

GHS Classification

ID546

CAS 99-09-2

Physical Hazards

m-Nitroaniline

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	—	—	—	Classification not possible due to lack of data, though the substance contains nitro groups with its oxygen budget calculated at -151. According to Bretherick (J) (5th, 1998), the kick-off temperature is 213degC, whereas the decomposition energy is 1.882kJ/g (280-380degC), which can be classified as "Explosives." Classified into Division 6.1 (UN#1661 (o-, m-, p-)) (UN Recommendation 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	—	—	—	Insufficient data available, though classified as flammable(HSDB (2006)) and the powder or granules, when mixed with the air, may cause dust explosion (ICSC (2004)) . Classified into Division 6.1 (UN#1661(o-, m-, p-)) (UN Recommendation on the Transport of Dangerous Goods).
8 Self-reactive substances and mixtures	Not classified	—	—	—	Not classified with the kick-off temperature of 213degC (Bretherick (J) (5th, 1998)), though the substance contains nitro groups with explosive properties. Classified into Division 6.1 (UN#1661 (o-, m-, p-)) (UN Recommendation 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#1661 (o-, m-, p-)) (UN Recommendation 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: 114degC (ICSC, 2002), 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 the elements other than carbon and hydrogen. Classified into Division 6.1 (UN#1661 (o-, m-, p-)) (UN Recommendation on the Transport of Dangerous Goods).
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 4	Exclamation mark	Warning	Harmful if swallowed	Based on the rat LD50 (oral route) value of 535mg/kg representing the lower of the two testing data, 535mg/kg and 540mg/kg (SIDS (1995)).
1 Acute toxicity (dermal)	Classification not possible	—	—	—	No data available
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)	Classification not possible	—	—	—	No data available
2 Skin corrosion / irritation	Classification not possible	—	—	—	Some human epidemiological studies provide evidence of skin irritation potential (PATTY (4th, 1999)): "The substance is rapidly absorbed through intact skin, and irritates the skin, eye and mucous membranes." However, classification is not possible since the severity of the effects is not presented.
3 Serious eye damage / eye irritation	Classification not possible	—	—	—	Some human epidemiological studies provide evidence of eye irritation potential (PATTY (4th, 1999)): "The substance is rapidly absorbed through intact skin, causing irritation of the skin, eye and mucous membranes." However, classification is not possible since the severity of the effects is not presented.
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 2	Health hazard	Warning	Suspected of causing genetic defects	Based on the absence of data on multi-generation mutagenicity tests, germ cell mutagenicity tests in vivo and germ cell genotoxicity tests in vivo, and positive data on somatic cell mutagenicity tests in vivo (micronucleus tests), described in Report by the Ministry of Health, Labour and Welfare (1994), NTP DB (Access on June, 2006) and SIDS (1995).
6 Carcinogenicity	Classification not possible	—	—	—	No data available
7 Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the indication of a potential of parturition or lactation disorder at doses inducing parental toxicity, described in Report by the Ministry of Health, Labour and Welfare (1994).

8	Specific target organs/systemic toxicity following single exposure	Category 2 (blood system)	Health hazard	Warning	May cause damage to organs (blood system)	Based on the human evidence: "Acute exposure can cause methemoglobinemia, cyanosis" (HSDB (2003)). Also based on the evidence from animal studies including "increased methemoglobin and sulfhemoglobin levels in blood" (HSDB (2003)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2. The priority rating for the referenced study for human effects is 2.
9	Specific target organs/systemic toxicity following repeated exposure	Category 2 (liver, blood system, testes)	Health hazard	Warning	May cause damage to organs through prolonged or repeated exposure (liver, blood system, testes)	Based on the human evidence: "Chronic exposure can cause liver damage" (HSDB (2003)), "may adversely affect the blood system, forming methemoglobin" (JCS (J) (2001)). Also based on the evidence from animal studies including "cyanosis, methemoglobinemia, testicular atrophy and hepatocyte swelling" (Report by the Ministry of Health, Labour and Welfare (1994)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 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 3	-	-	Harmful to aquatic life	It was classified into Category 3 from 24 hours EC50=36mg/L of the crustacea (Daphnia magna) (SIDS, 1995).
11 Hazardous to the aquatic environment (chronic)	Category 3	-	-	Harmful to aquatic life with long lasting effects	Although acute toxicity was Category 3 and the bio-accumulation potential was low (BCF=3(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 3.