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**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : Trifluralin

Product Number : 32061  
Brand : Sigma-Aldrich  
Index-No. : 609-046-00-1

CAS-No. : 1582-09-8

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

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052

**1.4 Emergency telephone number**

Emergency Phone # : +1-703-527-3887 (CHEMTREC)

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**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 3), H331  
Skin sensitisation (Category 1), H317  
Carcinogenicity (Category 2), H351  
Acute aquatic toxicity (Category 1), H400  
Chronic aquatic toxicity (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

Hazard statement(s)

H302 Harmful if swallowed.  
H317 May cause an allergic skin reaction.  
H331 Toxic if inhaled.  
H351 Suspected of causing cancer.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and

|                    |   |
|--------------------|---|
| P261               | understood.   |
| P264               | Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.  |
| P270               | Wash skin thoroughly after handling.  |
| P271               | Do not eat, drink or smoke when using this product.   |
| P272               | Use only outdoors or in a well-ventilated area.   |
| P273               | Contaminated work clothing should not be allowed out of the workplace.                                  |
| P280               | Avoid release to the environment.   |
| P301 + P312 + P330 | Wear protective gloves/ protective clothing/ eye protection/ face protection.                           |
| P302 + P352        | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.   |
| P304 + P340 + P311 | Rinse mouth.  |
| P308 + P313        | IF ON SKIN: Wash with plenty of soap and water.   |
| P333 + P313        | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor. |
| P363               | IF exposed or concerned: Get medical advice/ attention.   |
| P391               | If skin irritation or rash occurs: Get medical advice/ attention.                                       |
| P403 + P233        | Wash contaminated clothing before reuse.  |
| P405               | Collect spillage.   |
| P501               | Store in a well-ventilated place. Keep container tightly closed.  |
|                    | Store locked up.  |
|                    | Dispose of contents/ container to an approved waste disposal plant.                                     |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

|                  |  |
|------------------|--|
| Synonyms         | : 2,6-Dinitro-N,N-dipropyl-4-trifluoromethylaniline                            |
| Formula          | : C <sub>13</sub> H <sub>16</sub> F <sub>3</sub> N <sub>3</sub> O <sub>4</sub> |
| Molecular weight | : 335.28 g/mol   |
| CAS-No.          | : 1582-09-8  |
| EC-No.           | : 216-428-8  |
| Index-No.        | : 609-046-00-1   |

#### Hazardous components

| Component          | Classification  | Concentration |
|--------------------|---|---------------|
| <b>Trifluralin</b> | Acute Tox. 4; Acute Tox. 3; Skin Sens. 1; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H302, H317, H331, H351, H410 | 90 - 100 %    |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

#### In case of eye contact

Flush eyes with water as a precaution.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

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**5. FIREFIGHTING MEASURES****5.1 Extinguishing media****Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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

No data available

**5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

**5.4 Further information**

No data available

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**6. ACCIDENTAL RELEASE MEASURES****6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

**6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**6.3 Methods and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

**6.4 Reference to other sections**

For disposal see section 13.

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**7. HANDLING AND STORAGE****7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place.

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****8.1 Control parameters****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

## 8.2 Exposure controls

### Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

#### Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |  |   |
|--|---|
| a) Appearance                              | Form: solid                                       |
| b) Odour                                   | No data available                                 |
| c) Odour Threshold                         | No data available                                 |
| d) pH                                      | No data available                                 |
| e) Melting point/freezing point            | No data available                                 |
| f) Initial boiling point and boiling range | 96 - 97 °C (205 - 207 °F) at 1,013 hPa (760 mmHg) |
| g) Flash point                             | 100.00 °C (212.00 °F) - closed cup                |
| h) Evaporation rate                        | No data available                                 |
| i) Flammability (solid, gas)               | No data available                                 |

|   |                                     |
|---|-------------------------------------|
| j) Upper/lower flammability or explosive limits | No data available                   |
| k) Vapour pressure                              | 3.5 hPa (2.6 mmHg) at 20 °C (68 °F) |
| l) Vapour density                               | No data available                   |
| m) Relative density                             | No data available                   |
| n) Water solubility                             | insoluble                           |
| o) Partition coefficient: n-octanol/water       | No data available                   |
| p) Auto-ignition temperature                    | No data available                   |
| q) Decomposition temperature                    | No data available                   |
| r) Viscosity                                    | No data available                   |
| s) Explosive properties                         | No data available                   |
| t) Oxidizing properties                         | No data available                   |

## 9.2 Other safety information

No data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

Strong oxidizing agents

### 10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx), Hydrogen fluoride

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - 1,930 mg/kg

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Mydriasis (pupillary dilation).

Behavioral:Somnolence (general depressed activity). Skin and Appendages: Other: Hair.

LC50 Inhalation - Rat - 1 h - 2,800 mg/m<sup>3</sup>

LD50 Dermal - Rat - > 5,000 mg/kg

No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

**Respiratory or skin sensitisation**

Causes sensitisation.

