



Material Safety Data Sheet


MSDS/SDS Number: 00000159MSDS
Latest Revision Date: May 3, 2010
Revision: A

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

Product Name: Tween 20 / Sodium Azide Solution (100X).
Catalogue Number(s): See Section 16.
Chemical Name: Aqueous solution of Sodium Azide and [Sorbitan Monolaurate, Ethoxylated].
Synonyms: None.
Intended Product Use: Immunofluorescence research reagent intended for research use only.
Manufacturer/Distributor: Millipore Corporation (Corporate Headquarters) Millipore S.A.S. (European Headquarters)
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SECTION 2 HAZARDS IDENTIFICATION

Globally Harmonized System of Classification and Labeling of Chemicals (GHS):

Symbol:  **Hazard Category:** 3: Acute Toxicity, Inhalation
4: Acute Toxicity, Oral
4: Acute Toxicity, Dermal

Signal Word: Danger

Hazard Statement: H331: Toxic if inhaled.
H302+H312: Harmful if swallowed or in contact with skin.

GHS Precautionary Statements:

Prevention: P261: Avoid breathing dust/mist/vapors/spray.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well ventilated place.

P280: Wear protective gloves/protective clothing.

Response: P308+P313: If exposed or concerned: Get medical advice/attention.
 P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P311: Call a POISON CENTER or doctor/physician.
 P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
 P330: Rinse mouth.
 P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue rinsing.
 P302+P352: IF ON SKIN: Wash with plenty of soap and water.
 P363: Wash contaminated clothing before reuse.

Storage: P403+P233: Store in a well ventilated place. Keep container tightly closed.
 P405: Store locked up.

Disposal: P501: Dispose of content/container in accordance with local regulations.

Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH):

Symbol: **Symbol Letter:** T



Hazard: Toxic

Risk Phrase: R23: Toxic by inhalation.
 R21/22: Harmful in contact with skin and if swallowed.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Identification of Dangerous Components: This product contains the substances listed below, which are defined as dangerous substances or hazardous chemicals as defined in European Community Directives 67/548/EEC or 1999/45/EC, and Hazard Communication Standard 29 CFR 1910.1200.

Dangerous Component	EINECS or ELINCS No.	CAS No.	Content (weight percent)	EU Hazard Symbol Letters*†	R Phrases**†
Sodium Azide:	247-852-1	26628-22-8	< 2 %	T+ N	R28 R32 R50/53
Sorbitan Monolaurate, Ethoxylated:	500-018-3	9005-64-5	< 6 %	N/A	N/A

Identification of Components Not Classified as Dangerous: This product contains the substances listed below, which are not defined as dangerous substances or hazardous chemicals as defined in European Community Directives 67/548/EEC or 1999/45/EC, and Hazard Communication Standard 29 CFR 1910.1200.

Non-Dangerous Component	EINECS or ELINCS No.	CAS No.	Content (weight percent)	EU Hazard Symbol Letters *	R Phrases**
Water:	231-791-2	7732-18-5	> 92 %	N/A	N/A

* Symbol letters and categories of danger: **T+** = Very toxic, **T** = Toxic, **C** = Corrosive, **Xn** = Harmful, **Xi** = Irritant, **E** = Explosive, **F+** = Extremely flammable, **F** = Highly flammable, **N** = Dangerous for the environment, **O** = Oxidising.

** The full text of each R Phrase is listed in Section 16.

† Symbols Letters and R Phrases are assigned to each dangerous component for the highest concentration range as defined in 67/548/EEC and 1999/45/EC.

