

Trade Name: **TNT 2,4,6-Trinitrotoluene**
1. Product identification

- 1.1. **Product name**
Identification of the substance 2,4,6-trinitrotoluene
Registration number (REACH) this information is not available
CAS number 118-96-7
Alternative name(s) 2,4,6-TNT, 2-methyl-1,3,5-trinitrobenzene Article number A0013070
- 1.2. Recommended uses of the product Raw material for the manufacture of other explosives or pyrotechnic devices.
- 1.3. Safety sheet supplier's Data
SWORD Energetics,
Address: 231 Beverly Road, Greenville SC 29609
Website: www.swordenergetics.com
- 1.4. Emergency phone numbers +1 (833) 445-BOOM (2666)
This number is only available during the following office hours: Mon - Thu 08:00 AM - 05:00 PM, Fri 08:00 AM - 12:00 PM

2. Hazards identification

- 2.1. **Classification of the substance**
Classification according to Regulation (EC) No 1272/2008 (CLP)

Section	Hazard Class	Category	Hazard Class and Category	Hazard statement
2.1	explosive	1.1	Expl. 1.1	H201
3.10	acute toxicity (oral)	3	Acute Tox. 3	H301
3.1D	acute toxicity (dermal)	3	Acute Tox. 3	H311
3.1I	acute toxicity (inhal.)	3	Acute Tox. 3	H331
3.9	specific target organ toxicity - repeated exposure	2	STOT RE 2	H373
4.1C	hazardous to the aquatic environment - chronic hazard	2	Aquatic Chronic 2	H411

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects
Delayed or immediate effects can be expected after short or long-term exposure. Risk of explosion by shock, friction, fire or other sources of ignition. Spillage and fire water can cause pollution of watercourses.

- 2.2. **Label elements:**
Labelling according to Regulation (EC) No 1272/2008 (CLP)

Single Word: Danger

Pictograms
GHS01, GHS06,
GHS08, GHS09


Trade Name: **TNT 2,4,6-Trinitrotoluene**
2. Hazards identification *Continued:*

2.2	Hazard statements	
	H201	Explosive; mass explosion hazard.
	H301+H311+H331	Toxic if swallowed, in contact with skin or if inhaled.
	H373	May cause damage to organs through prolonged or repeated exposure.
	H411	Toxic to aquatic life with long lasting effects.
	Precautionary statements	
	P210	Keep away from heat, hot surfaces, sparks, open flames and other i Ignition sources. No smoking.
	P230	Keep wetted with water.
	P234	Keep only in original packaging.
	P250	Do not subject to grinding/shock/friction.
	P260	Do not breathe dust/fume/gas/mist/vapours/spray.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P370+P372+P380+P37	In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
	P403+P233	Store in a well-ventilated place. Keep container tightly closed.

2.3.	Other hazards	
	Results of PBT and vPvB assessment	
	According to the results of its assessment, this substance is not a PBT or a vPvB.	

3. Composition/information on ingredients

3.1.	Substances	
	Name of substance	2,4,6-trinitrotoluene
	Identifiers	
	CAS	No 118-96-7
	EC No	204-289-6
	Index No	609-008-00-4
	Molecular formula	C7H5N3O6
	Molar mass	227.1 g/mol

4. First aid measures

4.1.	Description of first aid measures
	General notes
	Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.
	Following inhalation
	If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.
	Following skin contact
	Rinse skin with water/shower.
	Following eye contact
	Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.
	Following ingestion
	Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting

Trade Name: **TNT 2,4,6-Trinitrotoluene**

4.	First aid measures <i>Continued:</i>
4.2	Most important symptoms and effects, both acute and delayed Symptoms and effects are not known to date
4.3.	Indication of any immediate medical attention and special treatment needed none
5.	Firefighting measures
5.1.	Extinguishing media Suitable extinguishing media Water, Foam, ABC-powder Unsuitable extinguishing media Water jet
5.2.	Special hazards arising from the substance or mixture Deposited combustible dust has considerable explosion potential. Mass explosion hazard. Hazardous combustion products Nitrogen oxides (NO _x), Carbon monoxide (CO), Carbon dioxide (CO ₂)
5.3.	Advice for firefighters In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance. DO NOT fight fire when fire reaches explosives.
6.	Accidental release measures
6.1.	Personal precautions, protective equipment and emergency procedures For non-emergency personnel Remove persons to safety. For emergency responders Wear breathing apparatus if exposed to vapours/dust/spray/gases.
6.2.	Environmental precautions Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.
6.3.	Methods and material for containment and cleaning up Advices on how to contain a spill Covering of drains, Take up mechanically Advices on how to clean up a spill Take up mechanically. Other information relating to spills and releases Place in appropriate containers for disposal. Ventilate affected area.
6.4.	Reference to other sections Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

