



Industrial Summit Technology

SAFETY DATA SHEET

Date Updated: June 01, 2015

Product Name: Skybond® 562 Polyimide Resin

Section 1: Identification

Chemical Product Name/Identifier: Skybond® 562 Polyimide Resin

CAS Number: Mixture

Trade Names and Synonyms: Solution of aromatic polyimide precursor in ethanol, xylene, and n- methyl pyrrolidone (NMP)

Recommended Use and Restrictions on Use: Polyimide Resin

Company Information: Industrial Summit Technology Corporation
250 Cheesequake Road
Parlin, NJ 08859

Telephone: Product and Sales Information: 732-238-2211

Emergency Phone: CHEMTREC: 1-800-424-9300

Section 2: Hazards Identification

OSHA HCS Status: This product is a hazardous chemical, as defined by OSHA at 29 CFR 1910.1200. Hazards identified are based on hazards of the ingredients.

Relevant Route of Exposure/Target Organs: Dermal, Eyes, Inhalation, Respiratory System

OSHA/GHS Signal Word and Hazard Statements:

DANGER: Highly flammable liquid and vapor. Causes skin irritation. Causes eye irritation. May cause an allergic skin reaction. Suspected of causing genetic defects. May damage fertility of the unborn child. Causes damage to organs (respiratory system). May damage organs (liver, kidney, blood) through prolonged or repeated exposure. May be fatal if swallowed and enters airways. May cause cancer. Harmful to aquatic life with long lasting effects.

OSHA/GHS Classification and Pictograms:

Flammable liquid (Category 2) H225

Skin irritation (Category 2) H315

Eye irritation (Category 2A) H319

Skin sensitization (Category 1) G370

Germ cell mutagenicity (Category 2) H341

Aspiration hazard (Category 1), H304

Carcinogenicity (Category 2) H351

Reproductive toxicity (Category 1B) H360

Specific target organ toxicity - single exposure (Category 1) H370

Specific target organ toxicity - repeated exposure (Category 2) H373

Acute aquatic toxicity (Category 2) H401

Chronic aquatic toxicity (Category 2) H411

For the full text of the H-Statements mentioned in this Section, see Section 16



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OSHA/GHS Precautionary Statements:

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces.– No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

Wear protective gloves/eye protection/face protection specified in Section 8.

Wash hands and exposed skin thoroughly after handling. Wear protective gloves, eye and face protection.

Avoid breathing mist, vapors, and spray. Use only outdoors or in well-ventilated area. Obtain special instructions before use.

Contaminated work clothing must not be allowed out of the workplace.

Response

In case of fire: Use water fog, dry chemical, or CO2 to extinguish.

If exposed or concerned: get medical advice/attention.

If on skin (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with plenty of water/shower. Specific treatment: see Section 4 for First Aid instructions. If skin irritation or rash occurs: Get medical advice/attention.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep Cool. Keep container tightly closed. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.



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GHS Hazard and Precautionary Statement Codes: See Section 16.

Section 3: Composition/Information on Ingredients

Chemical Product Name: Skybond 562 Polyimide Resin

Component	CAS #	Weight %
N-methyl-2-pyrrolidone	872-50-4	25.2
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-ar, ar'-diethyl ester, compd with with 4,4' -methylenebis (benzenamine) (syn. methylenedianiline salt) (1 : 1)	65701-06-6	59.9
Methanol	67-56-1	<0.2
Methyl isobutyl ketone	108-10-1	≈0.6
Xylene	1330-20-7	10.0
Ethylbenzene	100-41-4	≈3
Ethanol	64-17-5	≈3
4,4-methylenediamine	101-77-9	20.1

Section 4: First-Aid Measures

Skin Contact: Immediately wash skin with soap and water. Wash contaminated clothing before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes.

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most Important Symptoms/Effects: Skin and eye irritation. May cause respiratory irritation or distress. May cause cancer and damage fertility or the unborn child. Repeated or prolonged contact May cause allergic skin reaction in some people.

Indication of Immediate Medical Attention and Special Treatment Needed: Get medical attention immediately if product comes into contact with skin or eyes, or if it is inhaled or ingested.

Section 5: Fire-Fighting Measures

Extinguishing Media: Water fog, foam, dry chemical, CO₂.

Hazardous Combustion Products: Oxides of carbon produced when burned.



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Protective Equipment: Firefighters and others who May be exposed to products of combustion (see Hazardous Decomposition Products in Section 10) should be equipped with self-contained breathing apparatus and full protective gear. Equipment should be thoroughly decontaminated after use.

