

PLANT
CHEMICAL
SAFETY
MANUAL
MONSANTO
TEXAS CITY, TEXAS

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SC

007313

LAM008740

TOXICITY CHART

DEPT. NO. 13

Chemical Name	Systemic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Aluminum Chloride (AlCl ₃)	Avoid	Burns	Burns	Not Likely	X	X		Water Wash
Benzene (b2)	Avoid, Toxic	Avoid	Irritating	Keep away from food	X			Fresh air, Remove Contaminated Cloth- ing, soap and water washing.
Chlorine (Cl ₂)	Avoid, Toxic	Liquid, can burn	Avoid	Corrosive	X		X	Fresh air
Ethylbenzene (EB)	Avoid	Avoid	Irritating	Not Likely	X			Flush with water
Ethyl Chloride (EtCl)	Avoid	Possible frost- bite	No known problem	No known problem				Fresh air
Ethylene (CH ₂ CH ₂)	Avoid	Avoid	Avoid	Keep away from food	X	X		Flush with water
Hydrogen Chloride (Gas or Liquid) (HCl-Muriatic Acid)	Avoid	Burns	Severe irritation	Burns	X	X		Flush with water
Caustic (Sodium Hydroxide) NaOH Caustic)	Avoid Mist	Burns	Burns	Avoid-Severe injury	X	X		Lots of water wash
Aluminum Chloride (27%) AlCl ₃	-----	-----	This material is	relatively non-toxic	-----	-----	-----	

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TOXICITY CHART

DEPT. NO. 14

Chemical Name	Inhalation	Hygienic Hazards			Protection Required if Danger of Contact Exists			First Aid
		Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Aluminum Chloride (Anhydrous) $AlCl_3$	Avoid	Burns	Burns	Not Likely	X	X		Water wash
Aluminum Chloride (27%) $AlCl_3$				This Material is Relatively Non-Toxic				
Benzene (BZ)	Avoid, Toxic	Avoid	Irritating	Keep away from food	X			Fresh air, remove contaminated clothing, soap and water wash.
Sodium Hydroxide (20-50%) (NaOH Caustic)	Avoid Mist	Burns	Burns	Avoid - Severe Injury	X	X		Lots of water wash
Chlorine (Cl_2)	Avoid, Toxic	Liquid can burn	Avoid	Corrosive	X		X	Fresh air
Ethylbenzene (EB)	Avoid	Avoid	Irritating	Not likely	X			Flush with water
Ethyl Chloride (ETC)	Avoid	Possible Frost-bite	No known problem	No known problem				Fresh air
Ethylene (CH_2CH_2)	Avoid	Avoid	Avoid	Keep away from food	X	X		Flush with water
Styrene Inhibitor (ISI)	Avoid dust and vapor	Absorbed through skin	Irritant	Keep away from food	X (Discard Gloves)	X	X	Wash with soap and water

TOXICITY CHART

DEPT. NO. 15

Chemical Name	Inhalation	Hygienic Hazards			Protection Required if Danger of Contact Exists			First Aid
		Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Dehydrogenation Catalyst (Shell 105)	Avoid dust	Mild Irritant	No known problem	No known problem	X	X		Soap and water wash
Ethylbenzene (EB)	Avoid	Avoid	Irritant	Not likely	X			Flush with water

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TOXICITY CHART

DEPT. NO. 16

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
P-Tert-Butylcatechol (TBC)	Avoid when hot	Absorbed slowly	Avoid dust	Keep away from food	X			Wash with soap and water
Chlorine (Cl ₂)	Avoid. Toxic	Liquid, can burn	Avoid	Corrosive	X		X	Fresh Air
Styrene Inhibitor (MSI)	Avoid dust and vapor	Absorbed through skin	Irritant	Keep away from food	X (Discard gloves)	X	X	Wash with soap and water
Ethylbenzene (EB)	Avoid	Avoid	Irritant	Not likely	X			Flush with water
Styrene (SM)	Irritation	Burns	Burns	Avoid	X			Water wash, fresh air, first aid
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe Burns	Severe Burns	Severe injury	X	X		Water wash, first aid
Toluene	Narcotic effect	Avoid	Irritation	Avoid	X			Fresh air, water wash

TOXICITY CHART

DEPT. NO. 19

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Sodium Hydroxide (20-50%) (NaOH-Caustic)	Avoid mist	Burns	Burns	Avoid - Severe injury	X	X		Lots of water wash
Chlorine (Cl ₂)	Avoid. Toxic	Liquid, can burn	Avoid	Corrosive	X		X	Fresh air
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very Toxic	X	X	X	Flush with water
Acetonitrile (ACN)	Do not breathe	Avoid	Avoid	Not likely	X	X		Flush with water

