Safety Data Sheet
acc. to OSHA HCS

Printing date 09/20/2023 *Reviewed on 09/20/2023*

1 Identification

- ***Product identifier***
  - ***Trade name:*** ND Microspheres® Epoxy Series
    - ***Synonyms:*** 593S Blue Microspheres
    - ***Part number:*** 593SB
    - ***Application of the substance / the mixture*** Thread Locking
- ***Details of the supplier of the safety data sheet***
  - ***Manufacturer/Supplier:***
    ND Industries, Inc
    1000 North Crooks Road
    Clawson, MI 48017
    USA
    Telephone: +1-248-288-0000
    Email: info@ndindustries.com
    Website: www.ndindustries.com
  - ***Information department:*** Product Safety Department
  - ***Emergency telephone number:***
    United States: 1-800-424-9300
    International: +1-703-527-3887

2 Hazard(s) identification

- ***Classification of the substance or mixture***


GHS02 Flame

Flammable Liquids 2	H225	Highly flammable liquid and vapor.


GHS08 Health hazard

Toxic to Reproduction 2	H361	Suspected of damaging fertility or the unborn child.
Specific Target Organ Toxicity - Repeated Exposure 2	H373	May cause damage to organs through prolonged or repeated exposure.


GHS05 Corrosion

Skin Corrosion 1B	H314	Causes severe skin burns and eye damage.
Eye Damage 1	H318	Causes serious eye damage.


GHS07

Acute Toxicity - Inhalation 4	H332	Harmful if inhaled.
Sensitization - Skin 1	H317	May cause an allergic skin reaction.
Specific Target Organ Toxicity - Single Exposure 3	H335-H336	May cause respiratory irritation. May cause drowsiness or dizziness.

- ***Label elements***
  - ***GHS label elements*** The product is classified and labeled according to the Globally Harmonized System (GHS).
    - ***Hazard pictograms***


GHS02 GHS05 GHS07 GHS08

    - ***Signal word*** Danger
    - ***Hazard-determining components of labeling:***
      toluene
      Curing Agent
      Epoxy resin

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Reactive Stabilizer

- ***Hazard statements***

H225 Highly flammable liquid and vapor.
H332 Harmful if inhaled.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H361 Suspected of damaging fertility or the unborn child.
H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.

- ***Precautionary statements***

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P242 Use only non-sparking tools.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P260 Do not breathe dusts or mists.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P280 Wear protective gloves.
P280 Wear eye protection / face protection.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a poison center/doctor.
P321 Specific treatment (see on this label).
P312 Call a poison center/doctor if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- ***Other hazards***
  - ***Results of PBT and vPvB assessment***
    - ***PBT:*** Not applicable.
    - ***vPvB:*** Not applicable.

*
3 Composition/information on ingredients

- ***Chemical characterization: Mixtures***
  - ***Description:*** Mixture of the substances listed below with nonhazardous additions.
  - ***Dangerous components:***

CAS: 108-88-3	toluene	40 – 49%
	Flammable Liquids 2, H225; Toxic to Reproduction 2, H361; Specific Target Organ Toxicity - Repeated Exposure 2, H373; Aspiration Hazard 1, H304; Skin Irritation 2, H315; Eye Irritation 2A, H319; Specific Target Organ Toxicity - Single Exposure 3, H336	
CAS: 25036-13-9	Polyoxymethylene melamine urea	20 – 29%
	Skin Irritation 2, H315	
CAS: 28064-14-4	Epoxy resin	20 – 29%
	Skin Irritation 2, H315; Eye Irritation 2A, H319; Sensitization - Skin 1, H317; Specific Target Organ Toxicity - Single Exposure 3, H335	
CAS: 1761-71-3	Curing Agent	10 – 19%
	Specific Target Organ Toxicity - Repeated Exposure 2, H373; Skin Corrosion 1B, H314; Acute Toxicity - Oral 4, H302; Sensitization - Skin 1, H317	
CAS: 63148-65-2	Binding agent	1 – 4%
	Combustible Dust	
	Reactive Stabilizer	
	Acute Toxicity - Dermal 3, H311; Acute Toxicity - Inhalation 2, H330; Skin Corrosion 1B, H314; Eye Damage 1, H318; Acute Toxicity - Oral 4, H302	

4 First-aid measures

- ***Description of first aid measures***
  - ***General information:***

Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

  - ***After inhalation:***

Supply fresh air and to be sure call for a doctor.

