Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)

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

1.1. Product identifier

Product name : SOLUBORON 20

Product use : Agricultural micronutrient – Soluble Boron fertilizer

Chemical Formula : $Na_2B_4O_7.10H_2O + H_3BO_3 + C_6H_{12}O_6$

Chemical name : Sodium borates

Chemical family : Inorganic borates

Synonyms : Sodium tetraborate decahydrate + Boric acid + D-(−)-Fructose

CAS number : 1303-96-4 ($Na_2B_4O_7.10H_2O$)
10043-35-3 (H_3BO_3)
57-48-7 ($C_6H_{12}O_6$)

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

Relevant identified uses : Chemical Boron Fertilizer

Uses advised against : None

1.3. Details of the supplier of the safety data sheet

Manufacturer : NERİS YATIRIM GIDA İNŞ.SAN. VE TİC. A.Ş.

Address : Polatlı 2.OSB Çekirdeksiz Mah.316.Cad.No.13/1 Polatlı, Ankara, TURKEY

Tel : +90 312 5023344 (pbx)

Web : http://www.nerisgroup.com/

E-mail : info@nerisgroup.com

1.3. Emergency Telephone Number

Tel : +90 532 503 08 74

SECTION 2 : Hazards identification

Emergency overview Soluboron 20 is a white, odorless, powdered substance that is not flammable, combustible, or explosive and has low acute oral and dermal toxicity.

2.1. Product classification of the substance or mixture

Reproductive/developmental: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

2.2. GHS Label Elements

2.2.1. Hazard Pictogram

GHS08 Health Hazard

GHS07 Harmful

2.2.2. Signal Word

Warning

2.2.3. Hazard Statement

Human health hazard

This product is not dangerous if handled accordingly. Nevertheless, the following aspects will be taken into consideration:

Skin contact : Soluboron 20 does not cause irritation to intact skin.

Eye contact : Soluboron 20 is non-irritating to eyes in normal industrial use.

Ingestion : Products containing Soluboron 20 are not intended for ingestion. Soluboron 20 has a low acute toxicity. Small amounts (e.g., a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.

Inhalation : Occasional mild irritation effects to nose and throat may occur from inhalation of Soluboron dust at levels greater than 10 mg/m^3.

Cancer : Soluboron 20 is not a known carcinogen

Environmental hazards

Large amounts of Soluboron 20 can be harmful to plants and other species. Therefore, the product should only be used as part of a balanced plant nutrition program preferably after soil and/or tissue analysis. Accidental releases to the environment should be minimized.

Potential health effects

Routes of exposure : Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because Solubor is poorly absorbed through intact skin.

Reproductive/developmental : Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Target organs : No target organ has been identified in humans. High dose animal ingestion studies indicate the testes are the target organs in male animals.

Signs and symptoms of exposure : Symptoms of accidental over-exposure to Soluboron 20 might include nausea, vomiting and diarrhea, with delayed effects of skin redness and peeling. These symptoms have been associated with the accidental over-exposure to the chemically related substance boric acid.

2.3. Other hazards

Not known.

SECTION 3 : Composition/information on ingredients

3.1. Substances

Not relevant

3.2. Mixtures

Description of the mixture:

Substance name	CAS No.	Concentration (w/w)	Chemical Formula
Sodium tetraborate decahydrate	1303-96-4	Variable	$Na_2B_4O_7.10H_2O$
Boric acid	10043-35-3	Variable	H_3BO_3
D-(−)-Fructose	57-48-7	Variable	$C_6H_{12}O_6$

SECTION 4 : First aid measures

4.1. Description of first aid measures

Inhalation : Remove victim from area of exposure - avoid becoming a casualty. Seek medical advice if effects persist.

Skin contact : Soluboron 20 is very mildly alkaline. Can be slightly irritating. Wash with water. Can be readily absorbed through broken or abraded skin. If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

Eye contact : If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion : Rinse mouth with water. If swallowed, give a glass of water to drink. If vomiting occurs give further water. Seek medical advice.

Indication of immediate medical attention and special treatment needed : Treat symptomatically For ingestion of large amounts (greater than 5 grams), maintain adequate kidney function and force fluids. Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Haemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity of poisoning or as a guide in treatment.

4.2. Most important symptoms and effects, both acute and delayed

Not known.

4.3. Indication of any immediate medical attention and special treatment needed

Not known.

SECTION 5 : Firefighting measures

5.1. General Information

SOLUBORON 20 is not a flammable material. It functions as flame retardant. However, as in any fire, wear a selfcontained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Runoff from fire control or dilution water may cause pollution.

5.2. Extinguishing Media

Any fire extinguishing media may be used on nearby fires. Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

5.3. Advice for fire-fighters

In the event of fire, wear a self-contained breathing apparatus and a chemical protective suit. Make sure that doors and windows of storerooms are opened.

SECTION 6 : Accidental release measures

6.1. Emergency procedures/Environmental precautions:

Soluboron 20 is a water-soluble white powder that may, at high concentrations, cause damage to trees or vegetation by root absorption. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level or meets local quality standards. If contamination of sewers or waterways has occurred advise local emergency services.

