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SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**

· **Trade name: Dimethyl Formamide 99.9%**

· **Article number:**
1L: 50-1409-10
2.5L: 50-1409-25
· **CAS Number:**
68-12-2
· **EC number:**
200-679-5
· **Index number:**
616-001-00-X
· **Registration number** 01-2119475605-32-XXXX
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Product category**
PC1 Adhesives, sealants
Coatings and paints, thinners, paint removers
PC19 Intermediate
PC21 Laboratory chemicals
PC23 Leather treatment products
PC27 Plant protection products
PC28 Perfumes, fragrances
PC29 Pharmaceuticals
PC32 Polymer preparations and compounds
PC34 Textile dyes, and impregnating products
PC0 Other
· **Application of the substance / the mixture** The product has many industrial and professional applications.
· **Uses advised against**
Processes involving extreme heat use advised against.
Any use involving aerosol formation or vapour release in excess of the assigned WEL where workers are exposed without suitable RPE.
Any use carrying a risk of direct contact with eyes/skin where workers are exposed without adequate personal protective equipment (PPE).
Processes where workers who may be pregnant or breastfeeding could potentially come into direct contact with the undiluted product.
The product is stictly intended for industrial or professional use only.

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Severn Biotech Ltd.
Unit 2,
Park Lane,
Kidderminster,
Worcestershire.
DY11 6TJ
UK
Tel: 0044 1562 825286
Fax: 0044 1562 825284
email: info@severnbiotech.com

· **Further information obtainable from:** Product safety department.
· **1.4 Emergency telephone number:**
Members of the public seeking specific information on poisons should contact:
In England and Wales: NHS 111 - dial 111
In Scotland: NHS 24 - dial 111

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SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.

GHS08 health hazard

Repr. 1B H360D May damage the unborn child.

GHS07

Acute Tox. 4 H312 Harmful in contact with skin.
Acute Tox. 4 H332 Harmful if inhaled.
Eye Irrit. 2 H319 Causes serious eye irritation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the GB CLP regulation.
· **Hazard pictograms** GHS02, GHS07, GHS08
· **Signal word** Danger
· **Hazard statements**
H226 Flammable liquid and vapour.
H312+H332 Harmful in contact with skin or if inhaled.
H319 Causes serious eye irritation.
H360D May damage the unborn child.
· **Precautionary statements**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241 Use explosion-proof [electrical/ventilating/lighting] equipment.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.1 Chemical characterisation: Substances**
· **CAS No. Description**
68-12-2 Dimethyl formamide
· **Identification number(s)**
· **EC number:** 200-679-5
· **Index number:** 616-001-00-X

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· **SVHC**	
68-12-2	Dimethyl formamide

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SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Use of alcoholic beverages may enhance toxic effects.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Immediately rinse with water.
If skin irritation continues, consult a doctor.
May be absorbed through the skin. Seek medical advice.
· **After eye contact:**
Check for and remove any contact lenses.
Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; call for medical help immediately.
If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
· **Information for doctor:**
Indication of immediate medical attention and special treatment needed:
• Biomonitoring possible at chronic exposure
• Determination of formamide in blood at the end of the workday/workweek
• Determination of formamide in urine at the end of the workday/workweek
• Lab testing in blood for delayed effects
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
If swallowed, gastric irrigation with added, activated carbon.

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SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:**
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire extinguishing methods suitable to surrounding conditions.
· **For safety reasons unsuitable extinguishing agents:** Water with full jet
· **5.2 Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Carbon monoxide (CO)
Vapours are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
Flammable. Vapors may travel to source of ignition and flash back.
Nitrogen oxides (NOx)
· **5.3 Advice for firefighters**
· **Protective equipment:**
Wear fully protective suit.
Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.