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In case of unconsciousness place patient stably in side position for transportation.
Supply fresh air; consult doctor in case of complaints.
- ***After skin contact:*** Immediately wash with water and soap and rinse thoroughly.
- ***After eye contact:*** Rinse opened eye for several minutes under running water. Then consult a doctor.
- ***After swallowing:*** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- ***Information for doctor:***
  - ***Most important symptoms and effects, both acute and delayed*** No further relevant information available.
  - ***Indication of any immediate medical attention and special treatment needed***
    No further relevant information available.

5 Fire-fighting measures

- ***Extinguishing media***
  - ***Suitable extinguishing agents:***
    CO_2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - ***For safety reasons unsuitable extinguishing agents:*** Water
- ***Special hazards arising from the substance or mixture*** No further relevant information available.
- ***Advice for firefighters***
  - ***Protective equipment:***
    Wear self-contained respiratory protective device.
    Wear fully protective suit.

6 Accidental release measures

- ***Personal precautions, protective equipment and emergency procedures***
  Wear protective equipment. Keep unprotected persons away.
  Ensure adequate ventilation
  Wear protective clothing.
- ***Environmental precautions:***
  Inform respective authorities in case of seepage into water course or sewage system.
  Do not allow to enter sewers/ surface or ground water.
- ***Methods and material for containment and cleaning up:***
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Use neutralizing agent.
  Dispose contaminated material as waste according to section 13.
  Ensure adequate ventilation.
  Do not flush with water or aqueous cleansing agents
  Dispose of the collected material according to regulations.
- ***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.

7 Handling and storage

- ***Handling:***
  - ***Precautions for safe handling***
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
    No special precautions are necessary if used correctly.
  - ***Information about protection against explosions and fires:***
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
- ***Conditions for safe storage, including any incompatibilities***
  - ***Storage:***
    - ***Requirements to be met by storerooms and receptacles:*** No special requirements.
    - ***Information about storage in one common storage facility:*** Not required.
    - ***Further information about storage conditions:***
      Keep receptacle tightly sealed.
      Store in cool, dry conditions in well sealed receptacles.
- ***Specific end use(s)*** No further relevant information available.

*
8 Exposure controls/personal protection

- ***Additional information about design of technical systems:*** No further data; see section 7.
- ***Control parameters***
  - ***Components with limit values that require monitoring at the workplace:***
    The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

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At this time, the other constituents have no known exposure limits.

CAS: 108-88-3 toluene	
PEL	Long-term value: 200 ppm Ceiling limit value: 300; 500* ppm *10-min peak per 8-hr shift
REL	Short-term value: 560 mg/m³, 150 ppm Long-term value: 375 mg/m³, 100 ppm
TLV	Long-term value: 20 ppm BEI, OTO, A4

- ***Ingredients with biological limit values:***

CAS: 108-88-3 toluene	
BEI	0.02 mg/L Medium: blood Time: prior to last shift of workweek Parameter: Toluene 0.03 mg/L Medium: urine Time: end of shift Parameter: Toluene 0.3 mg/g creatinine Medium: urine Time: end of shift Parameter: o-Cresol with hydrolysis (background)

- ***Additional information:*** The lists that were valid during the creation were used as basis.