SECTION 4 FIRST AID MEASURES

	Treatment Measures:	Symptoms of Exposure:
Contact with Eyes:	If the product contacts the eyes, promptly wash (irrigate) the eyes with large amounts of tepid water for at least 15 minutes, occasionally lifting the lower and upper lids. Seek medical attention immediately.	Redness, irritation, swelling and watering of the eyes, blurred vision, and excessive dilation of the pupils.
Ingestion:	Seek medical attention immediately. Never give an unconscious person anything by mouth.	Possible gastrointestinal irritation, nausea, vomiting, diarrhea and polydipsia.
Inhalation:	If a person inhales large amounts of the product move the exposed person to fresh air at once. If breathing is difficult or stops seek immediate medical attention.	Inhalation may produce nasal irritation, headache, syncope, flaccidity, muscle weakness, hand tremor, coma, and seizures. Exposure to hydrazoic acid vapors evolved from sodium azide can cause irritation of the mucous membranes of the respiratory tract.
Skin Contact:	If the product contacts the skin, immediately flush the contaminated skin with mild soap and water. If this chemical penetrates clothing immediately remove the clothing and flush the skin with water. Seek medical attention immediately.	Possible skin irritation. Sodium Azide can be absorbed through the skin causing systemic toxicity.
Mild Exposure:	The most commonly reported health effect is hypotension, which can occur independent of route of exposure. Mild to moderate exposures can cause headache, mild hypotension, syncope, nausea, vomiting, diarrhea, abdominal pain, and a general feeling of apprehension and unwellness.	
Acute Exposure:	More serious poisoning can cause central nervous system depression, coma, chest discomfort, hyperthermia or hypothermia, pulmonary edema, lactic acidosis, bradycardia or tachycardia, severe hypotension (sometimes preceded by hypertension), atrial and ventricular dysrhythmias, electrocardiographic changes, shortness of breath, diaphoresis, blurred vision, and seizures.	

SECTION 5 FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use extinguishing media appropriate for the surrounding fire. This product is compatible with commercially available extinguishing media.

Special Protective Equipment for Firefighters: This product does not require the use of any additional fire fighting equipment beyond what is appropriate to the surrounding fire.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear chemical resistant boots, clothing, eye protection, and gloves to prevent skin contact. (See Section 8)

Small Spills: Identify the spilled material(s). Barricade the spill area and notify others in the surrounding areas. Control all sources of ignition if the substance is flammable. Don the appropriate personal protective equipment (See section 8). Control the movement of the spilled product (into drains, soil, across floors etc.) with absorbent spill materials. Collect contaminated spill material and place in container meeting appropriate U.N. packaging requirements. Decontaminate used equipment and affected spill area appropriately.

Large Spills: In addition to small spill precautions, determine personnel evacuation distances. Notify appropriate authorities if necessary.

Environmental Precautions: Collect and dispose of contaminated materials according to international, federal, state and local regulations. Keep away from surface and ground water, drains, and soil.

SECTION 7 HANDLING AND STORAGE

Handling: Seek appropriate training to safely handle this product under normal conditions. Use the recommended personal protective equipment (See Section 8) to prevent chemical exposures. Wash hands with soap and water before eating, drinking, or touching common items (phone, computer, etc.) to prevent cross contamination. Use this product with adequate ventilation. See product technical data sheet for details.

Storage: See product technical data sheet for details.

Specific use: See product technical data sheet for details.

SECTION 8 EXPOSURE CONTROL AND PERSONAL PROTECTION

Exposure Limit Values:	OSHA PEL	NIOSH REL	ACGIH TLV	Other
Sodium Azide:	Not Listed	C 0.3 mg/m ³ (as NaN ₃) [Skin]	C 0.29 mg/m ³ (as NaN ₃); A4 Not classifiable as a human carcinogen.	See Below
Australia:	Ceiling Concentration 0.11 ppm (0.3 mg/m ³), JUL2008			
Belgium:	TWA 0.1 mg/m ³ , STEL 0.3 mg/m ³ , Skin, MAR2002			
Denmark:	TWA 0.1 mg/m ³ , OCT 2002			
Finland:	TWA 0.1 ppm (0.3 mg/m ³), STEL 0.3 ppm (0.9 mg/m ³), JAN1999			
France:	VME 0.1 mg/m ³ , VLE 0.3 mg/m ³ , Skin, FEB2006			
Germany:	MAK 0.2 mg/m ³ (inhalable), 2005			
Hungary:	TWA 0.1 mg/m ³ , STEL 0.3 mg/m ³ , SEP2000			
Korea:	Ceiling Concentration 0.1 ppm (0.3 mg/m ³), 2006			
The Netherlands:	MAC-TGG 0.1 mg/m ³ , Skin, 2003			