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TOXICITY CHART

DEPT. NO. 26

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Tert-butylamine (TBA)	Very toxic, dissipates fast	Burns	Serious irritant	Severe injury - keep away from food	X	X	X	Use lots of water. Flushing under safety shower
N-tert-butylformamide (TBFA)	Non-toxic	Non toxic	Mild irritant	Non-toxic				Flush with water
Sodium Hydroxide (20-50%) (NaOH-Caustic)	Avoid mist	Burns	Burns	Avoid - Severe injury	X	X		Lots of water wash
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very toxic	X	X	X	Flush with water
Isobutylene (IBY)	Avoid	No known problem	No known problem	No known problem				Fresh air
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash - First aid

TOXICITY CHART

DEPT. NO. 27

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Acetaldehyde (ACH)	Very irritating	Avoid (Evaporates rapidly)	Irritant	Not likely		X	X	Fresh air, water wash
Sodium Hydroxide (20-50%) (NaOH-Caustic)	Avoid mist	Burns	Burns	Avoid - Severe injury	X	X		Lots of water wash
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very toxic	X	X	X	Flush with water
Lactonitrile (LN)	Toxic	Will absorb	Severe irritation	Toxic	X	X		Flush with water
Phosphoric Acid, Hypophosphorous Acid and phosphorus pentoxide (H ₃ PO ₄)	Slight irritant	Burns	Severe irritation	Toxic	X	X		Flush with water

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TOXICITY CHART

DEPT. NO. 29

Chemical Name	Inhalation	Hygienic Hazards			Protection Required If Danger of Contact Exists			First Aid
		Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Acetone (UNE)	Not very toxic Mostly a fire hazard	Drys the skin	Irritating	Toxic	X	X		Flush with water
Acetone Cyanoacrylate (ACT)	Very toxic	Must be avoided	Must be avoided	Toxic	X	X	X	Fresh air, water flushing
Sodium Hydroxide (20-50%) (NaOH-Caustic)	Avoid mist	Burns	Burns	Avoid - Severe injury	X	X		Lots of water wash
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very toxic	X	X	X	Flush with water
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash - first aid

TOXICITY CHART

DEPT. NO. 32

Chemical Name	Inhalation	Hygienic Hazards			Protection Required If Danger of Contact Exists			First Aid
		Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Lactic Acid (LA)	No known problem	Avoid	Irritating	No known problem		X		Fresh air/flush with water
Lactonitrile (LN)	Toxic	Will absorb	Severe irritation	Toxic	X	X		Flush with water
Methyl Lactate (ML)	Avoid	Avoid	Mild irritant	Avoid	X			Flush with water

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TOXICITY CHART

DEPT. NO. 35F

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Hexane (HEX)	Avoid	Irritating	Irritating	Unknown				Fresh air
Lime (Caustic Calcium Hydroxide)	Not likely	Very Irritating	Very Irritating	Toxic	X	X		Flush with water
Methanol (MEOH)	Avoid	Will absorb	Irritating	Toxic	X			Fresh air/flush with water

TOXICITY CHART

DEPT. NO. 35P

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Ammonia (NH ₃)	Strong Irritant	Liquid NH ₃ burns	Avoid	Liquid corrosive	X	X	X	Fresh Air, wash with water
Butane (C ₄ H ₁₀)	Not toxic - fire hazard	Non-toxic non corrosive	Avoid	Not likely				Flush with water
Diisobutylaluminum Hydride (DIBAH)	Avoid fumes (May catch fire)	Burns quickly	Avoid	Corrosive	X	X		Wash with water
Hexane (HEX)	Avoid	Irritating	Irritating	Unknown				Fresh air
Hydrogen (H ₂)	Not toxic - fire hazard		No known problem	No known problem				Fresh air
Methanol (MEOH)	Avoid	Will absorb	Irritating	Toxic	X			Fresh air/flush with water
Titanium Tetrachloride (TiCl ₄)	Irritation	Corrosive	Corrosive	Avoid	X	X		Water wash-First aid

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TOXICITY CHART

DEPT. NO. 44

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Carbon Monoxide (CO)	Avoid, toxic	No known problem	No known problem	No known problem			X	Fresh air
Chlorine (Cl ₂)	Avoid, toxic	Liquid can burn	Avoid	Corrosive	X		X	Fresh air
Hydrogen (H ₂)	Not toxic - fire hazard		No known problem	No known problem				Fresh air
Methane (CH ₄)	Not toxic - fire hazard	No known problem	No known problem	No known problem				Fresh air
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash/first aid
Methanol (MEOH)	Avoid	Will absorb	Irritating	Toxic	X			Fresh air, flush with water
Caustic (Sodium Hydroxide) (NaOH)	Avoid mist	Acres	Burns	Avoid-Severe injury	X	X		Lots of water wash

