Product	S3 Silicone Release Agent
Revision Date	12/10/2016
Revision	1

RENISHAW
apply innovation™

Safety Data Sheet (SDS)

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

1.1 Product Identifier

Product Name	**S3 Silicone Release Agent**
Synonyms, Trade Names	No information available.

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Identified Uses	Vacuum casting.
Uses Advised Against	For Industrial Use Only.

1.3 Details of the Supplier of the Safety Data Sheet

Supplier	Renishaw plc Brooms Road Stone Business Park Stone, Staffordshire ST15 0SH United Kingdom Tel: +44 (0) 1785 285000 (during UK office hours 09:00 to 17:00 UTC).
Contact Person	msds@renishaw.com

1.4 Emergency Telephone Number

Emergency Telephone	999 / 911 or local emergency number.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classifcation of the Substance or Mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Press. Gas - H280, Flam. Aerosol 1 - H222
Human Health	Not classified
Environment	Not classified

2.2 Label Elements

Contains Not applicable

Label in Accordance With (EC) No. 1272/2008

Signal Word Danger

Hazard Statements
H222 Extremely flammable aerosol.
H280 Contains gas under pressure; may explode if heated.

Precautionary Statements

Prevention
P210 Keep away from heat/ sparks/open flames/hot surfaces. — No smoking.
P211 Do not spray on an open flame or other ignition source.
P251 Pressurized container: Do not pierce or burn, even after use.

Storage
P410 + P412 Protect from sunlight. Do not expose to temperatures exceeding 50 oC/122oF.

2.3 Other Hazards

Potentially explosive mixtures may form if adequate ventilation is not provided. Inhaling can lead to irritations of the respiratory tract and mucous membrane. Exposure to product may cause headaches, dizziness or depression of the central nervous system. Higher doses may have a narcotic effect.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixtures

Name	Product Identifier	GHS Classification	%
Petroleum gases, liquefied	CAS-No.: 68476-85-7 EC No.: 270-704-2	Flam. Gas 1 - H220, Press. Gas - H280	60-100%

The Full Text for all Hazard Statements Are Displayed in Section 16.

Composition Comments The data shown are in accordance with the latest EC Directives.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures

General Information Provide general first aid, rest, warmth and fresh air. As a general rule, in case of doubt or if symptoms persist, always call a doctor. Seek medical attention for all burns and eye injuries, regardless how minor they may seem. First aid personnel must be aware of own risk during rescue.

Inhalation If this product is inhaled and symptoms occur, move the exposed person to fresh air promptly. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

Ingestion DO NOT induce vomiting! Provide fresh air, warmth and rest, preferably in comfortable upright sitting position. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head low and/or keep airway clear. If swallowed, seek medical advice immediately and show the container or label.

Skin Contact Remove affected person from source of contamination. Remove contaminated clothing. Promptly flush contaminated skin with water. Wash skin thoroughly with mild soap and water. Get medical attention promptly if symptoms occur after washing.

Eye Contact Do not rub eye. If this product contacts the eyes, gently flush eyes with water for at least fifteen (15) minutes, lifting the upper and lower eyelids occasionally. Avoid contaminating unaffected eye. Seek medical attention.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

General Information The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation In case of overexposure, solvents may depress the central nervous system causing headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. In case of inhalation product may cause chemical burns of the respiratory tract.

Ingestion Due to the physical nature and packaging of this material it is unlikely that swallowing will occur. May cause nausea, vomiting, abdominal pain and irritation of the throat.

Skin Contact Contact with the product can cause cold burns or frostbite. Contact with skin may cause irritation.

Eye Contact May cause irritation, redness, and tearing.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

Notes to the Physician Treat symptomatically. Treat frostbite like burns.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Extinguishing Media	Dry chemical, foam or carbon dioxide. Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable Extinguishing Media	Do not use water jet as an extinguisher.

