015/830/EU)

Revision date: – **Initial date of issue:** 14 December 2018 **SDS No.** 472A-1

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

1.1. Product identifier

ARC S5 (Part A) (LTGY, MDGY)

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

Combined with ARC S5 Part B, for use as a thin film coating on properly prepared surfaces for high temperature applications.

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:

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: +1 352-323-3500 (collect)

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 irritation, Category 2, H315
Skin sensitization, Category 1, H317
Serious eye damage, Category 1, H318
Hazardous to the aquatic environment, Chronic, Category 2, H411

2.1.2. 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]

Hazard pictograms:



Signal word:

Danger

Hazard statements:

H318	Causes serious eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements:	P261	Avoid breathing dust/vapours/spray.
	P264	Wash skin thoroughly after handling.
	P273	Avoid release to the environment.
	P280	Wear protective gloves and eye/face protection.
	P302/352	IF ON SKIN: Wash with plenty of soap and water.
	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.
	P333/313	If skin irritation or rash occurs: Get medical advice/attention.
	P362/364	Take off contaminated clothing and wash it before reuse.
	P391	Collect spillage.

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 Classification
Epoxy resin (number average molecular weight <= 700)	25-35	9003-36-5/ 500-006-8	NA	Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 2, H411
Glycidoxypropyltrimethoxysilane	5-10	2530-83-8 219-784-2	NA	Eye Dam. 1, H318
2-Methoxy-1-methylethyl acetate	0.1-0.5	108-65-6 203-603-9	NA	Flam. Liq. 3, H226* STOT SE 3, H336
Other ingredients:			NA	
Calcium carbonate	10-20	1317-65-3 215-279-6	NA	Not classified*
Aluminum oxide	10-20	1344-28-1 215-691-6	NA	Not classified*
Silica (Quartz)	1-3	14808-60-7 238-878-4	NA	Not classified*
Titanium dioxide	1-3	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: 1272/2008/EC, REACH

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 dust/vapours/spray. 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. Causes skin irritation. High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation.

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, oxides of Silicon and other toxic fumes.

5.3. Advice for firefighters

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

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 thoroughly after handling. 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. Keep from freezing.

7.3. Specific end use(s)

No special precautions.

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

Ingredients	ACGIH TLV ¹		UK WEL ²	
	ppm	mg/m ³	ppm	mg/m ³
Epoxy resin (number average molecular weight <= 700)	N/A	N/A	N/A	N/A
Glycidoxypropyltrimethoxysilane*	N/A	N/A	N/A	N/A
2-Methoxy-1-methylethyl acetate	N/A	N/A	50 STEL: 100	274 STEL: 548
Calcium carbonate	N/A	N/A	N/A	10 (inhal.) 4 (resp.)
Aluminum oxide	(resp.)	1	(inhal.) (resp.)	10 4
Silica (Quartz)	(resp.)	0.025	(resp.)	0.1
Titanium dioxide	N/A	10	(total) (resp.)	10 4

*Recommended exposure limit: 0.5 ppm (8-hr TWA)

¹ American Conference of Governmental Industrial Hygienists threshold limit values

² EH40 Workplace exposure limits, Health & Safety Executive

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 (number average molecular weight <= 700)	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
Glycidoxypropyltrimethoxysilane	Inhalation	Chronic effects, systemic	147 mg/m ³
2-Methoxy-1-methylethyl acetate	Inhalation	Chronic effects, systemic	275 mg/m ³
Aluminum oxide	Inhalation	Chronic effects, local, Chronic effects, systemic	15.63 mg/m ³
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 (number average molecular weight <= 700)	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
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: In case of insufficient ventilation, wear suitable respiratory equipment (e.g., a half or full-face respirator with combined dust/organic vapour filter). Use positive pressure, supplied-air respirators if there is a potential for uncontrolled release, if exposure levels are unknown, or under circumstances where air-purifying respirators may not provide adequate protection.

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

Eye and face protection: Full face shield with goggles underneath.