- ***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.
      Avoid contact with the eyes and skin.
    - ***Breathing equipment:***
      Not required.
      In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
    - ***Protection of hands:***

      Protective gloves

      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***
        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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
        Nitrile rubber, NBR
      - ***Penetration time of glove material***
        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

    - ***Body protection:*** Protective work clothing

9 Physical and chemical properties

- ***Information on basic physical and chemical properties***
  - ***General Information***
    - ***Appearance:***
      - ***Form:*** Fluid
      - ***Color:*** Blue
    - ***Odor:*** Solvent-like

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- ***Odor threshold:***	Not determined.
- ***pH-value:***	Not determined.
- ***Change in condition***	
- ***Melting point/Melting range:***	Undetermined.
- ***Boiling point/Boiling range:***	≥ 110 – ≤ 111 °C (≥ 230 – ≤ 231.8 °F)
- ***Flash point:***	4 °C (39.2 °F)
- ***Flammability (solid, gaseous):***	Highly flammable.
- ***Auto igniting:***	535 °C (995 °F)
- ***Decomposition temperature:***	Not determined.
- ***Ignition temperature:***	Product is not selfigniting.
- ***Danger of explosion:***	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- ***Explosion limits:***	
- ***Lower:***	1.2 Vol %
- ***Upper:***	7 Vol %
- ***Vapor pressure at 20 °C (68 °F):***	n.a. hPa
- ***Vapor pressure at 50 °C (122 °F):***	≤ 124 hPa (≤ 93 mm Hg)
- ***Density:***	Not determined.
- ***Relative density***	Not determined.
- ***Vapor density***	Not determined.
- ***Evaporation rate***	Not determined.
- ***Solubility in / Miscibility with***	
- ***Water:***	Not miscible or difficult to mix.
- ***Partition coefficient (n-octanol/water):***	Not determined.
- ***Viscosity:***	
- ***Dynamic:***	Not determined.
- ***Kinematic at 40 °C (104 °F):***	1,100 mm²/s
- ***Solvent content:***	
- ***Organic solvents:***	41.4 %
- ***Water:***	0.1 %
- ***VOC content:***	41.42 % 414.2 g/l / 3.46 lb/gal
- ***Solids content:***	46.6 %
- ***Other information***	No further relevant information available.

10 Stability and reactivity

- ***Reactivity*** No further relevant information available.
- ***Chemical stability***
  - ***Thermal decomposition / conditions to be avoided:*** No decomposition if used according to specifications.
- ***Possibility of hazardous reactions*** No dangerous reactions known.
- ***Conditions to avoid*** No further relevant information available.
- ***Incompatible materials:*** No further relevant information available.
- ***Hazardous decomposition products:***
  Aldehyde
  Hydrocarbons

* 11 Toxicological information

- ***Information on toxicological effects***
  - ***Acute toxicity:***

- ***LD/LC50 values that are relevant for classification:***

ATE (Acute Toxicity Estimate)		
Oral	LD50	4,859 mg/kg
Dermal	LD50	102,041 mg/kg (rabbit)
Inhalative	LC50/4 h	10.2 mg/l

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CAS: 108-88-3 toluene		
Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)
CAS: 1761-71-3 Curing Agent		
Oral	LD50	500 mg/kg (ATE)
Reactive Stabilizer		
Oral	LD50	790 mg/kg (rat)
Dermal	LD50	500 mg/kg (rabbit)
Inhalative	LC50/4 h	0.05 mg/l (ATE)

- ***Primary irritant effect:***
  - ***on the skin:*** Caustic effect on skin and mucous membranes.
  - ***on the eye:*** Strong caustic effect.
- ***Sensitization:*** Sensitization possible through skin contact.
- ***Additional toxicological information:***
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- ***Carcinogenic categories***

- ***IARC (International Agency for Research on Cancer)***

CAS: 108-88-3	toluene	3
CAS: 7631-86-9	Silicon dioxide, Untreated fumed	3

- ***NTP (National Toxicology Program)***

None of the ingredients is listed.

- ***OSHA-Ca (Occupational Safety & Health Administration)***

None of the ingredients is listed.

12 Ecological information

- ***Toxicity***
  - ***Aquatic toxicity:*** No further relevant information available.
- ***Persistence and degradability*** No further relevant information available.
- ***Behavior in environmental systems:***
  - ***Bioaccumulative potential*** No further relevant information available.
  - ***Mobility in soil*** No further relevant information available.
- ***Ecotoxical effects:***
  - ***Remark:*** Harmful to fish
- ***Additional ecological information:***
  - ***General notes:***
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
- ***Results of PBT and vPvB assessment***
  - ***PBT:*** Not applicable.
  - ***vPvB:*** Not applicable.
- ***Other adverse effects*** No further relevant information available.