Fire Fighting Procedures/Precautions: Keep away from heat/sparks/open flames/hot surfaces. Keep personnel removed and upwind of fire. Closed containers exposed to heat May build up pressure. Use water spray to keep exposed containers and equipment cool. Use water spray to cool containers and tanks.

Section 6: Accidental Release Measures

Personal Precautions: Review Firefighting Measures and Handling sections before proceeding with clean up. Take precautions to avoid eye, skin, and respiratory exposure. Should exposure occur, see Section 4 for first aid measures. Flammable vapors can accumulate in low areas and form explosive concentrations.

Protective Equipment: Use appropriate personal protective equipment during clean up. See Section 8.

Emergency Procedures: Maintain adequate ventilation. Shut off all sources of ignition. No heat, sparks, or flame in the area.

Methods/Materials for Containment and Cleaning Up: Dike spill. Remove sources of sparks, flame, or hot surfaces. Absorb spill with commercial absorbent material and place in suitable containers for disposal. Dispose of as hazardous waste (see section 13). Do not discharge into waterways or sewer systems without proper authority. Dispose of in accordance with government regulations.

Section 7: Handling and Storage

Precautions: Avoid breathing vapors or mist. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling. Do not store or consume food, drink or tobacco in areas where they May become contaminated with this material. Keep away from heat, sparks and flames.

Storage: Keep container in a cool place. Store below 50 C (122 F). Keep container tightly closed. Store in accordance with National Fire Protection Association recommendations.

Section 8: Exposure Controls/Personal Protection

Exposure Limits:

Component	OSHA PEL	ACGIH TLV	OARS/WEEL**	I.S.T/AEL*
N-methyl-2-pyrrolidone	NA	NA	10 ppm 8 hr TWA	25 ppm 8 hr TWA
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-ar, ar'-diethyl ester, compd	NA	NA	NA	NA
Methanol	200 ppm	200 ppm	NA	NA



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Component	OSHA PEL	ACGIH TLV	OARS/WEEL**	I.S.T/AEL*
	260 mg/m ³	250 STEL		
Methyl isobutyl ketone	50 ppm 205 mg/m ³ 75 ppm STEL	20 ppm	NA	NA
Xylene	100 ppm 435 mg/m ³	100 ppm 150 ppm STEL	NA	NA
4,4' -Methylenedianiline	0.1 ppm STEL	0.1 ppm	NA	NA
Ethylbenzene	100 ppm 435 mg/m ³ 125 ppm STEL	20 ppm 125 STEL	NA	NA
Ethanol	1000 ppm 1900 mg/m ³	1000 ppm	NA	NA

* AEL is I.S.T's acceptable limit. Where governmentally imposed occupational exposure limits, which are lower than the AEL are in effect, such shall take precedence.

** Occupational Alliance for Risk Science, workplace environmental exposure level.

Engineering Controls: Use ventilation that is adequate to keep employee exposure to airborne concentrations below recommended exposure limits. Provide natural or mechanical ventilation to control exposure levels below airborne exposure Limits (see section 6 above). If practical use, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design of exhaust system.

Personal Protection Measures/Equipment:

Skin Protection: Wear appropriate chemical resistant gloves and clothing to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove for given application. Wear chemical safety goggles, a face shield and a chemical resistant apron when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash hands and exposed skin thoroughly after handling. Repeated or prolonged contact May cause allergic skin reaction in some people.

Eye Protection – Wear eye and face protection. Wear safety goggles that meet ANSI Z87 standards and/or are tested and approved under appropriate government standards. Eyewash stations should be easily accessible.

Respiratory Protection – Avoid breathing vapor and/or mist. Use NIOSH/MSHA approved respiratory protection equipment (full face piece recommended) when airborne exposure limits (see below) are exceeded. If used, full face piece replaces need for face shield and chemical goggles.



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Consult respirator manufacturer to determine the appropriate type of equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 CFR 1910.134.

Section 9: Physical and Chemical Properties

Appearance (physical state, color, etc.): Brown viscous liquid

Odor: Amine-like

Odor Threshold: Not known

pH: Not known

Melting Point/Freezing Point: Not known

Initial Boiling Point: Not known

Flash Point: 65°F

Evaporation Rate: Not known

Flammability: Flammable liquid

Upper/Lower Flammability or Explosive Limits: Not known

Vapor Pressure: 33 mm Hg

Vapor Density: 2.7

Relative Density/Specific Gravity: 1.13 – 1.14

Solubility: Slight in water

Partition Coefficient: Not known

Auto-ignition Temperature: Not known

Decomposition Temperature: Not known

Viscosity: 5,000-12,000 cps at 25°C

% Volatiles: Not known

Solids after Cure: 52%

NOTE: This physical data are typical values based on material tested by May vary from sample to sample. Typical values should not be considered as a guaranteed analysis of any specific lot or as a specification for the product.

