

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name MCA, 80% Solution in Water

Chemical Name Monochloroacetic acid

Synonym(s) Chloroacetic acid

Product Use Chemical intermediate

Manufacturer / Supplier Akzo Nobel Functional Chemicals LLC
PO Box 40350
Denver, CO, USA 80204-0350
Tel. 1-303-937-7482

Emergency Telephone Numbers

CHEMICAL EMERGENCY CHEMTREC (800) 424-9300 (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)
(24-hr) (703) 527-3887 (For calls originating elsewhere / collect calls are accepted)

(Spill, Leak, Fire, Exposure or Accident) CANUTEC (613) 996-6666
(Canada)

MEDICAL / HANDLING EMERGENCIES (914) 693-6946 [AkzoNobel – USA]

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

This material is hazardous by the OSHA Hazard Communication Standard (29CFR 1910.1200)

DANGER - POISON

- **MCA is rapidly absorbed through the skin. May be toxic even if small areas of skin are exposed. Skin exposure may cause death. See Section 4 (First Aid Measures).**
- **May be fatal if swallowed and/or inhaled.**
- **Symptoms may be delayed by hours.**
- **Causes burns – Corrosive to eyes, skin and upper respiratory tract.**
- **Very toxic to aquatic life. Avoid release to the environment.**
- **Contains material which may cause damage to the heart, brain, central nervous system, liver, kidney, lung and vascular systems.**

Appearance and odor Colorless to pale yellow liquid with a pungent acidic odor.

POTENTIAL HEALTH EFFECTS [See Section 11 for additional information]

Primary Route(s) of Exposure Eye contact, skin contact and inhalation

Acute Exposure

Inhalation

Inhalation of monochloroacetic acid heated vapor, fume, mist or aerosol may cause severe irritation of the mucous membranes, nose, throat and lungs. Persons with lung disease are at greater risk. Symptoms of lung injury are often delayed some hours and are aggravated by physical effort. Central nervous system involvement produces symptoms of disorientation, excitation, coma and possibly death.

Skin Contact

Contact causes severe irritation, redness, pain and severe burns. Monochloroacetic acid is rapidly absorbed by the skin and then released to the systemic circulation which can lead to severe refractory metabolic lactic acidosis poisoning. Human fatalities have resulted from exposure to molten and liquid material when 10% or more body surface coverage occurred.

2. HAZARDS IDENTIFICATION (CONTINUED)

- Eye Contact** Eye contact with solid material or solutions may cause profound tissue damage including corneal and conjunctival edema, corneal opacity and corneal destruction accompanied by pain, lacrimation, and conjunctivitis. Corneal damage frequently results in blindness.
- Ingestion** This product is toxic by ingestion, likely to cause throat pain, abdominal pain and interference with essential enzyme systems. Symptoms may include nausea, vomiting, diarrhea and bloody stools. Perforation of the esophagus and stomach may occur and death may result from cardiovascular collapse.
- Carcinogenicity** IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen.
- Medical conditions aggravated by exposure** Persons with pre-existing skin and/or respiratory disease may be at increased risk if exposed to this material.

POTENTIAL ENVIRONMENTAL EFFECTS [See Section 12 for additional information]

- Aquatic Toxicity** This product is very toxic to aquatic life, based on available data.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS Number	% (w/w)
Monochloroacetic acid	79-11-8	80.0
Water	7732-18-5	20.0

