



Novagen Innovations (Pty) Ltd. t/a Agri Novagenix
Company registration number: 2020/891524/07 ; VAT: 4150295469
PO Box 1224, Isando, 1600, South Africa

SAFETY DATA SHEET ZIMBULUS DG

Reg. No. / Nr L11911 Act No. 36 of 1947 / Wet Nr 36 van 1947

Section 1. Identification of the material and the supplier

Product: **ZIMBULUS DG**
Product Use: Herbicide
Restriction of Use: Refer to Section 15

Supplier: **Novagen Innovations (Pty) Ltd T/A Agri Novagenix**
PO Box 1224
Isando, 1600
South Africa
www.novagenag.co.za

Emergency No: POISON CENTRE (UNITAS HOSPITAL) 012 664 1100
TYGERBERG 021 931 6129
RED CROSS 021 689 5227
RAPID SPILL RESPONSE 0800 775 3305
GRIFFON POISON CENTRE 082 446 8946

Date of SDS Preparation: 5 February 2025

Section 2. Hazards Identification

Classification of the substance or mixture

Globally Harmonised System, EU (GHS) and according to regulation EC No 1272/2008 [CLP]

Skin Irritation Category 3; H316
Eye Irritation Category 2; H319
Specific Target Organ Toxicity Repeated Exposure Category 2; H373
Reproductive Toxicity Category 2; H361
Short term (acute) aquatic hazard Category 1; H400
Long term (chronic) aquatic hazard Category 1; H410

Label elements:

Globally Harmonised System, EU (GHS) and according to regulation EC No 1272/2008 [CLP]

Pictograms



Signal Word: **WARNING**

Hazard statement(s)

H316: Causes mild skin irritation.

H319: Causes serious eye irritation.

H373: May cause damage to organs through prolonged or repeated exposure.

H361: Suspected of damaging fertility or the unborn child.

H410: Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

General:

P101 - If medical advice is needed, have product container or label at hand.

P102 - Keep out of reach of children.

P103 - Read carefully and follow all instruction.

Prevention:

P203 - Obtain, read and follow all safety instructions before use.

P260 - Do not breathe dust/fumes/gas/mist/vapours/spray.

P264 + P265 - Wash hands thoroughly after handling. Do not touch eyes.

P273 - Avoid release to the environment.

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

Response:

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P318 - If exposed or concerned, get medical advice.

P319 - Get medical help if you feel unwell.

P332 + P317 - If skin irritation occurs: Get medical help.

P337 + P317 - If eye irritation persists: Get medical help.

P391 - Collect spillage.

Storage:

P405 - Store locked up.

Disposal:

P501 - Dispose of contents/container in accordance with national regulations.

Supplemental Hazard Statements: none

2.3 Other

Other hazards

No other hazards known

Section 3. Composition / Information on Hazardous Ingredients
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Mixture

Water Dispersible Granule

Pyroxasulfone 850 g/kg

Globally Harmonised System, EU (GHS) and according to regulation EC No 1272/2008 [CLP]

Ingredients	Concentration of hazardous ingredient	CAS Number	Classification
Pyroxasulfone	85%	447399-55-5	STOT RE Cat. 1; H372 Repr. Cat. 2; H351 Aquatic Acute Cat. 1; H400 Aquatic Chronic Cat. 1; H410
Sodium dodecyl sulfate	>1-<10%	151-21-3	Flammable sol. Cat. 2; H228 Acute Tox. Oral Cat. 4; H302 Acute Tox. Inhalation Cat. 4; H332 Skin Irrit. Cat. 2; H315 Seri. Eye Dam. Cat. 1; H318 STOT SE Cat. 3 Resp.; H335 Aquatic Acute Cat. 2; H401 Aquatic Chronic Cat 3; H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

Section 4. First Aid Measures

Provide medical personnel with the container label, product name or safety data sheet (SDS) when seeking medical attention.

Routes of Exposure:

If in Eyes	Flush eyes immediately with plenty of clean, room temperature water for at least 15 minutes holding eyelids open. Remove contact lenses if present, after the first 5 minutes, then continue rinsing eyes. Seek medical attention immediately.
If on Skin	Immediately remove contaminated clothing and flush body and clothes with large amounts of water. Wash thoroughly with non-abrasive soap and water (including hair, skin, and fingernails) Wash contaminated clothing before re-use. Persons providing first aid must wear gloves to avoid self-contamination. Seek medical attention.
If Swallowed	Wash out the patient's mouth if the patient is alert and able. Do NOT induce vomiting unless instructed to do so by a poison control centre or a medical doctor. Seek medical attention.
If Inhaled	Remove victim to fresh air. Keep patient calm. Monitor for respiratory distress. If breathing is irregular or stopped, apply artificial respiration. If mouth to mouth resuscitation is given use rescuer protection (pocket mask etc.). Keep the patient warm and at rest. Seek medical attention

Most important symptoms and effects, both acute and delayed

Remove patient from exposed area. Never give fluids or induce vomiting if the patient is unconscious or is having convulsions.