Land spill : Vacuum, shovel or sweep up Solubor and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during cleanup and disposal. No personal protective equipment is needed to cleanup land spills.

Spillage into water : Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level.

6.2. Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:

Wear protective equipment to prevent skin and eye contact. Avoid breathing in dust. Work up wind or increase ventilation. Cover with damp absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal.

SECTION 7 : Handling and storage

7.1. Precautions for safe handling

Avoid skin and eye contact and breathing in dust. Keep out of reach of children. When using do not eat, drink or smoke. Wash hands thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Do not breathe dust, vapor, mist, or gas. Avoid ingestion and inhalation.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry, and well-ventilated area away from incompatible substances. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for spills.

7.3. Specific end uses

Chemical fertilizer.

SECTION 8 : Exposure controls/personal protection

8.1. Control parameters

No value assigned for this specific material by Safe Work Australia. However, supplier recommended Workplace Exposure Standard(s):

Occupational Exposure Limit (OEL): 1 mg B/m^3

To convert Soluboron 20 into equivalent boron (B) content, multiply by 0.20.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

8.2. Exposure controls

Appropriate engineering controls

Ensure ventilation is adequate to maintain air concentrations below Workplace Exposure Standards. Keep containers closed when not in use.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as Personal Protective Equipment (PPE):

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

SECTION 9 : Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Colour	:	White
Odour	:	Odourless
Molecular Formula	:	$Na_2B_4O_7.10H_2O + H_3BO_3 + C_6H_{12}O_6$
Solubility	:	Soluble in water, methanol, ethylene glycol, glycerol.
Specific Gravity	:	1.87 @22°C
Relative Vapour Density (air=1)	:	Not applicable
Vapour Pressure (20 °C)	:	Not applicable
Flash Point (°C)	:	Not applicable
Flammability Limits (%)	:	Not applicable
Autoignition Temperature (°C)	:	Not applicable
Melting Point/Range (°C)	:	815 (heated in a closed space)
pH (10% solution, 25°C)	:	7.64
Bulk density (gr cm^3)	:	0.42 – 0.61
Molecular Weight (gr cm^3)	:	412.52

9.2. Other information

No available additional information

SECTION 10 : Stability and reactivity

10.1. Reactivity

Reacts with strong reducing agents such as metal hydrides or alkali metals to generate hydrogen gas which could create an explosive hazard.

10.2. Chemical stability

Soluboron 20 is stable in normal storage, handling and usage conditions.

10.3. Possibility of hazardous reactions

Reacts with strong reducing agents liberating flammable hydrogen gas.

10.4. Conditions to avoid

Incompatible materials, dust generation, excessive heat, exposure to moisture.

10.5. Incompatible materials

Incompatible with strong reducing agents, acids, alkaloids, and metallic salts.

10.6. Hazardous decomposition products

Not available

SECTION 11 : Toxicological information

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Ingestion : No adverse effects expected, however, large amounts may cause nausea and vomiting. Low acute oral toxicity; LD_{50} in rats is 2,550 mg/kg of body weight.

Eye contact : May be an eye irritant. Exposure to the dust may cause discomfort due to particulate nature. May cause physical irritation to the eyes.

Skin contact : Repeated or prolonged skin contact may lead to irritation.

Inhalation : Breathing in dust may result in respiratory irritation. Low acute inhalation toxicity; LC_{50} in rats is greater than 2.0 mg/L (or g/m^3).

Acute toxicity :

Oral LD50 (rat) : >2,550 mg/kg.

Dermal LD50 (rabbit) : >2,000 mg/kg.

Inhalation LC50 (rat) : >2.0 mg/L.

Skin corrosion/irritation : Non-irritant (rabbit).

Serious eye damage/irritation : Non-irritant (rabbit).

Respiratory or skin sensitisation : Not a skin sensitiser (guinea pig).

Chronic effects : Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. The doses administered were many times in excess of those to which humans would normally be exposed.

Mutagenicity : No information available.

Carcinogenicity : Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).

Reproductive toxicity May damage fertility or the unborn child.

Specific Target Organ Toxicity (STOT) - single exposure : Not classified.

Specific Target Organ Toxicity (STOT) - repeated exposure : Not classified.

Aspiration hazard : Not classified.

Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust.

SECTION 12 : Ecological information

12.1. Ecotoxicity data

Avoid contaminating waterways.

Fish Toxicity : Boron naturally occurs in seawater at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC50) for under-yearling Coho salmon (Onchorhynchus kisutch) in seawater was

determined as 40 mg B/L (added as Sodium Metaborate). The Minimum Lethal Dose for minnows exposed to borates or boric acid at 20C for 6 hours is 18,000 to 19,000 mg/l in distilled water, 19,000 to 19,500 in hard water. Rainbow trout: 24-day LC50 = 150.0 mg/B/L 36-day NOEC-LOEC = 0.75-1 mg/B/L Goldfish: 7-day NOEC-LOEC = 26.50 mg/B/L 3-day LC50 = 178 mg/B/L

Bird Toxicity : Dietary levels of 100 mg/kg resulted in reduced growth of female mallards. As little as 30 mg/kg fed to mallard adults adversely affected the growth rate of offspring.

