

Product 5171A
 Revision Date 12/10/2016
 Revision 1



Safety Data Sheet (SDS)

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

1.1 Product Identifier

Product Name 5171A
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 No uses advised against are identified.

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).
 msds@renishaw.com

Contact Person

1.4 Emergency Telephone Number

Emergency Telephone 999 / 911 or local emergency number.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture

Classification (EC 1272/2008)
 Physical and Chemical Hazards Not classified
 Human Health Acute Tox 4 - H302, Skin. Sens 1 - H317
 Environment Aquatic Chronic 2 - H411

2.2 Label Elements

Contains 1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) (DMTDA)
 Phosphorous oxychloride, reaction products with propylene oxide
 1,3-Benzenediamine, 2-methyl-4,6-bis(methylthio) (DMTDA)
 diethylmethylbenzenediamine

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



Signal Word Warning

Hazard Statements H302 Harmful if swallowed.
 H317 May cause an allergic skin reaction
 H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements **Prevention**
 P261 Avoid breathing dust/fume/ gas/mist/vapours/spray.
 P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/eye protection/face protection.

Response

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P363 Wash contaminated clothing before reuse.

EUH Statements

EUH204 Contains isocyanates. May produce an allergic reaction.

2.3 Other Hazards

None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable.

3.2 Mixtures

Name	Product Identifier	GHS Classification	%
1,3-Benzenediamine, 4-methyl-2-6-bis(methylthio) (DMTDA)	CAS-No.: 102093-68-5 EC No.:	Acute Tox 4 - H302, Skin. Sens 1 - H317, Aquatic Chronic 2 - H411	30-60%
Phosphorous oxychloride, reaction products with propylene oxide	CAS-No.: 1244733-77-4 EC No.:	Acute Tox 4 - H302	30-60%
1,3-Benzenediamine, 2-methyl-4-6-bis(methylthio) (DMTDA)	CAS-No.: 104983-85-9 EC No.:	Acute Tox 4 - H302, Skin. Sens 1 - H317, Aquatic Chronic 2 - H411	10-30%
diethylmethylbenzenediamine	CAS-No.: 68479-98-1 EC No.: 270-877-4	Acute Tox 4 - H302, Acute Tox 4 - H312, Eye Irrit.2A - H319, STOT RE 2 - H373, Aquatic Acute 1 - H400, Aquatic Chronic 1 - H410	1-10%

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 necessary, clear the airway. If not breathing, give artificial respiration and get medical attention. If breathing is difficult, provide oxygen.

Ingestion

Immediately rinse mouth and provide fresh air. If vomiting occurs, the head should be kept low so that stomach content doesn't enter the lungs, and is not swallowed. Keep airway clear. Provide fresh air, warmth and rest, preferably in comfortable upright sitting position. Induce vomiting only when directed by medical personnel and person is conscious. Never give anything by mouth to an unconscious person. If swallowed, seek medical advice immediately and show the container or label.

Skin Contact

Remove affected person from source of contamination. Remove contaminated clothing. Wash the skin immediately with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye Contact

Do not rub eye. Avoid contaminating unaffected eye. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Remove contact lenses if present and easy to do so. Get medical attention immediately.

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

Inhalation may cause respiratory irritation.

Ingestion

May cause digestive tract irritation, pain or vomiting. Harmful if swallowed.

Skin Contact	Causes skin irritation. May cause an allergic skin reaction.
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.
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SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable Extinguishing Media	Do not use water jet as an extinguisher.

5.2 Special Hazards Arising From the Substance or Mixture

Hazardous Combustion Products	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, oxides of sulphur.
Unusual Fire & Explosion Hazards	No unusual fire or explosion hazards noted.
Specific Hazards	Floors may become slippery, avoid falls.

5.3 Advice for Firefighters

Special Fire Fighting Procedures	If possible, fight fire from protected position. Ventilate closed spaces before entering them. Keep up-wind to avoid fumes. Avoid breathing fire vapours. Containers close to fire should be removed immediately or cooled with water if safe to do so. Take measures to avoid the spill of the products or chemicals to rivers or drains due to water-discharge from fire fighting.
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. Avoid inhalation of vapours and contact with skin and eyes. Provide adequate ventilation. In case of inadequate ventilation, use respiratory protection. Do not smoke, eat or drink while using this product. Read and follow manufacturer's recommendations. Do not touch or walk through spilled material. Keep unnecessary and unprotected personnel from entering. Avoid prolonged or repeated exposure.
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.
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6.3 Methods and Material for Containment and Cleaning Up