4. FIRST AID MEASURES

- General Information** First-aid personnel should wear PVC or neoprene gloves and full body protective gear to avoid becoming contaminated with MCA.
- Skin Contact** Call "911" or a Poison Control Center and obtain emergency medical attention if the area of the exposed skin on any part of the body is greater than 1% of the total body surface area. An area of 1% of the total body surface area corresponds to approximately 1/2 of the total surface area of one hand, for example, the surface area you can cover with one hand with the fingers widely spread. The emergency medical services responders should transport the victim to a hospital as soon as possible with a copy of this Material Safety Data Sheet.
- If available, place patient in an emergency bath containing a saturated aqueous solution of sodium bicarbonate (7-9%) and keep victim in the bath for at least 30 minutes. Contaminated clothing and shoes should be removed in the bath and discarded. Excess baking soda should be visible at the bottom of the treatment bath. The water temperature should be 86°F (30°C). If bicarbonate bath is not available, immediately place victim under an emergency shower and flush with copious amounts of water even under clothing. With continued flushing, remove all contaminated clothing and shoes and discard them. Continue to flush with large amounts of running water for at least 15 minutes. Delayed irreversible effects are possible.
- Inhalation** If a known exposure occurs or is suspected, do not wait for symptoms to develop. Immediately call 911 or the nearest Poison Control Center to request immediate medical assistance. The emergency medical services responders should transport the victim to a hospital as soon as possible with a copy of this Material Safety Data Sheet. In addition, follow the procedures below and simultaneously contact a poison control center, a physician or the nearest hospital. Even if the victim is not in any distress at the time, inform the person contacted of the type and extent of exposure, describe the victim's symptoms and follow the advice given. Remove victim to fresh air. If not breathing, clear victim's airway and start artificial respiration. If victim is breathing, supplemental oxygen may be given from a demand-type or continuous-flow inhaler, preferably with a physician's advice.

4. FIRST AID MEASURES (CONTINUED)

Ingestion

Call 911 or the nearest Poison Control Center to request emergency medical assistance. The emergency medical services responders should transport the victim to a hospital as soon as possible with a copy of this Material Safety Data Sheet.

Call a physician or a poison control center immediately. ONLY induce vomiting at the instructions of a physician. If victim is conscious, rinse mouth, and give water to drink. If vomiting occurs, keep head below hips to reduce risk of aspiration. Give fluids again. Never give anything by mouth to a person who is unconscious or convulsing.

Eye Contact

Immediate first aid is required to prevent eye damage. Flush eyes with plenty of water for at least 15 minutes. If victim is wearing contact lenses, remove them if possible. Take care not to contaminate the victim's healthy eye or skin. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. DO NOT let victim rub eye(s). Do not attempt to neutralize with chemical agents. Oils or ointments should not be used at this time. Get medical attention immediately. Continue flushing for an additional 15 minutes if a physician is not immediately available.

Note to Physician

Monochloroacetic acid exposure has two primary aspects: 1) effects related to exposure to a strong acid, and 2) a specific systemic metabolic toxicity associated with the monochloroacetate anion. The monochloroacetate anion inhibits pyruvate dehydrogenase and α -ketoglutarate dehydrogenase enzyme complexes and forces cells to revert to anaerobic glycolysis leading to lactate accumulation.

Attending physician should treat exposed patients symptomatically. Monochloroacetic acid is rapidly absorbed through intact the skin and then released into the systemic circulation. The release into the circulation may cause a delayed severe refractory metabolic lactic acidosis.

In case of ingestion, evacuate stomach contents through a stomach tube, preferably introduced under endoscopic control. Published studies in rats experimentally dosed with MCA indicate that gastric emptying is delayed with MCA ingestion.

Timely administration of intravenous sodium dichloroacetate (SDCA) may be life saving in case of serious monochloroacetate intoxication. SDCA is not approved for medical use in the United States. Treatment is symptomatic and supportive without it. For a treatment protocol, contact the nearest Poison Control Center or AkzoNobel Emergency Center in the Netherlands (Tel. +31 570 67 92 11) and ask for IPCS INTOX PIM 352. Alternatively, you can consult the online database at: <http://www.inchem.org/documents/pims/chemical/pim352.htm>.

5. FIRE FIGHTING MEASURES

Flammable Properties

Not flammable or combustible

Extinguishing Media

This product is considered non-combustible. If involved in a fire, extinguishing agents suitable for the surrounding materials should be used. Use water spray, dry chemical powder, carbon dioxide or alcohol resistant foam extinguishing agents. Water used to extinguish a fire should not be allowed to enter public water systems in case of MCA leakage.