Trade Name: **TNT 2,4,6-Trinitrotoluene**
7. Handling and storage

- 7.1. Precautions for safe handling**
Recommendations
 - Measures to prevent fire as well as aerosol and dust generation
Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas. Ground/bond container and receiving equipment.
 - Specific notes/details
Dust deposits may accumulate on all deposition surfaces in a technical room. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.
- Advice on general occupational hygiene
Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feeding stuffs.
- 7.2. Conditions for safe storage, including any incompatibilities**
Managing of associated risks
 - Explosive atmospheres
Removal of dust deposits.
 - Flammability hazards
Do not subject to grinding/shock/friction.
 - Ventilation requirements
Keep any substance that emits harmful vapors or gases in a place that allows these to be permanently extracted. Use local and general ventilation.
 - Packaging compatibilities
Only packaging's which are approved (e.g. acc. to ADR) may be used.
- 7.3. Specific end use(s)**
See section 16 for a general overview

8. Exposure controls/personal protection
8.1. Control parameters

Occupationnel exposure limit values (Workplace Exposure Limits)

Country	Name of Agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Ceiling-C [ppm]	Ceiling-C [mg/m ³]	Notation	Source
GB	dust		WEL		10					i	EH40/2005
GB	dust		WEL		4					r	EH40/2005
GB	2,4,6-trinitrotoluene	118-96-7	WEL		0.5						EH40/2005

Notation

Ceiling-C

i

r

STEL

TWA

ceiling value is a limit value above which exposure should not occur

inhalable fraction

respirable fraction

short-term exposure limit: a limit value above which exposure should not occur, and which is related to a 15-minute period (unless otherwise specified)

time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Trade Name: **TNT 2,4,6-Trinitrotoluene**
8. Exposure controls/personal protection *Continued:*
8.1. Human health values
Relevant DNELs and other threshold levels

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	0.035 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	0.07 mg/m ³	human, inhalatory	worker (industry)	acute - systemic effects
DNEL	0.01 mg/kg bw/ day	human, dermal	worker (industry)	chronic - systemic effects
DNEL	0.02 mg/kg bw/ day	human, dermal	worker (industry)	acute - systemic effects

Environment Values
Relevant PNECs and other threshold levels

Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0.32 µg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.066 µg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	0.2 µg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	0.003 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	0.52 µg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	0.008 mg/kg	terrestrial organisms	soil	short-term (single instance)

- 8.2. Exposure controls**
- Appropriate engineering controls
General ventilation.
Individual protection measures (personal protective equipment)
Eye/face protection
Wear eye/face protection.
Skin protection
- Hand protection
- In the case of wanting to use the gloves again, clean them before taking off and air them well.
- Other protection measures
- Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.
Wash hands thoroughly after handling.
Respiratory protection
Particulate filter device (EN 143).
Environmental exposure controls Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

Trade Name: **TNT 2,4,6-Trinitrotoluene**
9. Physical and chemical properties:
9.1. Information on basic physical and chemical properties
Appearance

Physical state	solid
Color	various
Odor	characteristic

Other safety parameters

pH (value)	not applicable
Melting point/freezing point	80.4 °C at 1,009 hPa
Initial boiling point and boiling range	not determined
Flash point	not determined
Evaporation rate	not determined
Flammability (solid, gas)	this material is combustible, but will not ignite readily
Explosion limits of dust clouds	not determined
Vapour pressure	8.45 Pa at 85.4 °C
Density	1.64 kg/m ³ at 20 °C
Vapour density	this information is not available

Solubility(ies)

Water solubility	127 mg/l at 20 °C
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Partition coefficient

n-octanol/water (log KOW)	1.65 (pH value: 6.5, 20 °C) (ECHA)
Auto-ignition temperature	not determined
Decomposition temperature	311 °C at 1,009 hPa (ECHA)
Viscosity	not relevant (solid matter)
Explosive properties	explosive explosive; mass explosion hazard
Oxidising properties	none

9.2. Other Information

Solid content	100%
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Trade Name: **TNT 2,4,6-Trinitrotoluene**

10. Stability and reactivity	
10.1.	Reactivity Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". It's a reactive substance. The mixture contains reactive substance(s). Explosive property. If heated: Danger of explosion Under impact/pressure effect: Danger of explosion.
10.2.	Chemical stability See below "Conditions to avoid".
10.3.	Possibility of hazardous reactions Heating may cause an explosion.
10.4.	Conditions to avoid There are no specific conditions known which have to be avoided. Hints to prevent fire or explosion Do not subject to grinding/shock/friction. The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion
10.5.	Incompatible materials Oxidisers
10.6.	Hazardous decomposition products Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