TOXICITY CHART

DEPT. NO. 45

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Carbon Monoxide (CO)	Avoid, toxic	No known problem	No known problem	No known problem			X	Fresh air
Methanol (MEOH)	Avoid	Will absorb	Irritating	Toxic	X			Fresh air/flush with water

TOXICITY CHART

DEPT. NO. 46

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Carbon Monoxide (CO)	Avoid, Toxic	No known problem	No known problem	No known problem			X	Fresh air
Methanol (MEOH)	Avoid	Will absorb	Irritating	Toxic	X			Fresh air/flush with water

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TOXICITY CHART

DEPT. NO. 48

Chemical Name	Hygienic Hazards				Protection Required If danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Oxide Intermediate (Aldehydes mix)	Toxic, cobalt Hydrocarbonyl	Contaminated Clothing may catch fire	Avoid	Not likely	X			Fresh air, soap and water wash exposed areas
Carbon Monoxide (CO)	Avoid, toxic	No known problem	No known problem	No known problem			X	Fresh air
Cobalt Hydrocarbonyl HCO (Co4)	Avoid, toxic (has bad odor)	Avoid solvent	Avoid	Avoid			X	Fresh air
Cobaltic Oxide (CO ₂ O ₃)	No known problem	Avoid solvent	No known problem	No known problem				Use soap and water
Hydrogen (H ₂)	Not toxic - fire hazard		No known problem	No known problem				Fresh air
Olefin Mix (Light Olefin)	-----	-----	-----This material is relatively non-toxic -----				-----	Water wash
OXO Alcohols (OXO)	-----	-----	-----This material is relatively non-toxic -----				-----	Water wash
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash -first aid

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TOXICITY CHART

DEPT. NO. 50

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Acetic Acid (AcOH)	Very irritating	Burns	Severe damage	Avoid	X	X		Lots of water washing
Carbon Monoxide (CO)	Avoid, toxic	No known problem	No known problem	No known problem			X	Fresh air
Hydroiodic Acid (Hydrogen Iodide (HI))	Avoid	Burns	Severe irritation	Burns	X	X		Flush with water
Methyl Iodide (MI)	Avoid	Severe burns	Irritating	Toxic/burns	*X	X		Fresh air/flush with water
Rhodium Iodide (RI)	Avoid	Avoid	Avoid	Extremely toxic - Keep away from food	X	X		Flush with water

* Red Plastic Gloves as used in Acetic Acid Area

TOXICITY CHART

DEPT. NO. 51

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Acetaldehyde (Acn)	Very irritating	Avoid (Evaporates rapidly)	Irritant	Not likely		X	X	Fresh air, water wash
Acetic Acid (AcOH)	Very irritating	Burns	Severe damage	Avoid	X	X		Lots of water washing
Acrylonitrile (AN)	Evaporates	Remove contam- inated cloth- ing, shoes (Discard)	Irritant	Toxic	X (Plastic)	X	X	Fresh air, water or soap and water
Ammonia (NH ₃)	Strong irritant	Liquid NH ₃ burns	Avoid	Liquid corrosive	X	X	X	Fresh air, wash with water
Chlorine (Cl ₂)	Avoid, toxic	Liquid can burn	Avoid	Corrosive	X		X	Fresh air
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very toxic	X	X	X	Flush with water
Hydroquinone (HQ)	Avoid (dust)	Irritating	Severe irritation	Toxic	X	X	X	Flush with water
Iodine (I ₂)	Avoid	Irritating	Severe irritation	Toxic	X	X	X	Fresh air/flush with water
Methyl Ether of Hydroquinone (MQ)	Avoid	Irritating	Irritating	Toxic	X			Flush with water
Propylene (PR)	Avoid	No known problem	No known problem	No known problem				Remove to fresh air
Sodium Sulfite (NA ₂ SO ₃)	Liberates H ₂ S (toxic)	Irritation	Irritation	Avoid				Fresh air and water wash
Acetonitrile (ACN)	Do not breathe	Avoid	Avoid	Not likely	X	X		Flush with water