Fire Fighting Procedures

Products of combustion are irritating to the respiratory tract and may cause breathing difficulty and pulmonary edema. Symptoms may be delayed several hours or longer depending upon the extent of the exposure. As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate all non-essential personnel from the fire area. Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing. If possible, move containers from the fire area. If not leaking, keep fire exposed containers cool with a water fog or spray to prevent rupture due to excessive heat. High pressure water may spread product from broken containers increasing contamination or fire hazard. Contaminated buildings, areas and equipment must not be used until they are properly decontaminated. Dike fire control water for later disposal. Do not allow contaminated water to enter waterways.

5. FIRE FIGHTING MEASURES (CONTINUED)

Fire & Explosion Hazards	Not considered a flammable or combustible material. However, under fire conditions, this product may support combustion and decompose to give off toxic and corrosive combustion materials. MCA is explosive at higher temperatures when mixed with air. In case of fire and/or explosion, do not breathe fumes.
Hazardous Combustion Products	Thermal decomposition produces very toxic substances including carbon monoxide and hydrochloric acid and formaldehyde.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protective equipment (See Section 8). Do not breathe dust.
Methods for containment	Isolate spill area and restrict non-essential personnel from area. Stop source of spill if this is possible without being exposed.
Environmental precautions	Do not allow product to enter drains or water courses. If product contaminates public waters, inform appropriate authorities in accordance with local regulations.
Methods for clean-up	Sweep up spilled solid material, being careful not to create dust. Return sweepings to stock or, if contaminated, place into a chemical waste container for disposal according to regulations. Neutralize surrounding with sodium (bi)carbonate (Na ₂ CO ₃ / NaHCO ₃). Flush spill area with large amount of water and dike for later disposal. Avoid release to the environment.
Other information	See also Section 13 for disposal information.

7. HANDLING AND STORAGE

Handling	This material is a very toxic and corrosive solid. Avoid inhalation and prolonged and/or repeated skin and eye contact. Avoid dust generation. Use only with adequate ventilation. Wash thoroughly after handling. Do not drink, eat or smoke in application areas. Emptied containers may retain residues. Follow all warnings and precautions even after the container is emptied. Additionally, solutions of sodium bicarbonate (7-9%) should be available in the immediate work area. Large quantity users may want to install a thermostatically controlled (30°C/86°F) emergency bath containing the saturated bicarbonate solution as an added precaution.
Storage	Store away from foodstuffs or animal feed. Containers should be kept tightly closed and stored in a cool, dry (with relative humidity at less than 40%), well-ventilated area away from incompatible materials such as bases and amines. Exercise due caution to prevent damage to or leakage from the container. Store in polyethylene, glass-lined, PVC or 316L stainless steel equipment. Do not store in direct sunlight and keep away from heat sources.
Recommended Storage Temperature	In case of bulk storage, the temperature should be kept as low as possible (7-30°C / 45-86°F) in order to keep the solution liquid and avoid unnecessary hydrolysis and corrosion.
General Comments	Keep containers tightly closed until ready for use. Do not re-use empty containers. Prevent overheating (see section 5).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines	Exposure to this product should be controlled below the following limits: ACGIH – TWA : 2 mg/m³ or 0.5 ppm IFV [measured as Inhalable Fraction and Vapor] [Skin Notation ... Danger of cutaneous absorption] ACGIH = American Conference of Governmental Industrial Hygienists TWA = Time-Weighted Average exposure concentration for a conventional 8-hour workday. [Ref: ACGIH Guide to Occupational Exposure Values, 2010 Edition]
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONTINUED)

Engineering Controls & Ventilation Sufficient natural or mechanical ventilation must be provided to keep concentrations of MCA in air below applicable exposure limits and to help minimize exposures. Where ventilation is inadequate based on conditions of use, personnel protective equipment is needed (see next paragraph for full details). If use conditions generate airborne particles, the material should be handled in an open (e.g. outdoor) or well ventilated area.

Personal Protective Equipment (PPE)

Skin Skin contact with the product must be prevented through the use of suitable (acid-resistant) protective clothing, gloves and footwear selected according to use condition exposure potential. Protective equipment made of polyvinyl chloride (PVC) or neoprene is recommended. PVC gloves [manufactured by Ansell, / type Snorkel] have a breakthrough time of 480 minutes at 20°C/68°F. Discard gloves after MCA contact.