5.2 Special Hazards Arising From the Substance or Mixture

Hazardous Combustion Products	In case of fire, toxic gases(CO, CO2,) may be formed.
Unusual Fire & Explosion Hazards	Aerosols may explode if heated above 50°C. FLAMMABLE. Exposure to fire may cause containers to rupture/explode. Vapours are heavier than air and may spread near ground to sources of ignition.
Specific Hazards	If heated, harmful vapours may be formed. Flash back possible over considerable distance. Vapours form potentially explosive mixtures with air.

5.3 Advice for Firefighters

Special Fire Fighting Procedures	Evacuate personnel to safe areas. Ventilate closed spaces before entering them. Avoid breathing fire vapours. Keep up-wind to avoid fumes. Fight advanced or massive fires from safe distance or protected location. Water spray should be used to cool containers.
Protective Equipment for Firefighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Eliminate all sources of ignition. Provide adequate ventilation. In case of inadequate ventilation, use respiratory protection. Avoid inhalation of vapours and contact with skin and eyes. If necessary evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Read and follow manufacturer's recommendations.
For Emergency Responders	Follow safe handling advice and personal protective equipment recommendations for normal use of product.

6.2 Environmental Precautions

Environmental Precautions	Do not discharge into drains, water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body

6.3 Methods and Material for Containment and Cleaning Up

Spill Clean Up Methods	Prevent further leakage or spillage if safe to do so. Ventilate and evacuate the area. Eliminate all sources of ignition. Wear necessary protective equipment. Absorb spillage with non-combustible, absorbent material - sand. Keep area evacuated and free from ignition sources until product has evaporated. Use non sparking tools or equipment for clean up. Ensure that waste and contaminated materials are collected and removed from the work area as soon as possible in a suitably labelled container. Wash thoroughly after dealing with a spillage.

6.4 Reference to Other Sections

Reference to Other Sections	See section 1 for emergency contact. For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Handling	Keep away from heat, sparks and open flame. Wear suitable personal protective equipment, as detailed in Section 8. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Static electricity and formation of sparks must be prevented. Avoid prolonged or repeated contact.

Avoid spilling, skin and eye contact. Avoid inhalation of vapours. Do not eat, drink or smoke when using the product. Do not wear contact lenses. Do not mix with other chemicals. Pressurised container: Do not pierce or burn, even after use.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Storage Precautions Keep locked up and out of reach of children. Keep away from heat, sparks, direct sunlight and open flames. Store in tightly closed original container in a dry, cool and well-ventilated place. Pressurised container: Must not be exposed to temperatures above 50°C

Storage Class Aerosols.

7.3 Specific End Use(s)

Specific End Use(s) The identified uses for this product are detailed in Section 1.

Usage Description Use only according to directions. Replace and tighten cap after use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

Component	STD	TWA (8 Hrs)		STEL (15mins)		Notes
Petroleum gases, liquefied	WEL	1000ppm	1750mg/m3	1250ppm	2180mg/m3	
Petroleum gases, liquefied	NIOSH	1000ppm	1800mg/m3			

Ingredient Comments WEL - Workplace Exposure Limits - EH40/2005 Workplace exposure limits. The National Institute for Occupational Safety and Health (NIOSH).

8.2 Exposure Controls

Protective Equipment

Engineering Measures Provide adequate ventilation, including appropriate local extraction, to ensure that the defined occupational exposure limit is not exceeded. Use explosion-proof ventilation equipment.

Respiratory Equipment Where risk assessment shows air-purifying respirators are appropriate a full face respirator conforming to EN143, and suitable respirator cartridges as a backup to engineering controls. Where aerosols are in use, use self contained breathing apparatus with a type AX filter or appropriate combined filter (e.g. AX-P3), in compliance with EN 371. If the respirator is the sole means of protection, use a full-face supplied air respirator.
Use respirators and components tested and approved under appropriate government standards such as CEN (EU). Use respiratory protection as specified by an industrial hygienist or other qualified professional. Change filters frequently.

