

GHS Classification

ID321

CAS 88-85-7

Physical Hazards

2-(1-Methylpropyl)-4,6-dinitrophenol

Date Classified: Sep. 20, 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 -140). Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (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	—	—	—	Classification not possible due to lack of data, though classified as flammable according to ICSC (2004). Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (UN Recommendations on the Transport of Dangerous Goods)
8 Self-reactive substances and mixtures	Not classified	—	—	—	No data available, though containing nitro groups with explosive properties. Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (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	—	—	—	Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (UN Recommendations on the Transport of Dangerous Goods)
11 Self-heating substances and mixtures	Classification not possible	—	—	—	Test methods applicable to liquid substances are not available (melting point: 38-42degC (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 classified	—	—	—	No data available, though being organic compounds containing oxygen bound to elements other than carbon and hydrogen. Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (UN Recommendations on the Transport of Dangerous Goods)
15 Organic peroxides	Not applicable	—	—	—	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Not classified	—	—	—	Classification not possible due to lack of data, though the substance acts on mild steel in the presence of water, according to HSDB (2006). Classified into Division 6.1 (UN#2779 (Substituted nitrophenol pesticides, solid, toxic) (ICSC, 2004)) (UN Recommendations on the Transport of

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 rat LD50 (oral route) value of 25mg/kg (CERI Hazard Data 2001-15 (2002)).
1 Acute toxicity (dermal)	Category 2	Skull and crossbones	Danger	Fatal in contact with skin	Based on the rabbit LD50 (dermal route) value of 80mg/kg (CERI Hazard Data 2001-15 (2002)).
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
2 Skin corrosion / irritation	Category 1A-1C	Corrosion	Danger	Causes severe skin burns and eye damage	Based on the description of the human health effects (CERI Hazard Data 2001-15 (2002)): "Corrosive to the skin." Although classified into Category 1A-1C, the substance should be placed in Category 1A from the viewpoint of safety if further subclassification is needed.
3 Serious eye damage / eye irritation	Category 1	Corrosion	Danger	Causes serious eye damage	Classified as Category 1 in accordance with the technical guideline, given the fact that the substance is classified as "corrosive" for "2. Skin corrosion / irritation" above.
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	Classification not possible	—	—	—	Based on the absence of data on in vivo tests and no positive data on in vitro mutagenicity tests (several indices), described in CERI Hazard Data 2001-15 (2002).
6 Carcinogenicity	Not classified	—	—	—	Due to the fact that the substance is classified as Category D by EPA (1993).
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of pup malformation at parentally toxic doses (or in the absence of data on parental toxicity) in teratogenicity studies in mice and rats, along with the evidence of reproduction impairment in rat reproductive toxicity studies, described in CERI Hazard Data 2001-15 (2002).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system, kidneys). Category 3 (narcotic effects)	Health hazard	Danger	Causes damage to organs (nervous system, kidneys) (Narcotic effects) May cause drowsiness or dizziness	Based on the human evidence: "directly affects, stimulates and suppresses the cerebrum and lower brain centers; causes necrotic damage to the renal tubules in the kidneys" (CERI Hazard Data 2001-15 (2002)). Also based on the evidence from animal studies including "somnolency, spasm" (RTECS (2006)). 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 (liver, kidneys, nervous system, testes, uterus) Category 2 (blood system, visual organ)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (liver, kidneys, nervous system, testes, uterus) May cause damage to organs through prolonged or repeated exposure (blood system).	Based on the human evidence: "the substance has toxic effects on the liver, kidneys and nervous system, and produces degenerative changes in the hepatic parenchyma and renal tubules" (CERI Hazard Data 20001-5 (2002)), "this substance has effects on the kidneys, liver, blood, immune system and eye, may cause cataract; may induce reproductive toxicity in humans" (ICSC (J) (1994)). Also based on the evidence from animal studies: "Histological changes in the testes including abnormal spermatozoa, spermatids and multinucleated spermatogenic cells," "tubular atrophy of testes" (HSDB (2003)), "cystic endometrial hyperplasia and testicular atrophy" (IRIS (1987)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Categories 1 and 2. The effects on the blood system and visual organ are classified into Category 2 since the priority rating of the referenced study (ICSC (J)) is 2.
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=0.028mg/L of the fish (American Catfish) (CERI Hazard Data, 2002).
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=1(Existing Chemical Safety Inspections Data,)), since there was no rapidly degrading (the decomposition by BOD: 0%(Existing Chemical Safety Inspections Data)), it was classified into Category 1.