Eyes/Face Eye contact with this material must be prevented through the use of chemical safety splash goggles or a face shield selected with regard to use condition exposure potential.

Respiratory If use conditions generate dust and adequate ventilation (e.g., outdoor or well-ventilated area) is not available, use a NIOSH-approved organic vapor/acid gas respirator with dust, mist and fume filter to reduce potential for inhalation exposure. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure/pressure-demand, air-supplied respirator. When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the work shift) to assure breakthrough exposure does not occur.

Hygiene Measures Safety showers, with quick opening valves, which stay open, and eyewash fountains, or other means of washing the eyes with a gentle flow of cool to tepid tap water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-up in cold weather. Long sleeved clothing may be used to minimize skin contact. All food and smoking materials should be kept in a separate area away from the storage/use location. Eating, drinking and smoking should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, drinking and smoking, hands and face should be thoroughly washed.

Additionally, solutions of sodium bicarbonate (7-9%) should be available in the immediate work area. Large quantity users may want to install a thermostatically controlled (30°C/86°F) emergency bath containing the saturated bicarbonate solution as an added precaution.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Color	colorless to pale yellow
Odor	pungent acidic odor
Boiling Point	~ 280°F (~ 138°C)
Bulk Density	not applicable
Density	1333 kg/m ³ (at 77°F / 25°C)
Evaporation Rate (Butyl Acetate=1)	not determined
Melting Point	64°F (18°C)
Odor Threshold	0.045 ppm (MCA solid)
pH	< 1 (at 800 g/L water, 68°F / 20°C)
Partition Coefficient (n-octanol/water)	Log Pow = - 0.2 (calculated)
Solubility in water	> 1000 g/L (at 68°F / 20°C) for MCA flakes

9. PHYSICAL AND CHEMICAL PROPERTIES (CONTINUED)

Solubility in other solvents	soluble in acetone, ethanol and methanol
Vapor Density (<i>Air = 1</i>)	not determined (3.3 for MCA solid)
Vapor Pressure	MCA + water = 1.6 kPa (68°F/20°C); 3.8 kPa (104°F/40°C) Solid MCA = 0.014 kPa (77°F/25°C) ; 0.24 kPa (122°F/50°C) ; 1.27 kPa (176°F/80°C)
Viscosity	5.2 mPa.s (68°F/20°C); 4.4 mPa.s (77°F/25°C)
Volatiles (% by weight)	not determined
Other	not determined
Flammability	not flammable or combustible
Flash Point (<i>Method</i>)	>244°F (>118°C) [Closed Cup]
Upper Flammable Limit (% by volume)	not applicable
Lower Flammable Limit (% by volume)	not determined
Auto-Ignition Temperature	869°F (465°C)

< : less than > : greater than ~ : approximately

10. STABILITY AND REACTIVITY

Chemical stability	This product is stable at ambient temperature and atmospheric pressure as well as under recommended storage and handling conditions. Thermal decomposition occurs at temperatures above 250°C (482°F). It is not self-reactive and has an almost indefinite shelf-life under sealed conditions. It is not sensitive to physical impact.
Conditions to avoid	Avoid prolonged storage at elevated temperatures. In order to prevent thermal decomposition, do not overheat. Avoid humid conditions as product is hygroscopic.
Incompatible materials	This material is incompatible with most plastics, except hard PVC, PP, PE and PTFE. MCA might react violently with non-precious metals and produce hydrogen. Danger of explosion may result from contact with strong bases, strong oxidizing agents and amines. Exothermic reactions may occur with alcohols.
Hazardous decomposition products	Under fire conditions the product decomposes to give off toxic and corrosive hydrogen chloride gas, carbon oxides and formaldehyde.
Possibility of hazardous reactions	Hazardous polymerization is not expected to occur under normal temperatures and pressures.