Hand Protection Selection of the glove material depends on consideration of the penetration times, rates of diffusion and degradation, and concentration specific to the workplace. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374) is recommended.
Gloves must be inspected prior to use. Suggested material: Nitrile rubber. Neoprene. Breakthrough time: >480 minutes. Consult manufacturer for specific advice on material. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.

Eye Protection Wear safety goggles or face shield to prevent any possibility of eye contact. Use equipment for eye protection tested and approved under appropriate government standards such as EN 166(EU).

Other Protection Wear appropriate clothing to prevent any possibility of skin contact.
Protective clothing should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. The selected clothing must satisfy the European norm standard EN 943.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke during work. Wash promptly if skin becomes contaminated.

Process Conditions	Ensure that eye flushing systems are located close by in the work place.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

Appearance	Liquid under pressure.
Colour	Colourless.
Odour	Solvent.
Odour Threshold - Lower	No information available.
Odour Threshold - Upper	No information available.
pH-Value, Conc. Solution	No information available.
pH-Value, Diluted Solution	No information available.
Melting Point	No information available.
Initial Boiling Point and Boiling Range	<= -40 °C (Petroleum gases, liquefied).
Flash Point	<= -20 °C (c.c.).
Evaporation Rate	Evaporation rate (butyl acetate =1): > 1.
Flammability State	No information available.
Flammability Limit - Lower(%)	1.60
Flammability Limit - Upper(%)	11.10
Vapour Pressure	@ 20 °C: >= 1333 hPa (Petroleum gases, liquefied).
Vapour Density (air=1)	Relative vapour density (air=1) > 1 (Petroleum gases, liquefied).
Relative Density	0.57g/cm3 @ 25.00 °C
Bulk Density	No information available.
Solubility	Insoluble in water.
Decomposition Temperature	No information available.
Partition Coefficient; n-Octanol/Water	No information available.
Auto Ignition Temperature (°C)	No information available.
Viscosity	No information available.
Explosive Properties	Aerosols may explode if heated above 50°C.
Oxidising Properties	No information available.

9.2 Other Information

Molecular Weight	No information available.
Volatile Organic Compound	No information available.
Other Information	None noted.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Reactivity	Keep away from incompatibles such as oxidizing agents, acids, and alkalis.

10.2 Chemical Stability

Stability	Do not expose to temperatures exceeding 50°C. Protect from direct sunlight.

10.3 Possibility of Hazardous Reactions

Hazardous Reactions	Avoid extremes of temperature. Vapours may form explosive mixture with air.
Hazardous Polymerisation	Will not polymerise.
Polymerisation Description	Not applicable.

10.4 Conditions to Avoid

Conditions to Avoid	Heat, sparks, open flames, temperature extremes and direct sunlight. Do not spray on naked flames or any incandescent material. Do not open with force or incinerate, even when empty.

10.5 Incompatible Materials

Materials to Avoid	Avoid contact with oxidising agents, strong alkalis, and strong acids.