Invertebrate Toxicity : Daphnids 48-hour LC50 = 133 mg/B/L 1-day NOEC-LOEC = 6-13 mg/B/L

Phytotoxicity : Although boron is an essential micro-nutrient for healthy growth of plants, it can be harmful to boron-sensitive plants in higher quantities. Plants and trees can easily be exposed by root absorption to toxic levels of boron in the form of watersoluble Borate leached into nearby waters or soil. Care should be taken to minimize the amount of boron released to the environment.

12.2. Persistence and degradability

Biodegradation is not an applicable endpoint since the product is an inorganic chemical.

12.3. Bioaccumulative potential

This product shows a low bioaccumulation potential.

12.4. Mobility in soil

The product is soluble in water and is leachable through normal soil. Adsorption to soils or sediments is insignificant.

SECTION 13 : Disposal considerations

Waste treatment methods

The generation of waste should be avoided or minimized wherever possible. Recycle if possible. Do not mix with other waste. The waste should be in the original packaging. Do not allow significant quantities of the product or residues to enter in the sewage system. Treat them in WWTP. Disposal of this product or it's solutions must always comply with the requirements of environmental protection and local legal requirements in the field of waste management.

Package waste disposal:

The generation of waste should be avoided or minimized wherever possible. Empty packages should be for recycling. Incineration or landfill should be taken into account only when recycling is not possible. The national legal requirements for waste management to be observed.

SECTION 14 : Transport information

Road and Rail Transport : Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Marine Transport : Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

Air Transport : Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

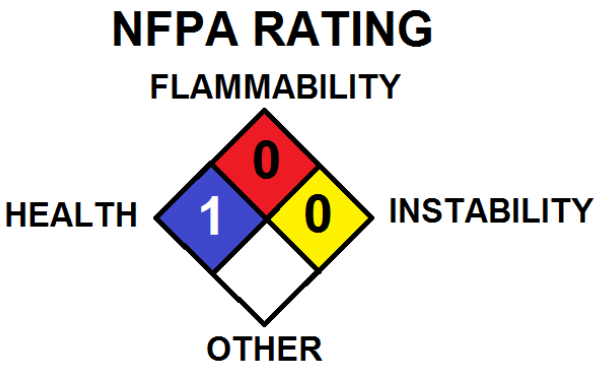
SECTION 15 : Regulatory information

US Regulations

TSCA	It is listed on the TSCA inventory.
Health & Safety Reporting List	Not on the Health & Safety Reporting List.
Chemical Test Rules	Not under a Chemical Test Rule.
TSCA 12(b)	Chemical Weapons Convention: TSCA 12(b): No
CDTA	No
SARA 311/312	Acute: Yes Chronic: Yes Fire: No Pressure: No Reactivity: No (Mixture / Solid)
TSCA Significant New Use Rule	Not a SNUR under TSCA.
SARA Section 302 (RQ)	None of the chemicals in this material have an RQ.
Section 302 (TPQ)	None of the chemicals in this product have a TPQ.
SARA Codes	Chronic.
Section 313	No chemicals are reportable under Section 313.
Clean Air Act	This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act	None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA	This product is not considered highly hazardous by OSHA
STATE	It can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts. California No Significant Risk Level: None of the chemicals in this product are listed.
Canada	It is listed on Canada's DSL List. This product has a WHMIS classification of D2A, D2B. It is listed on Canada's Ingredient Disclosure List.
Exposure Limits	OEL-AUSTRALIA:TWA 5 mg/m^3 OEL-BELGIUM:TWA 5 5 mg/m^3 OEL-DENMARK:TWA 5 5 mg/m^3 OEL-FRANCE:TWA 5 5 mg/m^3 OEL-THE NETHERLANDS:TWA 5 5 mg/m^3 OEL-SWEDEN:TWA 2 5 mg/m^3;STEL 5mg/m3;Skin OEL-SWITZERLAND:TWA 5 5 mg/m^3 OEL-UNITED KINGDOM:TWA 5 5 mg/m^3 OEL IN BULGARIA, COLOMBIA, KOREA, NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

SECTION 15 : Other information

16.1. National Fire Protection Association (NFPA) Classification



Hazard Scale : 0 = Minimal
1 = Slight
2 = Moderate
3 = Serious
4 = Severe

16.2. Abbreviations and acronyms

SDS	-	Safety Data Sheet
ECHA	-	European Chemicals Agency
EC	-	European Commission
LD_{50}	-	Lethal dose for 50% of subjects
ESIS	-	European Chemical Substances Information System (FE)
EFMA	-	Fertilizers Europe (European Fertilizer Manufacturers Association)
REACH	-	EC Regulation No. 1907/2006 of the European Parliament and Council concerning the registration, evaluation, authorization and restriction of chemical substances

Training advice : Operators should be provided with information, instruction, training and supervision relative to this Safety Data Sheet and any subsequent COSHH assessment produced by his/her employer.

References : EFMA/Fertilizers Europe Guidance documents, TFI HPV data; NOTOX gap analysis.

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