11. TOXICOLOGICAL INFORMATION

Acute toxicity (<i>Oral / Dermal / Inhalation</i>)	MCA (solid) Oral LD ₅₀ = 90.4 mg/kg in rats. Dermal LD ₅₀ = 305 mg/kg in female rats (40% solution of MCA) Inhalation LC ₅₀ > 1268 mg/m ³ (4-h exposure in rats). MCA is toxic by ingestion and dermal absorption. MCA is extremely destructive to tissues of the mucous membranes and upper respiratory tract. Follow the recommendations in Section 4 (First Aid Measures) for any MCA exposure. In humans, systemic toxicity has been reported with exposure to at least 5% of body surface area. Deaths have been reported following exposure of larger skin areas. This product is corrosive to skin. Monochloroacetic acid is rapidly absorbed in the skin and then released into the systemic circulation. The release into the circulation may cause a delayed severe refractory metabolic lactic acidosis.
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11. TOXICOLOGICAL INFORMATION (CONTINUED)

Irritation (Skin / Eyes)	MCA is corrosive to skin and eyes.
Chronic toxicity (Oral / Dermal / Inhalation)	A 90-day oral study in rats reported a LOAEL of 30 mg/kg/day. Cardiomyopathy was observed at doses of 60 mg/kg/day and higher. Increased relative liver weights and liver enzyme changes suggested the liver was also affected, but microscopic lesions were not observed.
Sensitization	Not sensitizing to skin [based on a test with sodium monochloroacetate (SMCA) / Mouse Local Lymph Node Assay].
Carcinogenicity	IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen. Monochloroacetic acid was not carcinogenic in a 2-yr feeding study (rat, mouse).
Mutagenicity	Product is not mutagenic, per various <i>in vitro</i> and <i>in vivo</i> tests.
Reproductive toxicity	No data available.
Other Effects	<i>In vitro</i> cytogenicity tests show positive effects at cytotoxic doses accompanied with dramatic changes in pH of culture medium. Cytogenicity tests <i>in vivo</i> show equivocal results. Central nervous system involvement, caused by acute or chronic exposure, has resulted in symptoms of disorientation, excitation, coma and possibly death. The lethal effects may be associated with cerebral lactic acidosis in combination with systemic lactic acidosis.
Target Organs	Eyes, skin, respiratory tract, heart, brain, central nervous system, skeletal muscles, liver, kidneys, lungs and vascular system.

12. ECOLOGICAL INFORMATION

Ecotoxicity	MCA is toxic to aquatic life. The following data is available for the solid material: Fish (<i>poecilla reticulata</i> / guppy): 96h LC ₅₀ = 369 mg/L Daphnia magna : 48h EC ₅₀ = 88 mg/L ; 21-days NOEC = 32 mg/L Algae (<i>desmodesmus subspicatus</i>): 72h ErC ₅₀ = 0.033 mg/L ; NOErC = 0.0058 mg/L Bacteria (<i>tetrahymena pyriformis</i>) freshwater, static : 9h EC ₅₀ = 83 mg/L [Growth inhibition / Activated sludge respiration inhibition test]
Biodegradation	MCA is readily biodegradable.
Bioaccumulation	Bioaccumulation is not expected due to the substance's high water solubility. Log P _{ow} = 0.49
Other information	None available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal	Material that cannot be used or chemically reprocessed should be collected in MCA-resistant drums and disposed of at an approved facility in accordance with all applicable regulations. This product, if unused, is not a RCRA-listed waste and does not meet the RCRA criteria for hazardous wastes by characteristics. Generators of waste material are required to evaluate all waste for compliance with RCRA and any applicable state and local disposal procedures and regulations. Dispose of waste in accord with local, state and federal regulations. Incineration may be used where permitted by regulations. NOTE! – State and local regulations may be more stringent than federal regulations.
Container Disposal	Containers should be cleaned of residual product before disposal. Do not contaminate public waters with waste or rinsate. Emptied containers may retain residues. Follow all warnings and precautions even after the container is emptied. Empty containers should be disposed of in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