10.6 Hazardous Decomposition Products

Hazardous Decomposition Products	Fire creates Toxic gases/vapours/fumes of Carbon monoxide (CO) and Carbon dioxide (CO2).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Toxicological Information	No toxicological information for the overall finished product.
Acute Toxicity (Oral LD50)	No information available.
Acute Toxicity (Dermal LD50)	No information available.
Acute Toxicity (Inhalation LD50)	No information available.
Serious Eye Damage/Irritation	Product is not classified as an eye irritant.
Skin Corrosion/Irritation	No information available.
Respiratory Sensitisation	No information available.
Skin Sensitisation	No information available.
Germ Cell Mutagenicity	No information available.
Carcinogenicity	No information available.
Specific Target Organ Toxicity - Single Exposure:	
STOT - Single Exposure	No information available.
Specific Target Organ Toxicity - Repeated Exposure:	
STOT - Repeated Exposure	No information available.
Inhalation	In case of overexposure, solvents may depress the central nervous system causing headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. In case of inhalation product may cause chemical burns of the respiratory tract.
Ingestion	Due to the physical nature and packaging of this material it is unlikely that swallowing will occur. May cause nausea, vomiting, abdominal pain and irritation of the throat.
Skin Contact	Contact with the product can cause cold burns or frostbite. Contact with skin may cause irritation.
Eye Contact	May cause irritation, redness, and tearing.
Waste Management	When handling waste, consideration should be made to the safety precautions applying to handling of the product. Do not puncture or burn even when empty.
Routes of Entry	No information available.
Target Organs	Eyes, skin, digestive system, respiratory system, central nervous system.
Aspiration Hazards:	No information available.
Reproductive Toxicity:	No information available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute Toxicity - Fish	No information available.
Acute Toxicity - Aquatic Invertebrates	No information available.
Acute Toxicity - Aquatic Plants	No information available.
Acute Toxicity - Microorganisms	No information available.
Chronic Toxicity - Fish	No information available.
Chronic Toxicity - Aquatic Invertebrates	No information available.
Chronic Toxicity - Aquatic Plants	No information available.
Chronic Toxicity - Microorganisms	No information available.
Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Eco Toxilogical Information	No ecological toxicity available on the overall finished product.

12.2 Persistence and Degradability

Degradability	No information available.
Biological Oxygen Demand	No information available.
Chemical Oxygen Demand	No information available.

12.3 Bioaccumulative Potential

Bioaccumulative Potential	No data available on bioaccumulation.
Bioacculmation Factor	No information available.
Partition Coefficient; n-Octanol/Water	No information available.

12.4 Mobility in Soil

Mobility	No information available.

12.5 Results of PBT and vPvB Assessment

Results of PBT and vPvB Assessment	No information available.

12.6 Other Adverse Effects

Other Adverse Effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Management	When handling waste, consideration should be made to the safety precautions applying to handling of the product. Do not puncture or burn even when empty.

13.1 Waste Treatment Methods

Disposal Methods	Dispose of waste and residues in accordance with local authority requirements, and in accordance with all local, national and international regulations. For waste disposal, use a licensed industrial waste disposal agent.

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number

UN No. (ADR)	UN1950
UN No. (IMDG)	UN1950
UN No. (IATA)	UN1950

14.2 UN Proper Shipping Name

ADR Proper Shipping Name	AEROSOLS,
IMDG Proper Shipping Name	AEROSOLS

IATA Proper Shipping Name AEROSOLS, FLAMMABLE

14.3 Transport Hazard Class(es)

ADR Class 2.1
IMDG Class 2+ - See SP63
IATA Class 2.1

Transport Labels

14.4 Packing Group

ADR/RID/ADN Packing Group <none>
IMDG Packing Group <none>
IATA Packing Group <none>

14.5 Environmental Hazards

ADR No
IMDG No
IATA No

14.6 Special Precautions for User

EMS F-D, S-U
Emergency Action Code A145 A153
Hazard No. (ADR) <none>
Tunnel Restriction Code (D)

14.7 Transport in Bulk According to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

EU Legislation Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 with amendments. The UN Globally Harmonized System (GHS) Safety Data Sheet format (Annex IV) is implemented as Annex II of REACH EU No 453/2010 of 20th May 2010 amending regulation (EC) No 1907/2006.

Approved Code of Practice Workplace Exposure Limits Guidance Note EH40/2005.

Chemical Safety Assessment No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

General Information This Safety Data Sheet is in accordance with Reach Regulation (EC) No 453/2010.
Revision Comments This is a first issue.
Revision Date 12/10/2016
Revision 1
Safety Data Sheet Status Approved.

Hazard Statements In Full

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
H222 Extremely flammable aerosol.

Disclaimer
This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of

the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.