Section 10: Stability and Reactivity

Reactivity: Not known

Chemical Stability: Not known.

Hazardous Reactions: Not known



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Conditions to Avoid: All sources of ignition – heat, sparks, and open flames. Volatiles given off during cure - Ethanol, N-methylpyrrolidone, xylene.

Incompatible Materials: Strong oxidizing agents, strong alkali

Hazardous Decomposition Products: Carbon monoxide, nitrogenous products

Hazardous Polymerization: Will not occur

Section 11: Toxicological Information

Relevant Route of Exposure/Target Organs: Dermal, Eyes, Inhalation, Respiratory System

Symptoms: Causes skin irritation. Causes serious eye irritation. Toxic if inhaled. May cause respiratory tract irritation. May damage fertility or the unborn child.

Delayed and Immediate Effects:

Eye effects:

N-methyl-2-pyrrolidone

Eye contact with the liquid or vapor May initially result in irritation with discomfort, tearing, or blurring of vision. Low vapor concentrations caused eye irritation in some individuals.

Skin effects: Skin contact May initially result in irritation with discomfort or rash.

N-methyl-2-pyrrolidone: Human experience has demonstrated severe dermatitis (blistering, cracking, edema, redness) upon prolonged or repeated skin contact. There are inconclusive or unverified reports of human sensitization.

Respiratory effects: Inhalation May result in irritation of the upper respiratory passages, with coughing, discomfort and headache.

Health Effects Summary

Chronic Effects (Following Short and Long Term Exposure):

The following information summarizes experience and results of scientific investigations reviewed by health professionals for hazard evaluation of Skybond® 562 polyimide resin and development of Precautionary Measures and Occupational Control Procedures recommended in this document. Industrial Summit Technology Corp has not conducted studies on SKYBOND® 562® polyimide resin and no data was obtained in a search of the available scientific literature. However, toxicity information is available on representative polyimide resins.

Inhalation and skin contact are expected to be the primary routes of occupational exposure of SKYBOND® 562 Polyimide Resin

Occupational exposure to this material has not been reported to cause significant adverse human health effects. However, SKYBOND 562 polyimide resin is considered to cause severe eye irritation based on animal studies. The organic solvents described below, have been reported to cause eye, skin and respiratory tract irritation and May contribute to the health effects of this material. These solvents also possess narcotic-like properties; excessive exposure May result in headache, dizziness, in coordination, nausea, loss of appetite and loss of consciousness.



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Toxicological Data

Single exposure (acute) animal studies conducted on representative polyimide resins indicate that these materials are slightly toxic or practically nontoxic orally (rats) and practically nontoxic after skin application (rabbits). They range from practically nonirritating to moderately irritating to rabbit skin and moderately irritating to corrosive to rabbit eyes.

SKYBOND562 has been tested for the potential to produce allergic skin reaction. However, no allergic skin reaction was observed in guinea pigs following repeated skin exposure to related polyimide resins.

Components

Data from Industrial Summit Technology Corporation, studies, and from the available scientific literature on the components of SKYBOND® 562 polyimide resin which have been identified under the criteria of the OSHA Hazard Communication standard (29 CFR 1910.1200) are discussed below.

4.4' –Methylenedianiline (MDA)

4,4' -Methylenedianiline (MDA) May be present in free or partially reacted forms (salts) in this SKYBOND® resin. It has been reported to cause eye, skin, and respiratory tract irritation. Reversible liver damage (hepatitis) has occurred in humans occupationally exposed to MDA. Symptoms include severe pain in the upper abdomen, high fever, and chills and subsequent jaundice (yellowing of the eyes and skin). These symptoms May be delayed several days following exposure. Although infrequent, allergic skin reaction has been reported in humans animals following repeated or prolonged contact with MDA. Laboratory animals have also demonstrated allergic skin reaction following MDA exposures.

Single-dose (acute) animal studies indicate that MDA is slightly toxic orally (rats). Rabbits, cats and dogs displayed liver and kidney damage following single oral doses of MDA at low to moderate levels. Industrial Summit Technology Material Safety Data Sheet

Numerous studies report liver damage in laboratory animals from repeated exposure to MDA by various routes including skin implantation (rats), dietary feeding (rats, dogs), skin application (rabbits), and short and long term oral administration (rats, mice, dogs). Kidney changes were also reported in rats and mice given MDA in their drinking water for 2 years.