New Zealand:	Ceiling Concentration 0.11 ppm (0.29 mg/m ³), JAN2002			
Sweden:	TWA 0.1 mg/m ³ ; STEL 0.3 mg/m ³ , Skin, JUN2005			
Switzerland:	MAK- week 0.2 mg/m ³ ,KZG- week 0.4e mg/m ³ , DEC2006			
United Kingdom:	TWA 0.1 mg/m ³ ; STEL 0.3 mg/m ³ (skin), 2005			
Sorbitan Monolaurate, Ethoxylated:	Not Listed	Not Listed	Not Listed	None

	Normal Handling Conditions	Emergency Response Conditions
Engineering Controls:	General room ventilation is adequate for the use of this product.	Provide negative pressure ventilation.
Respiratory Protection	Use appropriate respiratory protection.	Use appropriate respiratory protection.
Eye Protection:	Safety glasses with side shields.	Chemical splash goggles or other face protection as appropriate.
Skin Protection:	Laboratory coat, adequate chemical-resistant gloves.	Chemically resistant boots, clothes, and impermeable gloves as appropriate.
Environmental Exposure Controls:	Not available.	Not available.
Other Equipment:	Safety shower, eyewash stations, and hand washing equipment should be available close to the work area as needed.	

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Colorless Liquid	
Odor:	None	
Odor Threshold:	Not Available	
pH:	Not Available	
Melting Point/Freezing Point:	Essentially that of Water	
Initial Boiling Point and Boiling Range:	Essentially that of Water	
Flash Point:	Not Available	
Evaporation Rate, 20 °C:	Not Available	
Flammability (Solid/Gas):	Not Available	
Explosive Limits:	LEL: Not Available	UEL: Not Available
Vapor Pressure:	Not Available	
Vapor Density, 20 °C:	Not Available	
Relative Density (Water = 1.0):	Essentially that of Water	
Solubility:	Soluble	
Partition coefficient (n-octanol/water):	Not Available	

Auto Ignition Temperature (ASTM D1929): Not Available

Decomposition Temperature: Not Available

Oxidizing Properties: None

Viscosity, centipoise: Not Available

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Product is stable under normal operating conditions and use as described in the product technical data sheet.

Conditions to Avoid: See product technical data sheet for details.

Incompatible Materials to Avoid: Strong acids or bases, chromyl chloride, benzoyl chloride, barium carbonate, trifluoroacryloyl fluoride, metals, strong oxidizers, and extreme temperatures.

Hazardous Decomposition Products: Heating to decomposition temperature may produce carbon monoxide, carbon dioxide, nitrogen oxides.

SECTION 11 TOXICOLOGICAL INFORMATION

Toxicology Data: Toxicological information for this product as a whole does not exist, below is data for the individual components.

