

GHS Classification

ID78

CAS 534-52-1

Physical Hazards

4,6-Dinitro-o-cresol

Date Classified: Jul. 24, 2006 (Environmental Hazards: Mar. 31, 2006)

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not classified	-	-	-	Because of a lack of data on the kick-off temperature and decomposition energy (though the substance contains nitro groups, with its oxygen budget calculated at -97). Classified into Division 6.1 (UN#1598) (UN Recommendations on the Transport of Dangerous Goods)
2 Flammable gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	-	-	-	Classified as "flammable" by ICSC (2004). Classified into Division 6.1 (UN#1598) (UN Recommendations on the Transport of Dangerous Goods)
8 Self-reactive substances and mixtures	Not classified	-	-	-	No data available, though the substance contains chemical groups associated with explosive properties that contain nitro groups. Classified into Division 6.1 (UN#1598) (UN Recommendations on the Transport of Dangerous Goods)
9 Pyrophoric liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 340degC (ICSC, 2004).
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available (melting point: 87.5degC (ICSC, 2004), test temperature: 140degC)
12 Substances and mixtures, which in contact with water, emit flammable gases	Not applicable	-	-	-	Containing no metals or metalloids (B, Si, P, Ge, As, Se, Sn, Sb, Te, Bi, Po, At)
13 Oxidizing liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not applicable	-	-	-	Organic compounds containing oxygen (but not fluorine and chlorine), with the oxygen bound to carbon and hydrogen (but not to other elements)
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Classification not possible	-	-	-	Test methods applicable to solid substances are not available

Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 2	Skull and crossbones	Danger	Fatal if swallowed	Based on the LD50 value of 25mg/kg calculated from the testing data of rat LD50 (oral route) of 25mg/kg, 31mg/kg, 50mg/kg and 85mg/kg (EHC 220 (2000)).
1 Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Based on the LD50 (dermal route) value of 200mg/kg representing the lowest of the testing data, rat LD50 of 200mg/kg, 600mg/kg (EHC 220 (2000)) and rabbit LD50 (dermal route) of 1,000mg/kg (EHC 220 (2000)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Category 2	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 (4-hour inhalation of dust/mist) value of 0.23mg/L (EHC 220 (2000)).
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the description in the report on rabbit skin irritation tests (DFGOT vol.19 (2003)): "The substance causes moderate irritation."
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Based on the description in the report on rabbit eye irritation tests (EHC 220 (2000)): "Corrosive."
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Classification not possible	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization) -	Respiratory sensitization: No data available Skin sensitization: No data available
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects	Based on positive data on multi-generation mutagenicity tests (dominant lethal tests), described in EHC 220 (2000), ATSDR (1995) and NTP DB (Access on Apr., 2006).
6 Carcinogenicity	Classification not possible	-	-	-	Classification not possible given the insufficiency of data, along with the absence of existing classification.
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of resorption and malformation at doses causing parental toxicity, described in ATSDR (1995), EHC 220 (2000) and DFGOT vol.220 (2000).
8 Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, liver) Category 2 (respiratory organs)	Health hazard	Danger Warning	Causes damage to organs (nervous system, liver) May cause damage to organs (respiratory)	Based on the human evidence including "coma, headache, nausea or vomiting" (RTECS (2004)), "pulmonary/brain edema" (HSDB (2003)), and the evidence from animal studies including "myospasm, tremor, ataxia, debility, hepatic swelling with hemorrhage and necrosis" (ATSDR (1995)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system, respiratory organs, liver, kidneys) Category 2 (thymus, spleen)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (nervous system, respiratory organs, liver, kidneys) May cause damage to organs through prolonged or repeated exposure (thymus, spleen).	Based on the human evidence including "headache, fever, hyperhidrosis, abnormal thirst, short of breath, coughing, vomiting, hyperpnoea, emotional anxiety, debility, yellow discoloration of skin/hair/sclera/conjunctiva, pulmonary edema, stupor and coma," "regressive degeneration occurs in the hepatic parenchyma and renal tubules," "neurotoxicity manifests as toxic psychosis and brain edema diagnosed based on occasional spasm; peripheral neuropathy, asthenia, fatigue and autonomic hypertonia have also been reported" (PATTY (4th, 1999)), and the evidence from animal studies including "increased BUN," "fatty degeneration of the liver," "atrophy or hyperplasia of the thymus and spleen" (ATSDR (1995)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 1 (liver, kidneys) and Category 2 (thymus, spleen).
10	Aspiration hazard	Classification not possible	-	-	-	No data available

Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 96 hours LC50=0.066mg/L of the fish (Rainbow Trout) (EHC220, 2000).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting effects	Although acute toxicity is Category 1 and bio-accumulation is low (BCF=0.7(Existing Chemical Safety Inspections Data,)), since there was no rapidly degrading (the decomposition by BOD: 4%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.