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· **Additional information**
Cool endangered receptacles with water spray.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

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SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep ignition sources away - no smoking.
· **6.2 Environmental precautions:**
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course in the undiluted form.
· **6.3 Methods and material for containment and cleaning up:**
Contain and collect spillage with non-combustible, absorbent material e.g.sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.
Contaminated absorbent material may pose the same hazard as the spilt product.
Ensure adequate ventilation.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Prevent formation of aerosols.
Only handle and refill product in closed systems.
Avoid direct contact (skin/eye contact, ingestion and/or inhalation of fume/mist/dust) with the product in the undiluted form.
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
The product must only be handled by authorised, trained and experienced professionals under strictly controlled conditions.
· **Information about fire - and explosion protection:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** Prevent any seepage into the ground.
· **Information about storage in one common storage facility:**
Store away from oxidising agents.
Store away from foodstuffs.
· **Further information about storage conditions:**
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.
Store in a bunded area.
· **Storage class:** 3
· **7.3 Specific end use(s)** No further relevant information available.

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SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Additional information about design of technical facilities:** No further data; see section 7.

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· **Ingredients with limit values that require monitoring at the workplace:**

68-12-2 Dimethyl formamide

WEL	Short-term value: 30 mg/m³, 10 ppm Long-term value: 15 mg/m³, 5 ppm Sk

· **DNELs**

Oral	DNEL Long-term systemic effects	160 µg/kg bw/day (general population)
Dermal	DNEL Long-term systemic effects	1.1 mg/kg bw/day (worker)
Inhalative	DNEL Long-term systemic effects	1.1 mg/m³ (general population)
		6 mg/m³ (worker)

· **PNECs**

PNEC Sewage Treatment Plant	44 mg/L
PNEC Sediment (freshwater)	111 mg/kg
PNEC Sediment (marine water)	11.1 mg/kg

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Ensure that eyewash stations and safety showers are close to the workstation location.
Do not inhale gases / fumes / aerosols.
Pregnant women should strictly avoid inhalation or skin contact.
Avoid alcohol consumption while working with the product.
Do not eat, drink, smoke or sniff while working.
Be sure to clean skin thoroughly after work and before breaks.
Storing food in the working area is prohibited.
A safe system of work must be formulated and followed to ensure safe working with this product. Relevant workers must receive suitable and sufficient training and supervision.
Take note of assigned Workplace Exposure Limits.
· **Respiratory protection:**
Use suitable respiratory protective device in case of insufficient ventilation.
Filter A for organic vapours
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.
· **Protection of hands:**

Protective gloves.
Use gloves tested and approved under appropriate government standards such as NIOSH (US) or EN374 (EU).

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
Butyl rubber, BR
Neoprene gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

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· **Penetration time of glove material**
Break-through time: >480 minutes
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Tightly sealed goggles conforming to EN166.

· **Body protection:**

Protective work clothing

Do not get on skin or clothing. Wear clothing and footwear that cannot be penetrated by the product. Suitable protective equipment may include: Chemical resistant boots, Chemical resistant apron, Full chemical protective suit with a hood, Chemical protective suit consisting of a jacket and trousers. The jacket should be buttoned up to the neck, sleeves sealed at the gloves, and trouser legs worn outside the boots. These precautions are required to prevent the clothing from accidentally trapping product against the skin.
· **Limitation and supervision of exposure into the environment**
Do not allow to enter drains, sewers or watercourses.
· **Risk management measures**
The operators shall be instructed adequately.
The workplace shall be inspected regularly by competent personnel e.g. the safety representative.

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Fluid
Colour:	Colourless
· **Odour:**	Amine-like
· **Odour threshold:**	Not determined.
· **pH-value (200 g/l) at 20 °C:**	7
· **Change in condition**	
Melting point/freezing point:	-61 °C
Initial boiling point and boiling range:	152 °C
· **Flash point:**	58 °C
· **Flammability (solid, gas):**	Not applicable.
· **Auto-ignition temperature:**	435 °C
· **Decomposition temperature:**	Not determined.
· **Ignition temperature:**	Not determined.
· **Explosive properties:**	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· **Explosion limits:**	
Lower:	2.2 Vol %
Upper:	16 Vol %
· **Vapour pressure at 20 °C:**	3.8 hPa
· **Density at 20 °C:**	0.95 g/cm³

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· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with water:**	Fully miscible.
· **Partition coefficient: n-octanol/water:**	-1.01 log POW
· **Viscosity:**	
Dynamic at 20 °C:	0.8 mPas
Kinematic:	Not determined.
· **9.2 Other information**	NOTE: The physical data presented above are typical values and should not be construed as a specification. Conductivity: 0.06 mS/m at 25 °C

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SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
· **10.3 Possibility of hazardous reactions**
Can form explosive mixtures in air if heated above flash point and/or when sprayed or atomised.
· **10.4 Conditions to avoid** Heat and static discharge.
· **10.5 Incompatible materials:**
Strong acids and oxidising agents
Light metals and their alloys.
Halogenated hydrocarbons
· **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)
Ammonia
Amines
Formaldehyde

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SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity**
Harmful in contact with skin or if inhaled.