**Germ cell mutagenicity**

Hamster

ovary

Sister chromatid exchange

Human

lymphocyte

DNA damage

Human

lymphocyte

Sister chromatid exchange

Human

lymphocyte

Cytogenetic analysis

Mouse

Cytogenetic analysis

Mouse

Dominant lethal test

**Carcinogenicity**

Carcinogenicity - Mouse - Oral

Tumorigenic: Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Liver: Tumors.

Carcinogenicity - Mouse - Subcutaneous

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Blood: Lymphomas including Hodgkin's disease.

Tumorigenic: Tumors at site or application.

Carcinogenicity - Mouse - Intraperitoneal

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Blood: Lymphomas including Hodgkin's disease.

Tumorigenic: Tumors at site or application.

Limited evidence of a carcinogenic effect.

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Trifluralin)

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

No data available

Reproductive toxicity - Rabbit - Oral

Maternal Effects: Other effects. Effects on Fertility: Abortion. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Reproductive toxicity - Rat - Oral

Maternal Effects: Other effects. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Musculoskeletal system.

Reproductive toxicity - Rat - Oral

Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Reproductive toxicity - Mouse - Oral

Effects on Newborn: Stillbirth.

Reproductive toxicity - Mouse - Intraperitoneal

Effects on Fertility: Pre-implantation mortality (e.g., reduction in number corpora lutea). Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material). Effects on Embryo or Fetus: Fetal death.

No data available

#### **Specific target organ toxicity - single exposure**

No data available

#### **Specific target organ toxicity - repeated exposure**

No data available

#### **Aspiration hazard**

No data available

#### **Additional Information**

RTECS: XU9275000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

|   |   |
|---|---|
| Toxicity to fish                                    | mortality LOEC - <i>Cyprinodon variegatus</i> (sheepshead minnow) - 0.084 mg/l - 10 d |
|   | LC50 - <i>Cyprinus carpio</i> (Carp) - 0.66 mg/l - 96 h                               |
| Toxicity to daphnia and other aquatic invertebrates | LC50 - <i>Daphnia magna</i> (Water flea) - 0.193 mg/l - 48 h                          |
| Toxicity to algae                                   | Growth inhibition LOEC - <i>Pseudokirchneriella subcapitata</i> - 0.3 mg/l - 96 h     |

### **12.2 Persistence and degradability**

### **12.3 Bioaccumulative potential**

|                 |  |
|-----------------|--|
| Bioaccumulation | <i>Pimephales promelas</i> (fathead minnow) - 425 d - 1.9 µg/l |
|                 | Bioconcentration factor (BCF): 1,333                           |

### **12.4 Mobility in soil**

No data available

### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### **12.6 Other adverse effects**

Very toxic to aquatic life with long lasting effects.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

#### Contaminated packaging

Dispose of as unused product.

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## 14. TRANSPORT INFORMATION

#### DOT (US)

UN number: 2811      Class: 6.1      Packing group: III  
Proper shipping name: Toxic solids, organic, n.o.s. (Trifluralin)  
Reportable Quantity (RQ): 10 lbsMarine pollutant:yes  
Poison Inhalation Hazard: No

#### IMDG

UN number: 2811      Class: 6.1      Packing group: III      EMS-No: F-A, S-A  
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Trifluralin)

#### IATA

UN number: 2811      Class: 6.1      Packing group: III  
Proper shipping name: Toxic solid, organic, n.o.s. (Trifluralin)

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## 15. REGULATORY INFORMATION

#### SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313 Components

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

#### Massachusetts Right To Know Components

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

#### Pennsylvania Right To Know Components

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

#### New Jersey Right To Know Components

|             | CAS-No.   | Revision Date |
|-------------|-----------|---------------|
| Trifluralin | 1582-09-8 | 1993-04-24    |

|  | CAS-No. | Revision Date |
|--|---------|---------------|
|--|---------|---------------|



**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3.**

|                 |   |
|-----------------|---|
| Acute Tox.      | Acute toxicity  |
| Aquatic Acute   | Acute aquatic toxicity                                |
| Aquatic Chronic | Chronic aquatic toxicity                              |
| Carc.           | Carcinogenicity                                       |
| H302            | Harmful if swallowed.                                 |
| H317            | May cause an allergic skin reaction.                  |
| H331            | Toxic if inhaled.                                     |
| H351            | Suspected of causing cancer.                          |
| H400            | Very toxic to aquatic life.                           |
| H410            | Very toxic to aquatic life with long lasting effects. |
| Skin Sens.      | Skin sensitisation                                    |

**HMIS Rating**

|                        |   |
|------------------------|---|
| Health hazard:         | 2 |
| Chronic Health Hazard: | * |
| Flammability:          | 0 |
| Physical Hazard        | 0 |

**NFPA Rating**

|                    |   |
|--------------------|---|
| Health hazard:     | 2 |
| Fire Hazard:       | 0 |
| Reactivity Hazard: | 0 |

**Further information**

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

**Preparation Information**

Sigma-Aldrich Corporation  
Product Safety – Americas Region  
1-800-521-8956

Version: 5.4

Revision Date: 11/24/2017

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