



**SAFETY DATA SHEET****Protectosil® 40 S**

Material no.		Version	<b>2.1 / US</b>
Specification	<b>116610</b>	Revision date	<b>12/06/2016</b>
Order Number		Print Date	<b>03/16/2017</b>
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Signal word	Danger
Hazard statement	H225 - Highly flammable liquid and vapour. H315 - Causes skin irritation. H402 - Harmful to aquatic life.
Precautionary statement Prevention	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. P243 - Take precautionary measures against static discharge. P264 - Wash skin thoroughly after handling. P273 - Avoid release to the environment. P280 - Wear protective gloves/ eye protection/ face protection.
Precautionary statement Reaction	P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P332 + P313 - If skin irritation occurs: Get medical advice/ attention. P362 - Take off contaminated clothing and wash before reuse. P370 + P378 - In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
Precautionary statement Storage	P403 + P235 - Store in a well-ventilated place. Keep cool.
Precautionary statement Disposal	P501 - Dispose of contents/ container to an approved waste disposal plant.

**2.3. Other hazards**

None known.

**3. Composition/information on ingredients**

<b>• Ethanol</b> <= 60%	
CAS-No.	64-17-5
Flammable liquids	Category 2
<b>• NJTSR No.56705700001-5318P</b> >= 20%	
CAS-No.	Trade Secret
Flammable liquids	Category 4
Skin irritation	Category 2
Acute aquatic toxicity	Category 3
<b>• NJTSR No.56705700001-5361P</b> >= 1%	
CAS-No.	Trade Secret
Skin irritation	Category 2

**4. First aid measures****4.1. Description of first aid measures****General advice**

Remove contaminated or saturated clothing immediately and dispose of safely.

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**Inhalation**

If aerosol or mists are inhaled, take affected persons out into the fresh air. Possible discomforts include severe irritation of mucus lining (nose, throat, eyes), cough, sneezing and flow of tears. In case of persistent discomfort, obtain medical attention immediately.

**Skin contact**

Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Obtain medical attention immediately if symptoms occur. Wash clothing before reuse.

**Eye contact**

In case of contact, immediately flush eyes with plenty of water, or if necessary, with eye rinsing solution. In case of persistent discomfort, consult an ophthalmologist.

**Ingestion**

If accidentally swallowed, rinse mouth thoroughly with water and afterwards, drink plenty of water. In case of discomfort, obtain medical attention.

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

None known

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

If required, therapy of irritative effect.

After absorbing large amounts of substance:

administration of activated charcoal.

Acceleration of gastrointestinal passage

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**5. Fire-fighting measures****5.1. Extinguishing media**

Suitable extinguishing media: foam, water spray, Carbon dioxide (CO<sub>2</sub>), dry powder

Unsuitable extinguishing media: high volume water jet

**5.2. Special hazards arising from the substance or mixture**

In case of fire cool endangered containers with water.

Flammable liquid. Vapors can travel to a source of ignition and flash back. Explosive mixtures may occur at temperatures at or above the flashpoint.

**5.3. Advice for firefighters**

Water used to extinguish fire should not enter drainage systems, soil or stretches of water.

Ensure there are sufficient retaining facilities for water used to extinguish fire.

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

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**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Use personal protective equipment. Ensure adequate ventilation. Keep away from sources of ignition - No smoking.

**6.2. Environmental precautions**

Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

**6.3. Methods and material for containment and cleaning up**

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Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

## 7. Handling and storage

### 7.1. Precautions for safe handling

Provide good ventilation or extraction. Keep away from heat. Keep away from sparks, flames and other sources of ignition. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use with adequate ventilation. The need for grounding and bonding of containers in accordance with OSHA 29 CFR 1910.106 and NFPA 77 should be assessed for all product transfers. Follow all MSDS/label precautions even after the container is emptied because it may retain product residues. Wash thoroughly after handling.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Advice on protection against fire and explosion

Take precautionary measures against static charges, keep away from sources of ignition.

Explosion protection equipment required.

Danger of explosion from residual product fumes; therefore avoid spark production through cutting, grinding, or welding work in the area of the container.

When repairs of the production system are to be made (e.g. welding work), the section to be repaired must be essentially free of product.

#### Storage

Keep containers tightly closed in a cool, well-ventilated place. Protect from moisture.

Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container.