MDA has produced tumors (liver, kidney, thyroid) in rats and mice following long term oral administration; however, no increase in bladder or liver tumors were observed in dogs given MDA in their feed for 7 years. Genetic changes were reported in standard tests using animal and bacterial cells, yeast and animals. No adverse genetic changes were reported in standard tests using insects and human cell cultures.

4,4'-Methylenedianiline is listed as a substance that "May reasonably be anticipated to be carcinogenic,, by the National Toxicology Program (NTP) in their Sixth Annual Report on Carcinogens and is classified as "possibly carcinogenic to humans" by the International Agency for Research on Cancer (IARC Monographs, Vol. 39), and is regulated as a carcinogen by OSHA (29 CFR 1910.1050). The NTP listing is based, in part, on their determination that "there is sufficient evidence for the carcinogenicity of 4,4'- methylenedianiline in experimental animals." The IARC listing is based on their determination that "there is sufficient evidence for the carcinogenicity of MDA in humans and limited



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evidence for the carcinogenicity of MDA in experimental animals." The OSHA listing is also based on animal data and a NIOSH report, which associated elevated bladder cancer risk with workers exposed to MDA, although OSHA concluded that the evidence in humans "was not conclusive."

n-Methyl Pyrrolidone (NMP)

Human experience indicates that continued or gross skin contact with NMP produces irritation, redness, and defatting of the skin. Inhalation of very high concentrations of NMP may result in headache, giddiness, nausea, and mental confusion. Repeated dosing of laboratory animals with NMP has been reported to cause changes in organ weights and blood composition, reduced response to sound, and breathing difficulty at a dosage which produced death. No skin allergy was observed in guinea pigs following repeat skin exposure. Long-term inhalation (2 years) of NMP produced no increase in tumors in rats and NMP did not show tumor initiating activity in a mouse skin painting study. Birth defects were reported following dermal application of MP to rats at amounts which produced adverse effects on the mother and following intraperitoneal injection in two strains of mice. No birth effects were reported in rats exposed to NMP by inhalation. No effects were seen on the ability of rats to reproduce when exposed to NMP for two successive generations, although toxic effects were reported in offspring at levels which produced adverse effects on the mother. NMP has produced no genetic changes in standard tests using animal and bacterial cells.

Xylene

Swallowing of xylene may cause digestive tract irritation. Although xylene exists in different structural forms, single-dose studies using a mixture of these forms indicate that xylene is slightly toxic orally (rats) and after skin application (rabbit). It is slightly irritating to the eyes of rabbits and severely irritating to the skin of rabbits. No mortality occurred in rats exposed to mixed xylene at a concentration of 21.2 mg/L for 6 hours. Repeated application of xylene to the skin of rabbits produced irritation and skin damage.

Various laboratory animals exposed to xylene by repeat inhalation at high atmospheric concentrations showed slight blood changes. Guinea pigs exposed to xylene at lower concentration showed liver damage and lung inflammation. Rats and dogs exposed to xylene by inhalation at similar levels showed no adverse effects. Rats and mice repeatedly administered xylene orally showed no evidence of toxicity or tumor development.

No birth defects were reported in two studies with rats exposed by inhalation to mixed xylene (containing ethylbenzene): toxic effects were noted in the offspring from only one study. Birth defects occurred in mice exposed orally mixed xylene (containing ethylbenzene) at levels that produced adverse effects and mortality in the mother. No adverse genetic changes were reported in standard tests using bacterial and yeast cells, insects, animals, and animal cells.

Ethanol

Swallowing of ethanol also causes central nervous system effects and digestive tract effects; large amounts may cause respiratory failure leading to death. Other effects of ethanol related to repeated intake of alcoholic beverages including nutritional deficiencies, liver, and pancreas damage and secondary blood cell changes. Repeated consumption of ethanol (alcoholic beverages) by pregnant



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women is reported to produce adverse effects on the development of their offspring ("fetal alcohol syndrome").