13 Disposal considerations

- ***Waste treatment methods***
  - ***Recommendation:*** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- ***Uncleaned packagings:***
  - ***Recommendation:*** Disposal must be made according to official regulations.

14 Transport information

- ***UN-Number***
  - ***DOT, IMDG, IATA*** UN1133

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- ***UN proper shipping name***	
- ***DOT***	Adhesives
- ***IMDG, IATA***	ADHESIVES
- ***Transport hazard class(es)***	
- ***DOT***	
	
- ***Class***	3 Flammable liquids
- ***Label***	3
- ***IMDG, IATA***	
	
- ***Class***	3 Flammable liquids
- ***Label***	3
- ***Packing group***	
- ***DOT, IMDG, IATA***	II
- ***Environmental hazards:***	
- ***Marine pollutant:***	No
- ***Special precautions for user***	Warning: Flammable liquids
- ***Hazard identification number (Kemler code):***	33
- ***EMS Number:***	F-E,S-D
- ***Stowage Category***	B
- ***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code***	Not applicable.
- ***Transport/Additional information:***	
- ***DOT***	
- ***Quantity limitations***	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
- ***IMDG***	
- ***Limited quantities (LQ)***	5L
- ***Excepted quantities (EQ)***	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
- ***UN "Model Regulation":***	UN 1133 ADHESIVES, 3, II

* 15 Regulatory information

- ***Safety, health and environmental regulations/legislation specific for the substance or mixture***
No further relevant information available.

- ***Sara***

- ***Section 355 (extremely hazardous substances):***

None of the ingredients is listed.

- ***Section 313 (Specific toxic chemical listings):***

CAS: 108-88-3	toluene

- ***TSCA (Toxic Substances Control Act):***

All components have the value ACTIVE.

- ***Hazardous Air Pollutants***

CAS: 108-88-3	toluene

- ***Proposition 65***

- ***Chemicals known to cause cancer:***

None of the ingredients is listed.

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- ***Chemicals known to cause reproductive toxicity for females:***		
None of the ingredients is listed.		

- ***Chemicals known to cause reproductive toxicity for males:***		
None of the ingredients is listed.		

- ***Chemicals known to cause developmental toxicity:***		
CAS: 108-88-3	toluene	

- ***Carcinogenic categories***

- ***EPA (Environmental Protection Agency)***		
CAS: 108-88-3	toluene	II

- ***TLV (Threshold Limit Value)***		
CAS: 108-88-3	toluene	A4

- ***NIOSH-Ca (National Institute for Occupational Safety and Health)***		
None of the ingredients is listed.		

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

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.

- ***Department issuing SDS:*** ND Industries, Inc. - Safety, Health and Environmental Affaires
- ***Contact:*** Safety, Health and Environmental Affaires
- ***Classification System:***
  - ***HMIS-ratings (scale 0 - 4)***

Health = 3
Fire = 3
Reactivity = 0

  - ***NFPA ratings (scale 0 - 4)***

Health = 3
Fire = 3
Reactivity = 0

- ***Date of preparation / last revision*** 09/20/2023
- ***Abbreviations and acronyms:***

IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flammable Liquids 2: Flammable liquids – Category 2
Acute Toxicity - Oral 4: Acute toxicity – Category 4
Acute Toxicity - Dermal 3: Acute toxicity – Category 3
Acute Toxicity - Inhalation 2: Acute toxicity – Category 2
Skin Corrosion 1B: Skin corrosion/irritation – Category 1B
Skin Irritation 2: Skin corrosion/irritation – Category 2
Eye Damage 1: Serious eye damage/eye irritation – Category 1
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Sensitization - Skin 1: Skin sensitisation – Category 1
Toxic to Reproduction 2: Reproductive toxicity – Category 2
Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3
Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2
Aspiration Hazard 1: Aspiration hazard – Category 1

- **** Data compared to the previous version altered.***
- ***Disclaimer***

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