## 8. Exposure controls/personal protection

### 8.1. Control parameters

• Ethanol		
CAS-No.	64-17-5	
Control parameters	1000 ppm	Short Term Exposure Limit (STEL):(ACGIH)
Control parameters	1000 ppm 1900 mg/m <sup>3</sup>	Permissible exposure limit:(OSHA Z1)
Control parameters	1000 ppm 1900 mg/m <sup>3</sup>	Time Weighted Average (TWA) Permissible Exposure Limit (PEL)(US CA OEL)

### 8.2. Exposure controls

#### Engineering measures

Provide good ventilation or extraction.

#### Personal protective equipment

##### Respiratory protection

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

##### Hand protection

Use impermeable gloves.

##### Eye protection

Safety glasses

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**Skin and body protection**

A safety shower and eye wash fountain should be readily available.

To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

**Hygiene measures**

When using, do not eat, drink or smoke. Wash face and/or hands before break and end of work.

Remove contaminated or saturated clothing.

Wash contaminated clothing before re-use.

**9. Physical and chemical properties****9.1. Information on basic physical and chemical properties**

physical state	liquid
Colour	colourless
Form	liquid
Odour	alcoholic
Odour Threshold	not determined
pH	6.7 (0 °C)
Melting point/range	not determined
Boiling point/range	86 °C (1013 hPa)
Flash point	11 °C Method: DIN EN ISO 13736
Evaporation rate	not determined
Flammability (solid, gas)	no data available
Lower explosion limit	not determined
Upper explosion limit	not determined
Vapour pressure	66 hPa (20 °C)
Relative vapour density	no data available
Density	0.824 g/cm <sup>3</sup> (20 °C) Method: DIN 51757
Water solubility	partly miscible partial decomposition by hydrolysis
Partition coefficient: n-octanol/water	log Pow: -0.31 tested substance: Ethanol (measured)
Autoignition temperature	265 °C Method: DIN 51 794

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Thermal decomposition	not determined
Viscosity, dynamic	1.12 mPa.s (20 °C)
Method:	DIN 53 015

**9.2. Other information**

Explosiveness	no data available
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**10. Stability and reactivity****10.1. Reactivity**

No dangerous reaction known under conditions of normal use.

**10.2. Chemical stability**

Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

Possibility of hazardous reactions      No dangerous reactions known.

**10.4. Conditions to avoid**

Keep away from heat and sources of ignition.  
Vapours can form explosive mixtures with air.

**10.5. Incompatible materials**

None known

**10.6. Hazardous decomposition products**

No hazardous decomposition products known.

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**11. Toxicological information****11.1. Information on toxicological effects**

Skin irritation	Irritating to skin.
carcinogenicity assessment	Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

**Toxicological information on components****Ethanol**

Acute oral toxicity	LD50 Rat: 7060 mg/kg RTECS
	LD50 Rat: 10470 mg/kg Method: OECD Test Guideline 401 literature
Acute inhalation toxicity	LC50 Rabbit: 117 - 125 mg/l / 4 h / vapour Method: OECD Test Guideline 403 literature

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Acute dermal toxicity	LD50 Rabbit: > 20000 mg/kg literature
Skin irritation	Rabbit not irritating Method: OECD Test Guideline 404 literature
Eye irritation	Rabbit not irritating Method: OECD Test Guideline 405 literature
Sensitization	Local Lymph Node Assay Mouse: No sensitizing effects. Method: OECD TG 429 literature
Assessment of STOT single exposure	no evidence for hazardous properties
Assessment of STOT repeat exposure	no evidence for hazardous properties
Risk of aspiration toxicity	No evidence of aspiration toxicity
Gentoxicity in vitro	Ames test Salmonella typhimurium negative Method: OECD TG 471 literature
	gene mutation TK +/- mouse lymphoma cell (L5178Y) negative Method: OECD TG 476 literature
Mutagenicity assessment	This product contains an ingredient that has been shown to produce mutagenic effects in in vivo testing.
<b>Isobutyl triethoxysilane</b>	
Acute oral toxicity	LD50 Rat: > 5000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	LC50 Rat: 5.88 mg/l / 4 h / dust/mist Method: OECD Test Guideline 403 Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	LD50 Rat: > 2000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity
Skin irritation	Rabbit Skin irritation Method: OECD Test Guideline 404
	Rapid evaporation of the liquid may cause frostbite.