· **LD/LC50 values relevant for classification:**

Oral	LD50	> 3,010 mg/kg (rat)
Dermal	LD50	3,160 mg/kg (rat)
Inhalative	LC50/4 h	5.85 mg/l (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation**
Causes serious eye irritation.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Subacute to chronic toxicity:**
EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the liver. This may result in impaired functions.
Regular monitoring is recommended.

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· **Additional toxicological information:**
ROUTES OF EXPOSURE: Can be absorbed into the body by ingestion, by inhalation (mist and vapour) and through the skin.
The effects may be delayed. Medical observation is indicated.
Ingestion of a considerable dose can cause irritation in the throat, abdominal pain, nausea and vomiting.
Use of alcoholic beverages may enhance toxic effects.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity**
May damage the unborn child.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

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SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
EC50 (72 h)	1,000 mg/l (Algae)

· **12.2 Persistence and degradability** Readily biodegradable
· **12.3 Bioaccumulative potential** Product is not expected to bioaccumulate.
· **12.4 Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

*
SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Recommended Hierarchy of Controls:
- Minimise waste;
- Reuse if not contaminated;
- Recycle, if possible; or
- Safe disposal (if all else fails).
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Contact waste processors for recycling information.
Used, degraded or contaminated product may be classified as hazardous waste. Anyone classifying hazardous waste and determining its fate must be qualified in accordance with state and international legislation.

· **Uncleaned packaging:**
· **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.
Do not mix with other waste streams.
Disposal must be made according to official regulations.
Container remains hazardous when empty. Continue to observe all precautions.
Containers, even those that are “empty,” may contain residues that can develop flammable and/or hazardous vapours upon heating. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

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· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

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SECTION 14: Transport information

· **14.1 UN-Number**	
· **ADR/RID/ADN, IMDG, IATA**	UN2265
· **14.2 UN proper shipping name**	
· **ADR/RID/ADN**	UN2265 N,N-DIMETHYLFORMAMIDE
· **IMDG, IATA**	N,N-DIMETHYLFORMAMIDE
· **14.3 Transport hazard class(es)**	
· **ADR/RID/ADN, IMDG, IATA**	

· **Class**	3 Flammable liquids.
· **Label**	3
· **14.4 Packing group**	
· **ADR/RID/ADN, IMDG, IATA**	III
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Flammable liquids.
· **Hazard identification number (Kemler code):**	30
· **EMS Number:**	F-E,S-D
· **Stowage Category**	A
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **ADR/RID/ADN**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **Transport category**	3
· **Tunnel restriction code**	D/E
· **IMDG**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III

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SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Poisons Act**
· **Regulated explosives precursors** Substance is not listed.
· **Regulated poisons** Substance is not listed.
· **Reportable explosives precursors** Substance is not listed.

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· **Reportable poisons** Substance is not listed.

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **Seveso category** P5c
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 30, 40, 72, 75, 76
· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
Substance is not listed.
· **REGULATION (EU) 2019/1148**
· **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**
Substance is not listed.
· **Annex II - REPORTABLE EXPLOSIVES PRECURSORS** Substance is not listed.
· **Regulation (EC) No 273/2004 on drug precursors** Substance is not listed.
· **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**
Substance is not listed.

· **National regulations:**

· **Other regulations, limitations and prohibitive regulations**

· **Substances of very high concern (SVHC) according to UK REACH**	
68-12-2	Dimethyl formamide

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Training hints**
This product should only be handled by workers who have received sufficient training in the safe handling and use of chemical products.

· **Department issuing SDS:** Product safety department.
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (UK REACH)
PNEC: Predicted No-Effect Concentration (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Repr. 1B: Reproductive toxicity – Category 1B
· *** Data compared to the previous version altered.**