Sodium Azide: RTECS #VY8050000

Sorbitan Monolaurate, Ethoxylated: RTECS # TR7400000

	Toxicity Test	Exposure Route	Dose	Observed Effect
Acute Toxicity:				
Sodium Azide:	LC ₅₀ (Rat)	Inhalation	37 mg/m ³ (14 ppm)	Eye: Other eye effects Behavioral: Convulsions or effect on seizure threshold; Lung, Thorax, or Respiration: Structural or functional change in trachea or bronchi ¹
	Lowest Published Lethal Dose (Man)	Oral	29 mg/kg	Brain and Coverings: Increased intracranial pressure; Cardiac: Pulse rate decreased with fall in BP; Lung, Thorax, or Respiration: Acute pulmonary edema ¹
	LD ₅₀ (Rat)	Oral	27 mg/kg	N/A ¹
Sorbitan Monolaurate, Ethoxylated:	LD ₅₀ (Rabbit)	Skin	20 mg/Kg	N/A ¹
	LD ₅₀ (Rat)	Oral	33 gm/kg	N/A ²
	LD ₅₀ (Hamster)	Oral	18 mL/kg	N/A ²
	LD ₅₀ (Mouse)	Intravenous	1420 mg/kg	N/A ²

Skin Corrosion/Irritation:

Sorbitan Monolaurate, Ethoxylated:	Skin Irritation (Human)	Skin	15 mg/3D	Mild ²
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Serious Eye Damage/Eye Irritation:

Not Available

Respiratory or Skin Sensitization:

Not Available

Germ Cell Mutagenicity:

Not Available

Reproductive Toxicity:

Not Available

STOST-Single Exposure:

Not Available

STOST-Repeated Exposure:

Not Available

Aspiration Hazard:

Not Available

Carcinogenicity: Carcinogenetic information for this product as a whole does not exist, below is data for the individual components.

Research Agency:	OSHA:	NTP:	IARC:
Sodium Azide:	Not Listed	Not Listed	Not Listed
Sorbitan Monolaurate, Ethoxylated:	Not Listed	Not Listed	Not Listed

SECTION 12 ECOLOGICAL INFORMATION**Ecotoxicity:** Ecotoxicity information for this product as a whole does not exist, below is data for the individual components.

Sodium Azide:	LC ₅₀ Lepomis Macrochirus 24 Hours 1,500 ug/L ³ LC ₅₀ Lepomis Macrochirus 48 Hours 1,300 ug/L ³ LC ₅₀ Lepomis Macrochirus 96 Hours 680.0 ug/L ⁴
Sorbitan Monolaurate, Ethoxylated:	LC ₅₀ Poecilia Reticulata 24 Hours 350,000 ug/L ⁵ LC ₅₀ Artemia Sp. (Brine Shrimp) 48 Hours 1,089,600 ug/L ⁶ Mortality Daphnia Magna < 21 Days 10,000 ug/L ⁷

Mobility:

Sodium Azide: Aquatic Fate: Sodium azide is stable in water in the absence of light but appears to be susceptible to photo-decomposition by solar radiation. Photolysis of sodium azide may result in metal nitrides initially, with the eventual formation of the free metal and nitrogen gas.⁸

Persistence and Degradation:

Sodium Azide: The dissipation of azides in soil is not by microbial action but is strictly a chemical process accelerated by increasing acidity and elevated temperatures. Sodium Azide dissipates rapidly in soils by oxidation or by reaction of hydrazoic acid with soil organic acids to form azides of these acids which decompose by the Curtius rearrangement.⁸

Bio Accumulative Potential: Not Available.**Results of PBT Assessment:** Not Available.

Other Adverse Effects: None Known.

SECTION 13 DISPOSAL INFORMATION

Substance: Dispose of unused contents in accordance with international, federal, state, and local regulations.

Contaminated Packaging: Dispose of container in accordance with international, federal, state and local requirements.

SECTION 14 TRANSPORTATION INFORMATION

UN Number: Not Listed.

Class: Not Listed.

Proper Shipping Name: Not Listed.

Packing Group: Not Listed.

Marine Pollutant: Not Listed.

Other Applicable Information: None.

SECTION 15 REGULATORY INFORMATION

Australia: Hazchem Code: Not Listed.

Poisons Schedule Number: Not Listed.

California: Proposition 65 Listed: Not Listed.

Canada: WHMIS: D2B.

European Union: REACH: Chemical Safety Assessment for the substance or substances in the preparation not required.