Single-dose (acute) animal studies indicate that ethanol is practically non-toxic orally (rats), after skin application (rabbits) and after inhalation (rats). It is mildly to severely irritating to rabbit eyes and practically nonirritating to moderately irritating to rabbit skin. It is practically non-toxic by inhalation (Rat LD50-20,000 ppm, 10-hr. exposure). Various morphological functions and biochemical changes including changes in the heart muscle, liver, CNS, and blood cells have been reported for experimental animals given ethanol orally. Repeated inhalation exposures produced liver damage in rabbits, while other treatment-related effects were reported in pigs, dogs, and monkeys. Rats exposed by skin application to a 50o/o solution of ethanol showed only temporary skin irritation. Several species of laboratory animals have been exposed to ethanol by various routes to determine effects on an offspring. While susceptibility varies with each species, birth defects have been consistently reported in many of the species tested (mouse, rat, pig, guinea pig, monkey). Ethanol produced genetic changes in standard tests using human volunteers and animals and yeast cells. No genetic changes were reported in standard tests using bacterial or animal cells, negative responses were reported in assays using human cells.

Ethanol in alcoholic beverages is listed as a substance which is "carcinogenic to humans" by the International Agency for Research on Cancer (IARC Monographs Vol. 44). This IARC listing is based on evidence of carcinogenicity of alcoholic beverages following long-term consumption of alcoholic beverages. Epidemiological studies report increased incidence of mouth and throat cancer in humans after long-term consumption of alcoholic beverages. Higher risk is associated with the drinking of dark liquors and for smokers who consume alcoholic beverages.

Ethylbenzene

Ethylbenzene has been reported to cause severe eye, skin, and respiratory tract irritation. Prolonged skin contact with ethylbenzene May cause blistering, and repeated contact May remove oils from the skin surface causing dryness and cracking of the skin. This component possesses narcotic like properties; excessive exposure mat result in headache, dizziness, incoordination, fatigue, nausea, loss of appetite, and loss of consciousness. Coughing, choking and shortness of breath May occur in this material is accidentally drawn into the lungs during swallowing or vomiting.

No allergic skin reaction was observed in controlled skin contact studies with human volunteers. Single- dose (acute) animal studies indicate that ethylbenzene is sightly toxic orally (rats) and practically nontoxic after skin application (rabbit). It is slightly imitating to rabbit eyes and severely imitating to rabbit skin. One out of six rats died during a single 6-hour exposure to ethylbenzene vapor (30.2 mg/L) with another dying during the 14 day observation period. Rats given ethylbenzene orally for 6 months showed liver and kidney changes. Numerous short-term repeat inhalation studies have been conducted and report various effects in laboratory animals including increased liver or kidney weights, body weight changes, liver, kidney, and testes changes. The results from animal studies (rats, rabbits, and monkeys) suggest that these studies are not conclusive as to the reproductive effects of ethylbenzene. No adverse genetic changes were reported in standard tests using bacterial or yeast cells; however, genetic changes were reported in standard tests with human cell cultures.



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Methanol

In addition to the effects noted, significant swallowing of methanol also causes central nervous system effects and possible damage to the kidneys. Temporary or permanent visual disturbances are commonly seen with methanol poisoning in man, although permanent loss of vision is generally associated with poisoning following swallowing. Initial visual symptoms include blurring or dimness, changes in color perception, pain and tenderness, and dilated unreactive pupils.

Carcinogenicity:

4,4'-Methylenedianiline; IARC Group 2B: Possibly carcinogenic to humans, NTP Reasonably anticipated to be a human carcinogen

Methyl isobutyl ketone; IARC Group 2B: Possibly carcinogenic to humans

Ethyl benzene: IARC Group 2B Possibly carcinogenic to humans

Xylene: IARC Group 3: Not classifiable as to its carcinogenicity in humans

Other components of this product are not classified by NTP, IARC, or OSHA as carcinogens.

Section 12: Ecological Information

Industrial Summit Technology Corp has not developed toxicity information on SKYBOND 562 polyimide resin. However, data is available on SKYBOND 700 polyimide resin, a similar material.

96-hr LC50 Bluegill Sunfish: 380 mg/l, Practically Non-Toxic

96-brLC 50 Rainbow Trout: 340 mg/l Practically Non-Toxic

48-h LC50 Daphnia Magna: 16 mg/l, Slightly Toxic

Persistence and Degradability: Not known

Bioaccumulative Potential: Not known

Mobility in Soil: Not known

Section 13: Disposal Information

Do not discharge into waterways or sewer system. Dispose of in accordance with government regulations. US EPA waste code D001 (ignitability characteristic).

Section 14: Transport Information

UN Number: 1866

Proper shipping name: Resin solution

Hazard class 3

Packing group: II



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Section 15: Regulatory Information

TSCA Inventory Status: All ingredients are on the TSCA inventory.

