

## GHS Classification

**ID149**

**N,N-Dimethylformamide**

**CAS 68-12-2**

Date Classified: Mar. 23, 2006 (Environmental Hazards: Feb. 10, 2006)

**Physical Hazards**

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

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not applicable	-	-	-	Containing no chemical groups with explosive properties
2 Flammable gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
6 Flammable liquids	Category 3	Flame	Warning	Flammable liquid and vapour	The flash point is 58degC (c.c.) (ICSC, 2000) which is classified into Category 3. Classified into Class 3 and Packing Group III (UN#2265) (UN Recommendations on the Transport of Dangerous Goods)
7 Flammable solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Containing no chemical groups with explosive or self-reactive properties
9 Pyrophoric liquids	Not classified	-	-	-	Not pyrophoric when in contact with air at ordinary temperatures: the auto-ignition temperature is 445degC (ICSC, 2000)
10 Pyrophoric solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available
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	-	-	-	Organic compounds containing oxygen (but not fluorine and chlorine), with the oxygen bound to carbon and hydrogen (but not to other elements)
14 Oxidizing solids	Not applicable	-	-	-	Classified as "liquid" according to GHS definition
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "-O-O-" structure
16 Corrosive to metals	Not classified	-	-	-	Classified into Class 3 (UN Recommendations on the Transport of Dangerous Goods, UN#2265)

## Health Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 5	-	Warning	May be harmful if swallowed	Based on the LD50 value of 3,370mg/kg calculated from the testing data of rat LD50 (oral route) of 4,200mg/kg (MOE Risk Assessment vol.1, 2002), 3,040mg/kg (SIDS (2004)), 3,000mg/kg, 3,920mg/kg, 4,000 mg/kg, 4,320mg/kg, 3,200mg/kg, 7,170mg/kg (EHC 114 (1991)).
1 Acute toxicity (dermal)	Category 5	-	Warning	May be harmful in contact with skin	Based on the LD50 value of 4,390mg/kg, calculated from the testing data of rat LD50 (dermal route) of 11,140mg/kg, 11,000mg/kg (EHC 114 (1991)), and 3,500mg/kg (MOE Risk Assessment vol. 1 (2002)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "liquid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	Insufficient data available
1 Acute toxicity (inhalation: dust, mist)	Classification not possible	-	-	-	Insufficient data available
2 Skin corrosion / irritation	Not classified	-	-	-	Based on the evidence of "no irritation" from animal eye irritation tests (CERI-NITE Hazard Assessment No.8 (2005)). Accidental exposure to the substance caused skin irritation, according to some report.
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 114 (1991)): 75-100% solutions cause severe eye irritation; mild reddening of the conjunctiva and moderate corneal damage are observed within 14 days of exposure in the area, where severe damage, mild degeneration of the surface and arterIALIZATION are observed. The substance is thus considered "severely irritating" to the eyes.
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: based on the description in the report on guinea pig skin sensitization tests (performed based on the maximization method) (EHC 114 (1991)) - Negative. However, classification is not possible, with only one set of data showing "negative" available.
5 Germ cell mutagenicity	Category 2	Health hazard	Warning	Suspected of causing genetic defects	Based on negative data on multi-generation mutagenicity tests, the absence of data on germ cell mutagenicity tests in vivo, positive data on somatic cell mutagenicity tests in vivo and the absence of data on germ cell genotoxicity tests in vivo, described in CERI-NITE Hazard Assessment No.8 (2005).
6 Carcinogenicity	Not classified	-	-	-	Due to the fact that the substance is classified as Group 3 by IARC 71 (1999), Category A4 by ACGIH-TLV (2005).
7 Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	Based on the description in CERI-NITE Hazard Assessment No.8 (2005): Malformations (cleft palate, exencephalia, hydrocephalus, absence of sphenoid bone, fused ribs, absence of a tail, etc.) are observed in offspring at dose levels not toxic to parental animals.
8 Specific target organs/systemic toxicity following single exposure	Category 1 (liver), Category 2 (respiratory organs)	Health hazard	Danger Warning	Causes damage to organs (liver) May cause damage to organs (respiratory organs)	Based on the human evidence including "eating disorder, vomiting, pains in the abdominal/pelvic/femoral regions, hepatic fibrosis and aggregated histiocytes (after the disappearance of the symptoms)" (CERI-NITE Hazard Assessment No.8 (2005)), and the evidence from animal studies including "hypertrophy of the walls of the alveoli (CERI-NITE Hazard Assessment No.8 (2005))" The effects on experimental animals were observed at dosing levels within the guidance value ranges for Category 2.

9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (liver)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (liver)	Based on the human evidence including "hepatic function disorder, symptoms of alcohol intolerance (IRIS (1990)); hepatopathy, an increase in AST/ALT levels, focal hepatocyte necrosis, fatty degeneration of the agranular endoplasmic reticulum. And based on the evidence from animal studies including: hypertrophy of centrolobular hepatocytes" (NTP TOX22 (1992)), "symptoms suggesting acute hepatocyte damage, an increase in SGPT/SGOT activity, histopathological changes in the liver of a young animal" (IRIS (1990)), "an increase in ALP activity" (over 100ppm), "an increase in ALT activity" (over 200ppm) "hepatocyte necrosis" (over 200ppm) (CERI-NITE Hazard Assessment No.8 (2005)).
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)	Not classified	-	-	-	It was classified into Not classified from 96 hours LC50>100mg/L of the fish ( <i>Oryzias Latipest</i> ) (MOE eco-toxicity tests of chemicals (1995) and others.).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since it was not water-insolubility (the water-solubility =1.00*106mg/L (PHYSPROP Database, 2005)), and acute toxicity was low, it was classified into Not classified.