Substances of Very High Concern (SVHC) – January 13, 2010: This product does not contain SVHC's in concentrations above 0.1% weight/weight.

Category of Danger: T+: Very Toxic.
T: Toxic.
Xn: Harmful.
N: Dangerous for the Environment.

Risk Phrases: R21/22: Harmful in contact with skin and if swallowed.
R23: Toxic by inhalation.
R28: Very toxic if swallowed.
R32: Contact with acids liberates very toxic gas.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases: S7/9: Keep container tightly closed and in a well-ventilated place.
S20/21: When using do not eat, drink or smoke.
S26: In case of contact with eyes, rinse immediately with plenty of water

and seek medical advice.
 S27/28: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and tepid water.
 S29/35: Do not empty into drains; dispose of this material and its container in a safe way.
 S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.
 S45: In case of accident or if you feel unwell, seek medical advice immediately.

OECD/High Production Volume (HPV) chemicals: Water.

RoHS: This product does not contain RoHS listed substances in concentrations above the established thresholds.

Japan: Poisonous and Deleterious Substances Control Law: Sodium Azide: Poisonous Substance.

SECTION 16 ADDITIONAL INFORMATION

Product Number: Product Name:

5037 Tween 20 / Sodium Azide Solution (100X), 10 mL.

Component of Kit Number: Product Name:

3105 LIGHT DIAGNOSTICS™ Respiratory Panel I Viral Screening and Identification IFA
 3107 LIGHT DIAGNOSTICS™ Respiratory Viral Screen DFA Kit
 3108 LIGHT DIAGNOSTICS™ Respiratory Viral Screen IFA, included in kit #3105
 3110 LIGHT DIAGNOSTICS™ Respiratory Virus Panel I DFA, ~50 tests
 3120 LIGHT DIAGNOSTICS™ Parainfluenza 1, 2, and 3 DFA, ~50 tests
 3121 LIGHT DIAGNOSTICS™ SimulFluor® Flu A/Flu B, Flu A & Flu B, ~50 tests
 3123 LIGHT DIAGNOSTICS™ Influenza A & B DFA, ~50 tests
 3124 LIGHT DIAGNOSTICS™ Human Metapneumovirus (hMPV) Direct Immunofluorescence Assay, ~50 tests
 3125 LIGHT DIAGNOSTICS™ Respiratory Syncytial Virus DFA, ~50 tests
 3127 LIGHT DIAGNOSTICS™ SimulFluor® RSV/Para 3, ~50 tests
 3129 LIGHT DIAGNOSTICS™ SimulFluor® RSV/Flu A, ~125 tests
 3130 LIGHT DIAGNOSTICS™ Adenovirus DFA, ~50 tests
 3135 LIGHT DIAGNOSTICS™ CMV IFA Kit, ~250 tests
 3137 LIGHT DIAGNOSTICS™ Respiratory Viral Screen and Identification DFA Kit
 3140 LIGHT DIAGNOSTICS™ Mumps - IFA Kit, ~50 tests
 3187 LIGHT DIAGNOSTICS™ Measles - IFA Kit, ~50 tests
 3195 LIGHT DIAGNOSTICS™ Pneumocystis carinii DFA Kit, ~50 tests (Replaces 3190)
 3196 T. Vag DFA (Culture Confirmation)
 3245 LIGHT DIAGNOSTICS™ CMV DFA Kit, ~250 tests
 3290 LIGHT DIAGNOSTICS™ HSV 1/2 DFA KIT