Regulation	UN Number	Proper Shipping Name [Technical Name]	Hazard Class	PG	Label	Additional Information
US DOT	UN1750	RQ, Chloroacetic acid, solution	6.1 8	II	6.1 (poison) 8 (corrosive)	RQ = 100 lbs
Canada TDG	UN1750	Chloroacetic acid, solution	6.1 8	II	6.1 (toxic) 8 (corrosive)	ERAP Index = 1000
IATA / ICAO	UN1750	Chloroacetic acid, solution	6.1 8	II	6.1 (toxic) 8 (corrosive)	
IMDG / IMO	UN1750	Chloroacetic acid, solution	6.1 8	II	6.1 (toxic) 8 (corrosive)	Marine Pollutant

Emergency Response Guidebook (2008 ERG) 153

Environmentally Hazardous Substances Monochloroacetic acid has a Reportable Quantity (RQ) of 100 lbs (45.4 kg).

[49 CFR 172.101, Appendix A]

15. REGULATORY INFORMATION

Regulatory Lists / Inventories: The components are subject to the following regulatory lists and inventories:

Substance Name	CAA	CERCLA	IARC	US State Right-To-Know Lists	CA Prop 65	SARA
Monochloroacetic acid	X 112(b)	X	N/R	MA / MN / NJ / PA	N/R	X 302/313
Water	N/R	N/R	N/R	N/R	N/R	N/R

National Chemical Inventories Status:

Substance Name	US TSCA	Canada		EU EINECS	Australia AICS	New Zealand NZIoC	Japan ENCS	Korea KECI	Philippines PICCS	China IECSC
		DSL	NDSL							
Monochloroacetic acid	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X

Legend

AICS	Australian Inventory of Chemical Substances
CA LIST	California – Directors List of Hazardous Substances
CA PROP 65	California Proposition 65
CAA	Clean Air Act, Section 112
CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substances List – Canada
EINECS	European Inventory of Existing Commercial Chemical Substances
ENCS	Japan Existing and New Chemical Substances
IARC	International Agency for Research on Cancer – Carcinogens – Groups 1, 2A or 2B
IECSC	China – Inventory of Existing Chemical Substances
IL LIST	Illinois Toxic Substances Disclosure to Employees Act
KECI	Korea Existing Chemicals Inventory
LA LIST	Louisiana Right-to-Know Reporting List
MA LIST	Massachusetts – R-T-K Substance List
MN LIST	Minnesota – Hazardous Substance List
NDSL	Non-Domestic Substances List – Canada
NJ R-T-K	New Jersey – R-T-K Hazard List
N/R	Non Regulated
NZIoC	New Zealand Inventory of Chemicals
PA LIST	Pennsylvania Hazardous Substance List

15. REGULATORY INFORMATION (CONTINUED)

PICCS	Philippines Inventory of Chemicals and Chemical Substances
RI LIST	Rhode Island – Hazardous Substance List
SARA	SARA Title III, Section 302 / 313
TSCA	Toxic Substances Control Act – USA
X	Listed and/or Regulated

CANADA – WHMIS (Workplace Hazardous Materials Information System)

Class D1B, Class E

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* (CPR) and the MSDS contains all the information required by the CPR.

Other Regulatory Information

None known.

16. OTHER INFORMATION

HMIS Hazard Rating	Health: 4* / Flammability: 1 / Physical Hazard: 0 / Other: none [0 – Minimal / 1 – Slight / 2 – Moderate / 3 – High / 4 – Extreme / * - Chronic Health Hazard (see Section 11)]
NFPA Hazard Rating	Health: 4 / Fire: 1 / Instability: 0 / Other: None [0 – Minimal / 1 – Slight / 2 – Moderate / 3 – High / 4 – Extreme]
Trademark	Not applicable
Date of Issue / Revision	December 16, 2010
Revision #	14.0
Changes	All sections
Prepared by	Akzo Nobel Services Inc. (Technology & Engineering, Regulatory & Applied Life Sciences)
Technical Information Contact	Akzo Nobel Functional Chemicals, 1-303-937-7482
Disclaimer	The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent. [00707_061108]