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	paste	Odour	sweet
Colour	light gray, medium gray	Odour threshold	not determined
Initial boiling point	not determined	Vapour pressure @ 20°C	not determined
Melting point	not determined	% Aromatics by weight	none
% Volatile (by volume)	none	pH	not applicable
Flash point	122°C (255°F)	Relative density	1.83 kg/l
Method	component data	Coefficient (water/oil)	< 1
Viscosity	700,000 cps @ 25°C	Vapour density (air=1)	> 1
Autoignition temperature	not determined	Rate of evaporation (ether=1)	< 1
Decomposition temperature	not determined	Solubility in water	slightly soluble
Upper/lower flammability or explosive limits	not determined	Explosive properties	not determined
Flammability (solid, gas)	not applicable	Oxidising properties	not determined

9.2. Other information

None

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

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

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	LD50, rat	> 5000 mg/kg
Aluminum oxide	LD50, rat	> 5000 mg/kg
Glycidoxypropyltrimethoxysilane	LD50, rat	7.5 ml/kg
Titanium dioxide	LD50, rat	> 10000 mg/kg

Dermal: Based on available data on components, the classification criteria are not met.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	LC50, rabbit	> 3000 mg/kg
Glycidoxypropyltrimethoxysilane	LD50, rabbit	3.97 ml/kg
Titanium dioxide	LC50, rabbit	> 10000 mg/kg

Inhalation:

High vapor concentrations resulting from heating or spraying can cause eye and respiratory tract irritation.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	LC50 (aerosol), rat	> 1.7 mg/l/4 h
Glycidoxypropyltrimethoxysilane	LC50, rat, 4 h, aerosol	> 5.3 mg/L

Skin corrosion/irritation:

Causes skin irritation.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	Skin irritation, rabbit	Mild irritation/Moderate irritation
Glycidoxypropyltrimethoxysilane	Skin irritation, rabbit	Mild irritation

Serious eye damage/irritation:

Causes serious eye damage.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	Eye irritation, rabbit	Slightly irritating
Glycidoxypropyltrimethoxysilane	Eye irritation, rabbit	Corneal injury

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

Substance	Test	Result
Epoxy resin (number average molecular weight <= 700)	Skin sensitization, guinea pig	Sensitizing
Glycidoxypropyltrimethoxysilane	Human repeat insult patch test (HRIPT)	Not sensitizing
Glycidoxypropyltrimethoxysilane	Skin sensitization, guinea pig	Not sensitizing

Germ cell mutagenicity:

Epoxy resin (number average molecular weight <= 700), Glycidoxypropyltrimethoxysilane: 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).

Reproductive toxicity:

Epoxy resin (number average molecular weight <= 700), Glycidoxypropyltrimethoxysilane: based on available data, the classification criteria are not met.

STOT – single exposure:

Epoxy resin (number average molecular weight <= 700), Glycidoxypropyltrimethoxysilane: based on available data, the classification criteria are not met.

STOT – repeated exposure:

Epoxy resin (number average molecular weight <= 700), Glycidoxypropyltrimethoxysilane: based on available data, the classification criteria are not met. 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

Toxic to aquatic life with long lasting effects. LC50/EC50 between 1 and 10 mg/l in the most sensitive species, based on data from similar materials.

12.2. Persistence and degradability

Unreacted components (Parts A and B), improperly released to the environment, can cause ground and water pollution. Epoxy resin: not readily biodegradable. Glycidoxypropyltrimethoxysilane: hydrolyzes in water or moist air, releasing methanol and organosilicons.

12.3. Bioaccumulative potential

Epoxy resin: has the potential to bioaccumulate. Glycidoxypropyltrimethoxysilane: low potential for bioaccumulation.

12.4. Mobility in soil

Viscous liquid. Slightly soluble 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. The unhardened product is classified as a hazardous waste according to 2008/98/EC. 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: UN3082

14.2. UN proper shipping name

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

14.3. Transport hazard class(es)

ADR/RID/ADN/IMDG/ICAO: 9

14.4. Packing group

ADR/RID/ADN/IMDG/ICAO: 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

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)

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

None

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)
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 Irrit. 2, H315	Calculation method
Skin Sens. 1, H317	Calculation method
Eye Dam. 1, H318	Calculation method
Aquatic Chronic 2, H411	Calculation method

Relevant H-statements: H226: Flammable liquid and vapour.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H318: Causes serious eye damage.
H336: May cause drowsiness or dizziness.
H411: Toxic to aquatic life with long lasting effects.

Hazard pictogram names: Corrosion, exclamation mark, environment

Changes to the SDS in this revision: Original issue.

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.