- 3291 LIGHT DIAGNOSTICS™ HSV 1&2 DFA Typing Kit, ~50 tests
- 3293 LIGHT DIAGNOSTICS™ SimulFluor® HSV 1/2, ~125 tests
- 3295 LIGHT DIAGNOSTICS™ SimulFluor® HSV/VZV, ~125 tests
- 3296 LIGHT DIAGNOSTICS™ SimulFluor® Respiratory Screen, ~250 tests
- 3299 LIGHT DIAGNOSTICS™ SimulFluor® Para 1,2,3/Adeno, ~50 tests
- 3301 LIGHT DIAGNOSTICS™ Coxsackievirus A9 Reagent, ~25 tests, included in kit #3350
- 3302 LIGHT DIAGNOSTICS™ Coxsackievirus A24 Reagent, ~25 tests, included in kit #3350
- 3303 LIGHT DIAGNOSTICS™ Coxsackievirus B Blend Reagent, ~50 tests, included in kit #3350 & #3365
- 3304 LIGHT DIAGNOSTICS™ Coxsackievirus B1 Reagent, ~25 tests, included in kit #3350
- 3305 LIGHT DIAGNOSTICS™ Coxsackievirus B2 Reagent, ~25 tests, included in kit #3350
- 3306 LIGHT DIAGNOSTICS™ Coxsackievirus B3 Reagent, ~25 tests, included in kit #3350
- 3307 LIGHT DIAGNOSTICS™ Coxsackievirus B4 Reagent, ~25 tests, included in kit #3350
- 3308 LIGHT DIAGNOSTICS™ Coxsackievirus B5 Reagent, ~25 tests, included in kit #3350
- 3309 LIGHT DIAGNOSTICS™ Coxsackievirus B6 Reagent, ~25 tests, included in kit #3350
- 3311 LIGHT DIAGNOSTICS™ Echovirus Blend Reagent, ~50 tests, included in kit #3340 & #3365
- 3312 LIGHT DIAGNOSTICS™ Echovirus 6 Reagent, ~25 tests, included in kit #3340
- 3313 LIGHT DIAGNOSTICS™ Echovirus 9 Reagent, ~25 tests, included in kit #3340
- 3314 LIGHT DIAGNOSTICS™ Echovirus 11 Reagent, ~25 tests, included in kit #3340
- 3315 LIGHT DIAGNOSTICS™ Echovirus 30 Reagent, ~25 tests, included in kit #3340
- 3317 LIGHT DIAGNOSTICS™ Echovirus 4 Reagent, ~25 tests, included in kit #3340
- 3321 LIGHT DIAGNOSTICS™ Enterovirus 70 and 71/Coxsackie A16 Blend Reagent, ~50 tests, included in kit #3345 & #3365
- 3322 LIGHT DIAGNOSTICS™ Enterovirus 70 Reagent, ~25 tests, included in kit #3345
- 3323 LIGHT DIAGNOSTICS™ Enterovirus 71 / Coxsackie A16 Reagent, ~25 tests, included in kit #3345
- 3324 LIGHT DIAGNOSTICS™ Enterovirus 71 Reagent, ~25 tests
- 3331 LIGHT DIAGNOSTICS™ Poliovirus 1 Reagent, ~25 tests, included in kit #3355
- 3332 LIGHT DIAGNOSTICS™ Poliovirus 2 Reagent, ~25 tests, included in kit #3355
- 3335 LIGHT DIAGNOSTICS™ Poliovirus 3 Reagent, ~25 tests, included in kit #3355
- 3336 LIGHT DIAGNOSTICS™ Poliovirus Blend Reagent, ~50 tests, included in kit #3355 & #3365

- 3360 LIGHT DIAGNOSTICS™ Pan-Enterovirus Reagent (Blend), ~125 tests, included in kit #3365
- 3361 LIGHT DIAGNOSTICS™ Pan-Enterovirus Reagent, ~125 tests, clone 9D5
- 3362 LIGHT DIAGNOSTICS™ Pan-Enterovirus Reagent, ~125 tests, clone 2E11
- 3430 LIGHT DIAGNOSTICS™ Varicella-Zoster Virus DFA Kit, ~125 tests
- 3460 LIGHT DIAGNOSTICS™ Pan-Enterovirus Detection Kit, ~125 tests
- 3465 LIGHT DIAGNOSTICS™ Enterovirus Screening Set Kit (Coxsackie A9 mAb, Echovirus Blend, Enterovirus Blend, Coxsackie Blend, Poliovirus Blend, Pan-Enterovirus Reagent, IgG FITC secondary, Pan-Enterovirus Control Slides, Normal Mouse Antibody, Mounting & Wash Solutions)
- 5015 LIGHT DIAGNOSTICS PBS Packet & 100x Tween 20/azide

