

## GHS Classification

**ID176**

**CAS 123-31-9**

### Physical Hazards

## Hydroquinone

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 applicable	-	-	-	Containing no chemical groups with explosive properties
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	Classification not possible	-	-	-	Classification not possible due to lack of data, though classified as "flammable" by ICSC (2004)
8 Self-reactive substances and mixtures	Not applicable	-	-	-	Containing no chemical groups with explosive or self-reactive properties
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 515degC (ICSC, 2004)
11 Self-heating substances and mixtures	Classification not possible	-	-	-	No data 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	-	-	-	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 4	Exclamation mark	Warning	Harmful if swallowed	Based on the LD50 value of 593mg/kg calculated from the testing data of rat LD50 (oral route) of 1,300mg/kg (CERI Hazard Data 99-19 (2000)), 302mg/kg (MOE Risk Assessment vol. 3 (2004)), 390mg/kg (SIDS (2002)), 320mg/kg, 1,005mg/kg, 1,295mg/kg, 1,050mg/kg, 1,090mg/kg, 1,182mg/kg, 1,081mg/kg, 731mg/kg, 323mg/kg, 298mg/kg, 310mg/kg, 743mg/kg and 627mg/kg (EHC 157 (1994)).
1 Acute toxicity (dermal)	Not classified	-	-	-	Based on the rabbit LD50 (dermal route) value of 74,800mg/kg (CERI Hazard Data 99-19 (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)	Classification not possible	-	-	-	No data available
2 Skin corrosion / irritation	Category 2	Exclamation mark	Warning	Causes skin irritation	Based on the description in the report on guinea pig skin irritation tests (CERI Hazard Data 99-19 (2000) and EHC 157 (1994)): "Application of 10% aqueous solution produced irritation of the skin" (though results are not those of 4-hour application). Also based on the description in the report on epidemiological studies of human exposure (CERI Hazard Data 99-19 (2000), EHC 157 (1994) and DFGOT vol.10 (1998)): "irritating to the skin." The substance is thus considered to possess an irritation potential (of an unknown degree) and can be classified into Category 2 or 3. Placed in Category 2 from the viewpoint of safety.
3 Serious eye damage / eye irritation	Category 2A-2B	Exclamation mark	Warning	Causes serious eye irritation	Based on the description in the report on eye irritation tests in guinea pigs and rabbits (CERI Hazard Data 99-19 (2000), EHC 157 (1994), DFGOT vol.10 (1998) and SIDS (2002)): "Mild to moderate irritation was observed." Although classified into Category 2A-2B, the substance should be placed in Category 2A from the viewpoint of safety if further subclassification is needed.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Category 1	(Respiratory sensitization) - (Skin sensitization) Exclamation mark	(Respiratory sensitization) - (Skin sensitization) Warning	(Respiratory sensitization) - (Skin sensitization) May cause an allergic skin reaction	Respiratory sensitization: No data available Skin sensitization: A number of "positive" results have been reported from guinea pig skin sensitization tests (CERI Hazard Data 99-19 (2000) and EHC 157 (1994)). Also human epidemiological studies provide evidence of skin sensitization (CERI Hazard Data 99-19 (2000), EHC 157 (1994) and DFGOT vol.10 (1998)).
5 Germ cell mutagenicity	Category 1B	Health hazard	Danger	May cause genetic defects	Based on negative data on multi-generation mutagenicity tests and positive data on germ cell mutagenicity tests in vivo, described in EHC 157 (1994), SIDS (2002), CERI Hazard Data 99-19 (2000) and NTP DB (Access on March 2006).
6 Carcinogenicity	Category 2	Health hazard	Warning	Suspected of causing cancer	Due to the fact that the substance is classified as Category A3 by ACGIH (2001).
7 Toxic to reproduction	Category 1B	Health hazard	Danger	May damage fertility or the unborn child	Based on the evidence of an increased incidence of resorptions with no maternal toxicity, described in EHC 157 (1994).

8	Specific target organs/systemic toxicity following single exposure	Category 1 (central nervous system, kidneys)	Health hazard	Danger	Causes damage to organs (central nervous system, kidneys)	Based on the human evidence: "major toxic effects of hydroquinone include tremor, vomiting, abdominal pain, headache, tachycardia, hyporeflexia, dark urine, dyspnea, cyanosis and coma" (EHC 157 (1994)). Also based on the evidence from animal studies: "enzymuria, glucosuria, increased epitheliocytes in the urine were observed" (EHC 157 (1994)), "nerve/muscle shrinkage and tremor were found" (IUCILD (2000)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Categories 1 and 2.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (respiratory organs, blood system) Category 2 (central nervous system, liver, kidneys)	Health hazard	Danger Warning	Causes damage to organs through prolonged or repeated exposure (respiratory organs, blood system) May cause damage to organs through prolonged or repeated exposure (central nervous system, liver,	Based on the human evidence including "significant decrease in pulmonary function in the exposed group" (EHC 157 (1994)), and the evidence from animal studies including "tremor and decreased activity," "hepatic lesions including syncytial cells and giant cells observed" (EHC 157 (1994)), "tremor and spasm," "decreased hematocrit levels/hemoglobin levels/RBC, dose-dependent increase in kidney damage" (NTP TR 366 (1989)), "hematological changes such as anisocytosis, polychromatophilia and acidophil erythroblast were detected" (CERI Hazard Data 99-19 (2000)). The effects on experimental animals were observed at dosing levels within the guidance value ranges for Categories 1 and 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=44microg/L of the fish (Fathead Minnows) (MOE Risk Assessment vol. 2 (2003) and others.).
11 Hazardous to the aquatic environment (chronic)	Not classified	-	-	-	Since there was rapidly degrading (the decomposition by BOD: 70% (Existing Chemical Safety Inspections Data)) and the bio-accumulation was low (log Kow=0.59 (PHYSPROP Database, 2005)), it was classified into Not classified.