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Eye irritation	Rabbit No eye irritation Method: OECD Test Guideline 405
Sensitization	maximization test Guinea pig: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Repeated dose toxicity	Oral Rat / 28-day NOAEL: > 1000 mg/kg Method: OECD Test Guideline 407
Assessment of STOT single exposure	Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.
Assessment of STOT repeat exposure	Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Risk of aspiration toxicity	No aspiration toxicity classification
Gentoxicity in vitro	Ames test Salmonella typhimurium negative Method: OECD TG 471  chromosomal aberration Chinese hamster (V 79 -cells) negative Method: OECD TG 473  chromosomal aberration Chinese hamster (CHO K1 -cells) negative Method: OECD TG 476
Gentoxicity in vivo	chromosomal aberration Mouse Oral negative Method: OECD TG 474
Carcinogenicity	No evidence that cancer may be caused.
Toxicity to reproduction	Animal model trials have produced no evidence of fertility damage.

**Triethoxy(octyl)silane**

Acute oral toxicity	LD50 Rat: > 5110 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	LC0 Rat: 22 ppm / 4 h / vapour Method: OECD Test Guideline 403 Assessment: The substance or mixture has no acute inhalation toxicity maximum concentration in the test: no animals died.
Acute dermal toxicity	LD50 Rabbit: 6730 mg/kg Method: OECD Test Guideline 402
Skin irritation	Rabbit



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	Skin irritation	
	Method:	OECD Test Guideline 404
Eye irritation	Rabbit	
	No eye irritation	
	Method:	OECD Test Guideline 405
Sensitization	maximization test Guinea pig: Does not cause skin sensitisation.	
	Method:	OECD Test Guideline 406
	Test substance:	Structurally similar substance
Repeated dose toxicity	Oral Rat / 28-day	
	NOAEL:	300 mg/kg
	Method:	OECD TG 422
Assessment of STOT single exposure	Assessment:	The substance or mixture is not classified as specific target organ toxicant, single exposure.
Assessment of STOT repeat exposure	Assessment:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Risk of aspiration toxicity		No evidence of aspiration toxicity
Gentoxicity in vitro	Ames test Salmonella typhimurium	negative
	Method:	OECD TG 471
	chromosomal aberration Chinese hamster (CHO K1 -cells)	negative
	Method:	OECD TG 473
	Genetic mutation in mammal cells TK +/- mouse lymphoma cell (L5178Y)	negative
	Method:	OECD TG 476
Carcinogenicity		No data available
Toxicity to reproduction	Screening for reproductive/developmental toxicity Oral Rat	
	Number of exposures:	daily
	NOAEL (No Observed Adverse Effect Level) of parents:	300 mg/kg
	Method:	OECD TG 422
	Screening for reproductive/developmental toxicity Oral Rat	
	Number of exposures:	daily
	NOAEL F1:	300 mg/kg
	Method:	OECD TG 422

**12. Ecological information****12.1. Toxicity**

*No ecotoxicological studies are available on the mixture.*

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**12.2. Persistence and degradability**

Biodegradability No data available

**12.3. Bioaccumulative potential**

Bioaccumulation No data available

**12.4. Mobility in soil**

Mobility No data available

**12.5. Other adverse effects**

Further Information An Expert Judgment stated that no classification is necessary based on present knowledge.

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**13. Disposal considerations****13.1. Waste treatment methods****Product**

Waste must be disposed of in accordance with federal, provincial, state and local regulations. Empty containers must be handled with care due to product residue. DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH AN ELECTRIC OR GAS TORCH.

**Uncleaned packaging**

Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities.

Incorrect disposal or reuse of this container is illegal and can be dangerous.

If there is product residue in the emptied container, follow directions for handling on the container's label.

Other countries: observe the national regulations.

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**14. Transport information****D.O.T. Road/Rail**

14.1. UN number:	UN 1170
14.2. UN proper shipping name:	Ethanol solution
14.3. Transport hazard class(es):	3
14.4. Packing group:	II
14.5. Environmental hazards (Marine pollutant):	--
14.6. Special precautions for user:	No

**Air transport ICAO-TI/IATA-DGR**

14.1. UN number:	UN 1170
14.2. UN proper shipping name:	Ethanol solution
14.3. Transport hazard class(es):	3
14.4. Packing group:	II
14.5. Environmental hazards:	--

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- 14.6. Special precautions for user: Yes
- IATA-C: ERG-Code 3L  
Maximum Net Quantity per Package 60 L
- IATA-P: ERG-Code 3L  
Maximum Net Quantity per Package 5 L

**Sea transport IMDG-Code/GGVSee (Germany)**

- 14.1. UN number: UN 1170
- 14.2. UN proper shipping name: ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
- 14.3. Transport hazard class(es): 3
- 14.4. Packing group: II
- 14.5. Environmental hazards (Marine pollutant): --
- 14.6. Special precautions for user: No  
EmS: F-E,S-D
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:  
for transport approval see regulatory information