Treatment:

No specific antidote known. Treat symptomatically and supportively. Gastric lavage may not be necessary due to low toxicity of the compound. However, the administration of activated charcoal and sodium sulphate is advisable with significant ingestions.

Section 5.	Fire Fighting Measures
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Hazards from products	In the event of fire the following may be released: Carbon dioxide, carbon monoxide, nitrogen oxides, sulphur oxides, hydrogen fluoride and hydrogen cyanide.
Suitable Extinguishing media	Suitable extinguishing media: Fine water spray, alcohol-resistant foam, Carbon Dioxide (CO ₂), sand. Unsuitable extinguishing media: Do not use a water jet due to contamination/spreading fog.
Recommended protective clothing & Precautions for firefighters	Firefighting: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire-fighting clothing (includes fire-fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire-fighting operations. If contact is likely, change to full chemical resistant fire-fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections. Additional provisions: Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full-face piece operated in the pressure demand or other positive pressure mode. Remove spectators from surrounding area. Isolate the fire area and evacuate downwind. Remove undamaged containers from fire area if it is safe to do so. Use a recommended extinguishing agent for the type of surrounding fire. Fight fire from maximum distance and use unmanned hose holder or monitor nozzles. Contain fire control agents for later disposal. Avoid inhaling hazardous vapours and fumes from burning materials. Keep upwind. Remove container from fire area if possible and without risk. Water can be used to cool unaffected containers but must be contained for later disposal. Do not scatter the material. Avoid pollution of waterways.

Section 6.	Accidental Release Measures
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Personal precautions:

All personnel handling this material must be thoroughly trained on how to handle spills and releases. Avoid contact with skin and eyes. Avoid dust formation. Avoid breathing dust. Do not breathe in spray or fumes. For personal protection see Section 8. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink, or smoke. Wash contaminated clothing before re-use. For personal protection see Section 8.

Environmental precautions:

Do not contaminate waterways, drains and groundwater. If contamination of waterways, drains, rivers or lakes is unavoidable, warn the local authorities (Police and Department of Water/Environmental affairs) immediately.

Methods and materials for containment and cleaning up:

Wear protective clothing. Clear area of unprotected persons and animals.

Do not touch any spilled material, stop the leak if it is safe to do so and without risk.

Pick up and arrange disposal without creating dust. Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to over-pressurization of the container.

Keep in suitable, closed containers for disposal.

Sweep up or vacuum up spillage and collect in suitable container for disposal.

Use approved industrial vacuum cleaner for removal and place in waste containers. Place the material into a clean dry container and seal for subsequent disposal in accordance with local and national regulations. Wash the area with water and detergent and absorb with further inert material. Collect the contaminated water for later disposal in accordance with local and national regulations. For large spills, barricade area and consult manufacturer. If further assistance is required, telephone the emergency contact number. Contain runoff to prevent entry into water or drainage systems.

Label all waste drums according to their content and dispose of in accordance with local and national regulations.

Waste Disposal: **DO NOT** flush spilled material into drains. Decontaminate all tools and equipment following clean-up. Keep spectators away and upwind. Open burning or dumping of this material is prohibited. Heavily contaminated soil layers have to be dug out down to clean soil. If spill does enter waterways, contact the local authority. Spilled product cannot be re-used and must be disposed of in accordance with local and national regulations. If containers cannot be recycled, they should be disposed of together with the waste chemical.

Do not contaminate ponds, waterways or ditches with chemical or used container. Wash out thoroughly. Container and washings must be disposed of safely and in accordance with applicable regulations. The preferred options are to send to licensed reclaimer or to permitted incinerators. Do not re-use container for any purpose.

Container Disposal: Refer to the product label for instructions.

Containers and packages must be completely emptied before disposal. Rinse empty container three times with a volume of water equal to a minimum of 30% of that of the container. Add the rinsings to the contents of the spray tank before destroying the empty container. Destroy the empty container by perforation and flattening and do not use for any other purpose. Store appropriately until it can be taken to a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations for disposal. Empty containers and product should not be burnt.

Reference to other sections

Information regarding safe handling, see section 7.

Information regarding personal protective equipment, see section 8.

Information regarding waste disposal, see section 13.