Spill Clean Up Methods	Stop leak if possible without risk. Wear respirator if ventilation is not adequate. Eliminate all sources of ignition. Ventilate and evacuate the area. Wear necessary protective equipment. DO NOT touch spilled material! Absorb spillage with non-combustible, absorbent material - sand. In case of a large scale of spill, dyke area with sand to stop the spill spreading. Leave to react for at least 30 minutes. Shovel into open top drums. After recovery of spilled liquid, do not close container tightly - remove to a safe well ventilated area. Wash work area with water. 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.
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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 Use proper personal protection when handling (refer to Section 8). Provide good ventilation. Wear appropriate respirator when ventilation is inadequate. Keep away from heat, sparks and open flame. Static electricity and formation of sparks must be prevented. Do not eat, drink or smoke when using the product. Avoid inhalation of vapours. Avoid contact with skin and eyes. Do not use contact lenses. Avoid prolonged or repeated contact. Read and follow manufacturer's recommendations. Do not mix with other chemicals.

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. After opening containers, replace with dry nitrogen or dry air and tightly seal the container to prevent leaks. To avoid static electricity, ground equipment. Keep material under inert gas. Keep away from humidity.

Storage Class Toxic storage

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

Ingredient Comments No exposure limits noted for ingredient(s).

8.2 Exposure Controls

Protective Equipment



Engineering Measures Provide adequate ventilation.

Respiratory Equipment Where risk assessment shows air-purifying respirators are appropriate a full face respirator conforming to EN143 should be used, and suitable respirator cartridges as a backup to engineering controls. Recommended: Respirator with combination filter for organic vapour/particulate (EN 141). Consult manufacturer for specific advice. 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).

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. Use suitable organic solvent resistant gloves if there is a risk of skin contact. Suggested material: Chloroprene. Nitrile rubber. Consult manufacturer for specific advice. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. 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

Other Protection	166(EU). Wear appropriate clothing to prevent any possibility of skin contact. Select appropriate protective clothing based on chemical resistance data and an assessment of local exposure potential. 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. The selected clothing must satisfy the European norm standard EN 943.
Hygiene Measures	Wash promptly if skin becomes contaminated. Handle in accordance with good industrial hygiene and safety practice. DO NOT SMOKE IN WORK AREA! Wash hands at the end of each work shift and before eating, smoking and using the toilet.
Process Conditions	Use only according to directions. Keep container tightly sealed when not in use. 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.
Colour	Amber
Odour	No information available.
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	No information available.
Flash Point	200.00 °C
Evaporation Rate	No information available.
Flammability State	No information available.
Flammability Limit - Lower(%)	No information available.
Flammability Limit - Upper(%)	No information available.
Vapour Pressure	No information available.
Vapour Density (air=1)	No information available.
Relative Density	1.27g/cm ³ @ 20.00 °C
Bulk Density	No information available.
Solubility	No information available.
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	Not classified as explosive.
Oxidising Properties	No information available.

9.2 Other Information

Molecular Weight	No information available.
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Volatile Organic Compound No information available.

Other Information 1.27 g/ml.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Reactivity Stable under recommended transport and storage conditions and under recommended use.

10.2 Chemical Stability

Stability Relatively stable when stored in a cool and dark place.

10.3 Possibility of Hazardous Reactions

Hazardous Reactions No information available.

Hazardous Polymerisation Hazardous polymerisation is not expected to occur under normal temperatures and pressures.

Polymerisation Description Unknown.

10.4 Conditions to Avoid

Conditions to Avoid Fire and high temperature. Protect against humidity

10.5 Incompatible Materials

Materials to Avoid Avoid contact with water, alcohol, amines, basic substance or organic metallic compounds. Avoid contact with oxidising substances and acids.

10.6 Hazardous Decomposition Products

Hazardous Decomposition Products When heated, vapours/gases hazardous to health may be formed. Combustion produces toxic gases such as carbon monoxide.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Toxicological Information No toxicological information for the overall finished product.

Acute Toxicity (Oral LD50) (Cas 102093-68-5)1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) (DMTDA):>1515 mg/kg (rat). (Cas 68479-98-1)Diethylmethylbenzenediamine DETDA: (Estimated) 485 mg/kg (Rat).