SARA Title III Section 311/312 Hazard Categories: Immediate (acute), Delayed (chronic), Fire

SARA Title III Section: The component listed below is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (EPCRA or SARA Title III) and 40 CFR 372.

Component	CAS #	313 Listed	%	RQ (lb)
N-methyl-2-pyrrolidone	872-50-4	Yes	25.2	--
Ethylbenzene	100-41-4	Yes	3	1000
Xylene	1330-20-7	Yes	10	100
1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-ar, ar'-diethyl ester, compd with 4,4' -methylenebis (benzenamine) (1 : 1)	65701-06-6	No	59.9	--
Ethanol	64-17-5	No	3	--
Methyl isobutyl ketone	108-10-1	Yes	0.6	5000
4,4-methylenediamine	101-77-9	Yes	20.1	1000
Methanol	67-56-1	Yes	<0.2	5000

CERCLA RQ: See table above.

California Proposition 65: This product contains N-methyl-2-Pyrrolidone, a chemical known to the State of California to cause birth defects or other reproductive harm (developmental). This product contains 4,4'-Methylenedianiline, ethylbenzene, and Methyl isobutyl ketone, which are known to the State of California to cause cancer.

Section 16: Other Information

Date of Preparation or Revision: June 01, 2015

GHS Label Hazard Statement Codes

Signal Word: DANGER

H225: Highly flammable liquid and vapor.

H302: Harmful if swallowed

H304: May be fatal if swallowed and enters airways

H311: Toxic in contact with skin

H315: Causes skin irritation.



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H317: May cause an allergic reaction.

H319: Causes serious eye irritation.

H331: Toxic if inhaled

H335: May cause respiratory irritation

H351: Suspected of causing cancer

H360: May damage fertility or the unborn child

H373: May cause damage to organs through prolonged or repeated exposure

H401: Toxic to aquatic life

H411: Toxic to aquatic life with long lasting effects

GHS Label Precautionary Statement Codes

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P210: Keep away from flames and hot surfaces. – No smoking.

P233: Keep container tightly closed.

P241: Use explosion-proof equipment.

P242: Use non-sparking tools.

P343: Take action to prevent static discharges.

P260: Do not breathe dust/ fume/ gas/ mist/ vapors/ spray

P264: Wash hands thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace

P273: Avoid release to the environment.

P280: Wear protective gloves, eye and face protection.

P281: Use personal protective equipment as required.

P301+310: IF SWALLOWED: Immediately call a poison center/doctor.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P303+P361:P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water

P303+313: If exposed or concerned: Get medical advice/attention.

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P251+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.



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P307+P313: If exposed: Call a POISON CENTER or doctor/ physician.

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

P321: Specific treatment: In case of skin contact, immediately wash skin with soap and water. Remove and wash contaminated clothing before reuse.

P331: Do NOT induce vomiting.

P332+P313: If skin irritation occurs: Get medical advice.

P337+P313: If eye irritation persists: Get medical advice.

P361+P364: Take off immediately all contaminated clothing and wash it before reuse.

P370+P378: In case of fire: Use water fog, dry chemical, foam, or CO₂ for extinction.

P403+P233+P235: Store in a well-ventilated place. Keep container tightly closed. Keep cool.

P405: Store locked up.

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Abbreviations

ALC	Approximate Lethal Concentration
ANSI	American National Standards Institute
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	US Code of Federal Regulations
CO ₂	Carbon dioxide
DOT	US Department of Transportation
EPCRA	Emergency Planning and Community Right to Know Act
GHS	UN Globally Harmonized System of Classification and Labeling of Chemicals
HCS	Hazard Communication Standard
IARC	International Agency for Research on Cancer
ICAO/IATA	International Civil Aviation Organization/International Air Transport Association
IMO/IMDG	International Maritime Organization/International Maritime Dangerous Goods Code
LC ₅₀	Lethal concentration to 50% of exposed laboratory animals
LD ₅₀	Lethal dose to 50% of exposed laboratory animals
MSHA	US Mine Safety and Health Administration
NA	Not available
NIOSH	US National Institute of Occupational Safety and Health
NMP	N-methyl-2-pyrrolidone



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NTP	National Toxicology Program
OARS	Occupational Alliance for Risk Science
OSHA	US Occupational Safety Health Administration
RQ	Reportable quantity
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety data sheet
TSCA	Toxic Substances Control Act
UN	United Nations
US/USA	United States
WEEL	Workplace Environmental Exposure Levels

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