Section 7. Handling and Storage
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Precautions for Handling:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid ingestion, inhalation of dust and contact with skin and eyes. Children and pregnant women should not come in contact with this product. Repeated exposure may cause allergic disorders. When preparing the spray and using the prepared spray, wear cotton overalls, boots, gloves and face shield. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use wash overalls, boots, gloves, face shield and contaminated clothing. Do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the environment.

Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Precautions for Storage:

Store in a closed container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.

Store in a cool, dry place, well-ventilated area out of direct sunlight. Protect from excessive heat and cold.

Store away from food, feed, fertilizer, and seed.

Keep out of reach of children, uninformed persons, and animals.

Specific end use(s): Use only according to the label.

Section 8 Exposure Controls / Personal Protection

Ingredient	Application Area	Route of Exposure	Health effect	Value
Sodium Dodecyl Sulfate	Worker DNEL*, long term	Inhalation	Systemic effects	285 mg/m ³
	Consumer DNEL*, long term	Inhalation	Systemic effects	85 mg/m ³

*DNEL: Derived No Effect Level

Engineering Controls / Industrial Hygiene

Comply with occupational safety, environmental, fire and other applicable regulations.

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

Personal Protection Equipment

Eyes	Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent. Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.
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Hands	Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove is recommended to prevent contact with the solid material. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant work place factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Skin	Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.
Respiratory	Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
General	Keep away from food, drink and animal feedstuffs. No eating, drinking or smoking during use. Wash hands and face before breaks and after work. Suitable or appropriate respiratory and eye protection should also be worn. Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating. When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Section 9 Physical and Chemical Properties

Appearance	Granule
Colour	White to off-white
Odour	Characteristic
Odour Threshold	No data available
pH	7.5-9.5(1% dilution in water)
Boiling/Melting Point	No data available
Freezing Point	No data available
Flash Point	No data available
Flammability	Not classified
Upper and Lower Explosive Limits	No data available
Vapour Pressure	No data available

Relative Vapour Density	No data available
Bulk Density	N/A
Water Solubility	Disperses in water
Partition Coefficient:	Formulated product: No data available Pyroxasulfone: log Kow = 2.39 (25 °C)
Ignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	Dynamic viscosity: No data available Kinematic viscosity: No data available.
Particle Characteristics	No data available
Surface tension	No data available

Section 10. Stability and Reactivity

Stability of Substance	Stable under normal conditions. Stable for 24 months. Avoid exposure elevated temperatures. Thermally stable at recommended temperatures and pressures. No decomposition if stored and applied as directed. Store below 50°C, preferably below 30°C and not for prolonged periods in direct sunlight.
Possibility of hazardous reactions	None known.
Conditions to Avoid	Excessive heat, freezing, and direct sunlight.
Incompatible Materials	Store only in the original container. Avoid strong basic, acidic or oxidising materials.
Hazardous Decomposition Products	Carbon dioxide, carbon monoxide, nitrogen oxides, sulphur oxides, hydrogen fluoride and hydrogen cyanide may be released in a fire.

Section 11 Toxicological Information

Acute Effects:

Oral	GHS: Not classified.
Dermal	GHS: Not classified.
Inhalation	GHS: Not classified.
Eye	GHS: Eye Irrit. Cat. 2
Skin	GHS: Skin Irrit. Cat. 3

Chronic Effects:

Carcinogenicity	GHS: Not classified.
Reproductive Toxicity	GHS: Cat. 2
Germ Cell Mutagenicity	GHS: Not classified.
Aspiration	GHS: Not classified.
STOT/SE	GHS: Not classified.
STOT/RE	GHS: Cat. 2