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**15. Regulatory information****US Federal Regulations****OSHA**

If listed below, chemical specific standards apply to the product or components:

- None listed

**Clean Air Act Section (112)**

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

**CERCLA Reportable Quantities**

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

**SARA Title III Section 311/312 Hazard Categories**

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard
- Fire Hazard

**SARA Title III Section 313 Reportable Substances**

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

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**Toxic Substances Control Act (TSCA)**

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

**State Regulations****California Proposition 65**

A warning under the California Drinking Water Act is required only if listed below:

- None listed

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

**HMIS Ratings**

Health :	2
Flammability :	3
Physical Hazard :	1

**NFPA Ratings**

Health :	1
Flammability :	3
Reactivity :	0

**16. Other information****Further information**

Revision date 12/06/2016

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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**Legend**

<b>ACC</b>	American Chemistry Council
<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists

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<b>ACS</b>	Advisory Committee on Sustainability
<b>ADI</b>	Acceptable Daily Intake
<b>ASTM</b>	American Society for Testing and Materials
<b>ATP</b>	Adaptation to Technical Progress
<b>BCF</b>	Bioconcentration factor
<b>BOD</b>	Biochemical oxygen demand
<b>c.c.</b>	closed cup
<b>CAO</b>	Cargo Aircraft Only
<b>Carc</b>	Carcinogen
<b>CAS</b>	Chemical Abstract Services
<b>CDN</b>	Canada
<b>CEPA</b>	Canadian Environmental Protection Act
<b>CERCLA</b>	Comprehensive Environmental Response – Compensation and Liability Act
<b>CFR</b>	Code of Federal Regulations
<b>CMR</b>	carcinogenic-mutagenic-toxic for reproduction
<b>COD</b>	Chemical oxygen demand
<b>DIN</b>	German Institute for Standardization
<b>DM EL</b>	Derived minimum effect level
<b>DNEL</b>	Derived no effect level
<b>DOT</b>	Department of Transportation
<b>EC50</b>	half maximal effective concentration
<b>EPA</b>	Environmental Protection Agency
<b>ErC50</b>	Reduction of Growth Rate
<b>ERG</b>	Emergency Response Guide Book
<b>FDA</b>	Food and Drug Administration
<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
<b>GLP</b>	Good Laboratory Practice
<b>GMO</b>	Genetic Modified Organism
<b>HCS</b>	Hazard Communication Standard
<b>HMIS</b>	Hazardous Materials Identification System
<b>IARC</b>	International Agency for Research on Cancer
<b>IATA</b>	International Air Transport Association
<b>IBC</b>	Intermediate Bulk Container
<b>ICAO-TI</b>	International Civil Aviation Organization- Technical Instructions
<b>ICCA</b>	International Council of Chemical Association
<b>ID</b>	Identification number
<b>IMDG</b>	International Maritime Dangerous Goods
<b>IUPAC</b>	International Union of Pure and Applied Chemistry
<b>ISO</b>	International Organization For Standardization
<b>LC50</b>	50 % Lethal Concentration
<b>LD50</b>	50 % Lethal Dose
<b>L(E)C50</b>	LC50 or EC50
<b>LOAEL</b>	Low est observed adverse effect level
<b>LOEL</b>	Low est observed effect level
<b>MARPOL</b>	International Convention for the Prevention of Pollution from Ships
<b>NFPA</b>	National Fire Protection Association
<b>NOAEL</b>	No observed adverse effect level
<b>NOEC</b>	no observed effect concentration
<b>NOEL</b>	no observed effect level
<b>o. c.</b>	open cup
<b>OECD</b>	Organisation for Economic Cooperation and Development
<b>OEL</b>	Occupational Exposure Limit
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PBT</b>	Persistent, bioaccumulative, toxic
<b>PEC</b>	Predicted effect concentration
<b>PNEC</b>	Predicted no effect concentration
<b>RQ</b>	Reportable Quantity
<b>SDS</b>	Safety Data Sheet
<b>STOT</b>	Specific Target Organ Toxicity
<b>UN</b>	United Nations
<b>vPvB</b>	very persistent, very bioaccumulative
<b>voc</b>	volatile organic compounds
<b>WHMIS</b>	Workplace Hazardous Materials Information System
<b>WHO</b>	World Health Organization