Acute Toxicity (Dermal LD50) (Cas 102093-68-5)1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) (DMTDA): >2000 mg/kg (Rabbit).

Acute Toxicity (Inhalation LD50) No information available.

Serious Eye Damage/Irritation Causes serious eye irritation.

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 Inhalation may cause respiratory irritation.

Ingestion May cause digestive tract irritation, pain or vomiting. Harmful if swallowed.

Skin Contact Causes skin irritation. May cause an allergic skin reaction.

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 pour into drains or waterways. Empty containers retain residue (liquid and/or vapour) and can be dangerous.
Routes of Entry Target Organs	No information available. Eyes, skin, digestive system, respiratory system.
Aspiration Hazards: Reproductive Toxicity:	No information available. No information available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute Toxicity - Fish	Benzenediamine,ar,ar-diethyl-ar-methyl (Cas 68479-98-1): LC50, 48 Hr, 200 mg/l. 4-methyl-2,6-bis(methylthio)-1,3-benzenediamine (Cas 102093-68-5): LC50, 96 Hr -(rainbow trout), 7.3 mg/l.
Acute Toxicity - Aquatic Invertebrates	Benzenediamine,ar,ar-diethyl-ar-methyl (Cas 68479-98-1): LC50, 48 Hr - (water flea) 0.5 mg/l. 4-methyl-2,6-bis(methylthio)-1,3-benzenediamine (Cas 102093-68-5): EC50, 48 Hr - (Daphnia), 0.9 mg/l.
Acute Toxicity - Aquatic Plants	Benzenediamine,ar,ar-diethyl-ar-methyl (Cas 68479-98-1): EC50, 72 Hr - (algae), 54 mg/l. 4-methyl-2,6-bis(methylthio)-1,3-benzenediamine (Cas 102093-68-5): EC50, 72 Hr -(algae), 7.6 mg/l.
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 contains a substance which is toxic to aquatic life with long lasting effects.
Eco Toxicological Information	The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

12.2 Persistence and Degradability

Degradability	The product is not readily biodegradable.
Biological Oxygen Demand	No information available.
Chemical Oxygen Demand	No information available.

12.3 Bioaccumulative Potential

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

12.4 Mobility in Soil

Mobility	No information available.
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12.5 Results of PBT and vPvB Assessment

Results of PBT and vPvB Assessment	No information available.
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12.6 Other Adverse Effects

Other Adverse Effects	No information available.
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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 pour into drains or waterways. Empty containers retain residue (liquid and/or vapour)
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and can be dangerous.

13.1 Waste Treatment Methods

Disposal Methods

Dispose of in accordance with national and local regulations for special waste via an appropriately licensed waste contractor.

SECTION 14: TRANSPORT INFORMATION

14.1 UN Number

UN No. (ADR)	UN3082
UN No. (IMDG)	UN3082
UN No. (IATA)	UN3082

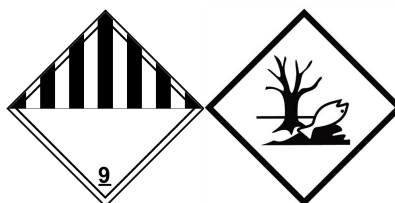
14.2 UN Proper Shipping Name

ADR Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) + 1,3-Benzenediamine, 2-methyl-4,6-bis(methylthio))
IMDG Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) + 1,3-Benzenediamine, 2-methyl-4,6-bis(methylthio))
IATA Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID N.O.S. (1,3-Benzenediamine, 4-methyl-2,6-bis(methylthio) + 1,3-Benzenediamine, 2-methyl-4,6-bis(methylthio))

14.3 Transport Hazard Class(es)

ADR Class	9
IMDG Class	9
IATA Class	9

Transport Labels



14.4 Packing Group

ADR/RID/ADN Packing Group	III
IMDG Packing Group	III
IATA Packing Group	III

14.5 Environmental Hazards

ADR	Yes
IMDG	Yes
IATA	Yes

14.6 Special Precautions for User

EMS	F-A, S-F
Emergency Action Code	A97
Hazard No. (ADR)	90
Tunnel Restriction Code	(E)

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

H302 Harmful if swallowed.
H317 May cause an allergic skin reaction
H411 Toxic to aquatic life with long lasting effects.
H312 Harmful in contact with skin
H319 Causes serious eye irritation.
H373 May cause damage to organs [*] through prolonged or repeated exposure [*].
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
EUH204 Contains isocyanates. May produce an allergic reaction.

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.