Training Advice: Seek effective chemical handling training to reduce the hazards associated with this product prior to use.

Technical Contact: <http://www.millipore.com/support>

Abbreviations Used

ACGIH	American Conference of Government Industrial Hygienists
ADR	European agreement on the international carriage of dangerous goods on road
CAS	Chemical Abstract Service
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EPA	United States Environmental Protection Agency
IARC	International Agency for Research in Cancer.
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	Regulations regarding the transportation of dangerous goods on ocean-going vessels issued by the International Maritime Organization.
LC ₅₀	Lethal Concentration 50% is the concentration of a chemical which kills 50% of a sample population
LD ₅₀	Lethal Dose 50% is the dose of a chemical which kills 50% of a sample population.
LDLo	Lowest observed lethal dose
LEL	Lower Explosive Limit
MSFU	Manufacture, Formulation, Supply and Use (Section 13)
NIOSH	National Institute of Occupational Safety and Health (US)
NTP	National Toxicology Program (US)
OSHA	United States Occupational Safety and Health Administration
RID	International regulations concerning the international carriage of dangerous goods by rail.
RTECS	Registry of Toxic Effects of Chemical Substances (US)
STOST	Specific Target Organ Systemic Toxicity
UEL	Upper Explosive Limit
WHMIS	Workplace Hazardous Materials Information System (Canada)

This safety data sheet has been prepared to comply with the requirements of the European Union regulation on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) 1906/2006 and ANSI standard Z400.1-1998.

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¹ Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, USA, National Institute for Occupational Health and Safety (NIOSH), Registry of Toxic Effects of Chemical Substances (RTECS) File # VY8050000, 2009.

² Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, USA, National Institute for Occupational Health and Safety (NIOSH), Registry of Toxic Effects of Chemical Substances (RTECS) File # TR7400000, 2009.

³ Hughes, J.S., Use of the Red Crawfish, *Procambarus clarki* (Girard), for Herbicidal Assays, Proc.Annu.Conf.Southeast.Assoc.Game Fish Comm. 20:437-439, 1967.

⁴ Mayer, F.L.Jr., and M.R. Ellersieck, Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals, Resour.Publ.No.160, U.S.Dep.Interior, Fish Wildl.Serv., Washington, DC :505 p. (USGS Data File), 1986.

⁵ Yarzhombek, A.A., A.E. Mikulin, and A.N. Zhdanova, Toxicity of Substances in Relation to Form of Exposure (Toksichnost Vestichestv diya ryb v Zavisimosti ot Sposoba Vozdejstviya), J.Ichthyol / Vopr.Ikhtiol.31(3):496-502(RUS) 31(7):99-106, 1991.

⁶ Castritsi-Catharios, J., V. Kiortsis, and M. Moraiti-Ioannidou, Influence Toxique de Trois Detergents et d un Dispersant sur artemia (DL50), Rapp.P.V.Reun.Comm.Int.Explor.Sci.Mer Mediterr.:813-815 (FRE) (ENG ABS), 1982.

⁷ Brown, D., C.P. Croudace, N.J. Williams, J.M. Shearing, and P.A. Johnson, The Effect of Phthalate Ester Plasticisers Tested as Surfactant Stabilised Dispersions on the Reproduction of the *Daphnia magna*, Chemosphere 36(6):1367-1379, 1998.

⁸ <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+@rel+26628-22-8>, U.S. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894, 2009.