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TOXICITY CHART

DEPT. NO. 53

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Maleic Anhydride (MA)	Irritating	Burns	Strong Irritant	Not likely	X	X	X	Remove to fresh air, flush with water
Phthalic Anhydride (PA)	Irritation	Corrosive	Corrosive	Avoid	X		X	Water wash and first aid
Sodium Sulfite (NA ₂ SO ₃)	Liberates H ₂ S (toxic)	Irritation	Irritation	Avoid				Fresh air and water wash
Sulfur Dioxide (SO ₂)	Do not breathe	Irritation	Burns	Avoid	X		X	Water wash, fresh air and first aid
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash - first aid
Xylene (Xyl)	Avoid	Irritation	Avoid		X			Fresh air and water wash

TOXICITY CHART

DEPT. NO. 56

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Di-2-ethyl Phthalate (DEP)	-----	-----	This material is relatively non-toxic	-----	-----	-----	-----	Wash with soap and water
Diisododecyl Phthalate (DIDP)	-----	-----	This material is relatively non-toxic	-----	-----	-----	-----	-----
OxO-Alcohols (OXO)	-----	-----	This material is relatively non-toxic	-----	-----	-----	-----	Water wash
Oxalic Acid (OA)	Irritation	Corrosive	Corrosive	Toxic	X	X		Water wash, fresh air, first aid
Phthalate Ester (Santocizer) (S-711)	-----	-----	This material is relatively non-toxic	-----	-----	-----	-----	Water wash
Stannous Oxalate (SO)	Avoid	Avoid	Avoid					Wash with soap and water

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TOXICITY CHART

DEPT. HQ. Power 2

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Chlorine (Cl ₂)	Avoid, toxic	Liquid can burn	Avoid	Corrosive	X		X	Fresh air
Hydrogen Chloride (Gas or liquid) (HCL)	Avoid	Burns	Severe irritation	Burns	X	X		Flush with water
Lime(Caustic)	Not likely	Very irritating	Very irritating	Toxic	X	X		Flush with water
Methane (CH ₄)	Not toxic - fire hazard	No known problem	No known problem	No known problem				Fresh air
Sodium Sulfite (NA ₂ SO ₃)	Liberates H ₂ S (toxic)	Irritation	Irritation	Avoid				Fresh air and water wash
Zinc Chromate (ZnCrO ₄)	Avoid	Corrosive	Corrosive	Avoid	X	X		Water wash and fresh air

TOXICITY CHART

DEPT. HQ. IDA 2

Chemical Name	Hygienic Hazards				Protection Required if Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Formaldehyde (HCHO)	Irritating - severe	Irritating	Irritating	Severe irritant	X	X	X	Remove to fresh air. Flush with water
Hydrogen Cyanide (HCN)	Do not breathe	Will absorb skin	Severe irritation	Very toxic	X	X	X	Flush with water

TOXICITY CHART

DEPT. NO. DOCK 1

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Naphthalene (NAPH)	Avoid	Avoid		Not likely	X			Wash with soap and water
Carbonic Acid (Phenol)	Absorbed	Corrosive	Corrosive	Very toxic	X	X		Immediate washing with soap and water and first aid with- out delay
Vinyl Acetate (VAM)	Avoid	Avoid	Irritation	Avoid	X			Fresh air and water wash

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TOXICITY CHART

DEPT. NO. DOCK 2

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Naphthalene (NAPH)	Avoid	Avoid		Not likely	X			Wash with soap and water
Carbonic Acid (Phenol)	Absorbed	Corrosive	Corrosive	Very toxic	X	X		Immediate washing with soap and water and first aid with- out delay
Vinyl Acetate (VAM)	Avoid	Avoid	Irritation	Avoid	X			Fresh air and water wash

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TOXICITY CHART

DEPT. NO. 513

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Ammonia (NH ₃)	Strong Irritant	Liquid NH ₃ Burns	Avoid	Liquid Corrosive	X	X	X	Fresh air, wash with water
Sulfuric Acid (H ₂ SO ₄)	Irritation	Severe burns	Severe burns	Severe injury	X	X		Water wash - first aid

TOXICITY CHART

**DEPT. NO. Chemicals found
everywhere in plant**

Chemical Name	Hygienic Hazards				Protection Required If Danger of Contact Exists			First Aid
	Inhalation	Skin	Eye	(Swallowing) Ingestion	Gloves	Goggles	Breathing Protection	
Acetylene (C ₂ H ₂)	Not toxic - fire hazard	No known problem	No known problem	No known problem				Remove to fresh air
Freon (Trade Name)	Not toxic	Burns	Burns	No known problem				Remove to fresh air
Methylene Chloride (MC-P) Degreaser (CH ₂ CL ₂)	Avoid	Irritating	Irritating	Avoid				Fresh air/flush with water

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NOTES:

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