11. Toxicological information							
11.1.	Information on toxicological effects Classification according to GHS (1272/2008/EC, CLP) Acute toxicity Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled. Acute toxicity estimate (ATE) <table> <tr> <td>Oral</td><td>100 mg/kg</td></tr> <tr> <td>Dermal</td><td>300 mg/kg</td></tr> <tr> <td>Inhalation: dust/mist</td><td>0.5 mg/l /4h</td></tr> </table> Skin corrosion/irritation Shall not be classified as corrosive/irritant to skin. Serious eye damage/eye irritation Shall not be classified as seriously damaging to the eye or eye irritant. Respiratory or skin sensitisation Shall not be classified as a respiratory or skin sensitiser. Germ cell mutagenicity Shall not be classified as germ cell mutagenic. Carcinogenicity Shall not be classified as carcinogenic.	Oral	100 mg/kg	Dermal	300 mg/kg	Inhalation: dust/mist	0.5 mg/l /4h
Oral	100 mg/kg						
Dermal	300 mg/kg						
Inhalation: dust/mist	0.5 mg/l /4h						

Trade Name: **TNT 2,4,6-Trinitrotoluene**
11. Toxicological information *Continued*:

- 11.1. Reproductive toxicity
Shall not be classified as a reproductive toxicant.
- Specific target organ toxicity - single exposure
Shall not be classified as a specific target organ toxicant (single exposure).
- Specific target organ toxicity - repeated exposure May cause damage to organs through prolonged or repeated exposure.
- Aspiration hazard
Shall not be classified as presenting an aspiration hazard.

12. Ecological information

- 12.1. **Toxicity**
Toxic to aquatic life with long lasting effects.

Aquatic toxicity (chronic)

Endpoint	Value	Species	Exposure Time
LC50	2.2 mg/l	Fish	10d

- 12.2. **Persistence and degradability**
Data are not available

- 12.3. **Bioaccumulative potential**
Data are not available.

n-octanol/water (log KOW)	1.65 (pH value: 6.5, 20 °C) (ECHA)
BCF	8.4 (ECHA)

- 12.4. **Mobility in soil**
Data are not available.

Henry's law constant	0.01 Pa m ³ /mol at 20 °C
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- 12.5. **Results of PBT and vPvB assessment**
Data are not available.

- 12.6. **Other adverse effects**
Data are not available.

Trade Name: **TNT 2,4,6-Trinitrotoluene**
13. Disposal considerations
13.1. Waste treatment methods

Sewage disposal-relevant information
Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings
It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

14. Transport information

14.1.	UN number	0209
14.2.	UN proper shipping name	TRINITROTOLUENE
14.3.	Transport hazard class(es) Class	1 (explosive substances and articles)
14.4.	Packing group	not assigned to a packing group
14.5.	Environmental hazards	hazardous to the aquatic environment
14.6.	Special precautions for user Provisions for dangerous goods (ADR) should be complied within the premises.	

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations
Transport of dangerous goods by road, rail and inland waterway (ADR/RID/AND)

UN number	0209
Proper shipping name	TRINITROTOLUENE
Class	1
Classification code	1.1D
Danger label(s)	  1, fish and tree
Environmental hazards	yes (hazardous to the aquatic environment)
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
Transport category (TC)	1
Tunnel restriction code (TRC)	B1000C
International Maritime Dangerous Goods Code (IMDG)	
UN number	0209
Proper shipping name	TRINITROTOLUENE

Trade Name: **TNT 2,4,6-Trinitrotoluene**
14. Transport information Continued:

14.7.

Class	1.1D
Marine pollutant	yes (hazardous to the aquatic environment)
Danger label(s)	 1, fish and tree
Special provisions (SP)	-
Excepted quantities (EQ)	E0
Limited quantities (LQ)	0
EmS	F-B, S-Y
Stowage category	
International Civil Aviation Organization (ICAO-IATA/DGR)	
UN number	1
Proper shipping name	B1000C
Class	
Environmental hazards	0209

15 Regulatory information

15.1. **Safety, health and environmental regulations/legislation specific for the substance or mixture**

15.2. **Chemical Safety Assessment**

No Chemical Safety Assessment has been carried out for this substance.

16 Other information
Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)

Trade Name: **TNT 2,4,6-Trinitrotoluene**

16

Other information *Continued*:

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
DNEL	Derived No-Effect Level
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	Short-term exposure limit
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU. Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA)

Trade Name: **TNT** 2,4,6-Trinitrotoluene

16

Other information *Continued*:**List of relevant phrases (code and full text as stated in chapter 2 and 3)**

Code	Text
H201	Explosive; mass explosion hazard.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.