Section 12. Ecotoxicological Information

Ecological effects information	Fish: Pyroxasulfone: Rainbow trout: <i>Oncorhynchus mykiss</i> : > 2.2 mg/l - 96,0hr
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	Bluegill sunfish: <i>Lepomis macrochirus</i>: >2.8 mg/L Daphnia magna: Pyroxasulfone: Acute 48 hour EC₅₀ (mg l⁻¹): >4.4 Algae: Pyroxasulfone: <i>Raphidocelis subcapitata</i>: formerly <i>Selenastrum capricornutum</i> and <i>Pseudokirchneriella subcapitata</i> EC₅₀ : 0.00038 mg/L GHS: Aquatic acute category 1 GHS: Aquatic chronic category 1 Formulated product: GHS: Aquatic acute category 1 GHS: Aquatic chronic category 1 Birds: Pyroxasulfone: Bobwhite quail: Oral: LD₅₀: >2250 mg/kg Bees: Pyroxasulfone: Contact acute LD₅₀ (worst case from 24, 48 and 72 hour values - µg bee⁻¹): >100 Worms: Pyroxasulfone: Acute 14-day LC₅₀ (mg kg⁻¹): >997
Persistence and degradability	Pyroxasulfone: Biodegradability: Photolysis is only expected to be a minor degradation pathway for pyroxasulfone. Pyroxasulfone is unlikely to remain stable in the atmosphere, due to reactions with photo-chemically produced hydroxyl radicals, with an estimated half-life of 2.9 hours. Soil DT₅₀: 22 days. Non-persistent.
Bioaccumulation	Partition coefficient: n-octanol/water(log Pow): log Kow 2.39 Potential for bioaccumulation is low. Pyroxasulfone is unlikely to bioaccumulate in organisms or accumulate in soil.
Mobility in Soil	K _{oc} : 57- 119. Moderately to highly mobile.
Other adverse effects	This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). This substance / mixture contains no ingredients that are on the Montreal Protocol list of substances that deplete the ozone layer.
Precautions:	Do not allow to enter waterways.

Section 13. Disposal Considerations

Disposal Method:

In accordance with local and national regulations.

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

This product and its container must be disposed of by a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations. Do not dispose into, or allow contact with, municipal sewerage systems or open water bodies. Do not bury.

Contaminated packaging:

Contaminated packaging should be emptied as far as possible. If containers cannot be recycled, they should be disposed of together with the waste chemical

Do not reuse empty containers. Empty containers retain product residue. Triple rinse, or equivalent, empty container, return rinse water to dilution mixture, and dispose of dilution mixture as a hazardous waste if it cannot be disposed of by use according to label instructions. Consult provincial environment department for advice on waste disposal. Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packaged and properly labelled. Only licensed carriers may be used for transport. If recycling, close container and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and take to a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations for disposal.

Special precautions during disposal:

Waste resulting from the use of this product cannot be reused or reprocessed. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Do not contaminate rivers, dams or any other water sources with the product or used containers. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and take to a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations for disposal.

If on-site container disposal is necessary, triple rinse empty container with water, add rinsate to the spray tank. Puncture top, sides and bottom, crush, and store appropriately until it can be taken to a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations for disposal.

Empty containers and product should not be burnt.

Section 14 Transport Information

Rail/road (RID/ADR):

Proper shipping name

ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
SOLID, N.O.S. (Pyroxasulfone)

UN number

3077

Class	9
Packing group	III
Environm. Haz. Mark	Yes

Sea (IMDG code):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Pyroxasulfone)
UN number	3077
Class	9
Packing group	III
Marine pollutant	Yes
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC code	Consult IMO regulations before transporting ocean bulk.

Air (ICAO/IATA):

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Pyroxasulfone)
UN number	3077
Class	9
Packing group	III
Environm. Haz. Mark	Yes

Section 15	Regulatory Information
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Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

Section 16	Other Information
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Full text of H-Statements referred to under sections 2 and 3.

H316: Causes mild skin irritation.
H319: Causes serious eye irritation.
H228: Flammable solid.
H302: Harmful if swallowed.
H315: Causes skin irritation.
H318: Causes serious eye damage.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H373: May cause damage to organs through prolonged or repeated exposure
H372: Causes damage to organs.
H351: Suspected of causing cancer.
H361: Suspected of damaging fertility or the unborn child.
H400: Very toxic to aquatic life.
H401: Toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.
H412: Harmful to aquatic life with long lasting effects.

Abbreviations and acronyms

ADR European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS-Nr. Chemical Abstracts Service number
CLP Classification, Labelling and Packaging
ECHA – European Chemicals Agency
EC-No. European community number
ECx Effective concentration to x %
EU European Union
GHS Globally Harmonized System
IATA International Air Transport Association
IBC International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICAO International Civil Aviation Organization
IMDG International Maritime Dangerous Goods
LCx Lethal concentration to x %
LDx Lethal dose to x %
MARPOL: International Convention for the prevention of marine pollution from ships
PBT Persistence, Bioaccumulation and Toxic
vPvB Very persistent and very bioaccumulative
RID Regulations concerning the International Carriage of Dangerous Goods by Rail
STOT SE Specific target organ toxicity single exposure.
STOT RE Specific target organ toxicity repeated exposure.
UN United Nations

For proper and safe use of this product, please refer to the approval conditions laid down on the product label. The data contained in this safety data sheet is based on our current knowledge and describes the product only with regard to safety requirements. The data does not describe the products properties. Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any existing laws and legislation are observed.

The information herein is given in good faith, but no warranty, express or implied is made.

Issue Date: 5 February 2025 Review Date: 5 February 2030