



Industrial Summit Technology Corporation
Safety Data Sheet

Date Updated / June 01, 2015
Product Name / SKYBOND® 705 Polyimide Resin

Section 1 Identification

Chemical Product Name/Identifier

SKYBOND® 705 Polyimide Resin

CAS Number

Mixture

Recommended Use and Restrictions on Use

Polyimide Resin

Company Information

Industrial Summit Technology Corporation
250 Cheesecake 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: Flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. May be fatal if swallowed and enters airways. May cause cancer. May damage fertility or the unborn child. May cause genetic defects. May cause damage to respiratory system. Harmful to aquatic life with long lasting effects.

OSHA/GHS Classification and Pictograms

Flammable liquid (Category 3) H226
Skin irritation (Category 2) H315
Eye irritation (Category 2A) H319
Aspiration hazard (Category 1), H304
Carcinogenicity (Category 1B) H351
Reproductive toxicity (Category 1B) H360

Germ cell mutagenicity (Category 1B) H340
Specific target organ toxicity - single exposure (Category 3, respiratory system) H335
Acute aquatic toxicity (Category 3) H402
Chronic aquatic toxicity (Category 3) H412

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



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. Do not breathe mist, vapors, or spray. Use only outdoors or in well-ventilated area. Wear respiratory protection. Do not eat, drink, or smoke when using this product.

Avoid release to the environment.

Response

In case of fire: Use water spray, foam, dry chemical, carbon dioxide, or any Class B extinguishing agent.

If exposed or concerned: get medical advice/attention.

If on skin: Wash with plenty of water. Take off immediately all contaminated clothing and wash it before reuse. Specific treatment: see Section 4 for First Aid instructions.

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.

If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. Specific treatment: see First Aid instructions in Section 4 of Safety Data Sheet.

Storage

Store in a well-ventilated place. Store locked up.

Disposal

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

GHS Hazard and Precautionary Statement Codes

See Section 16.

Section 3 Composition/Information on Ingredients

Chemical Product Name
SKYBOND® 705 Polyimide Resin

Component	CAS #	Weight %
N-methyl-2-pyrrolidone	872-50-4	60-63
Polyamic Acid of Benzophenone Tetracarboxylic Acid Dianhydride / 4,4-methylene dianiline (Polymer)	25038-84-0	16.5-19.5
Xylene	1330-20-7	20.5-23.5

Section 4 First-Aid Measures

Skin Contact

Immediately wash skin with soap and water. Remove contaminated clothing. Get medical attention. Wash contaminated clothing before reuse.

Eye Contact

Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Inhalation

Remove person to fresh air. If not breathing, give artificial respiration. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Remove material from eyes, skin, and clothing.

Ingestion

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Immediately give 2 glasses of 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.

Indication of Immediate Medical Attention and Special Treatment Needed

Get medical attention immediately any of the symptoms noted above occur.

Section 5 Fire-Fighting Measures

Extinguishing Media

water fog, foam, dry chemical, CO2..

Hazardous Combustion Products

Oxides of carbon produced when burned. Vapor forms explosive mixture with air.

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. See section 13 for disposal instructions. 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
Xylene	100 ppm 435 mg/m3	100 ppm 150 ppm STEL	NA	NA
Polyamic Acid of Pyromellitic Dianhydride/4, 4- Oxydianiline (Polymer)	NA	NA	NA	25 ppm TWA

* 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. 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 glasses with side shields or chemical 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. 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.)

Light yellow viscous liquid

Odor

Aromatic hydrocarbon

Odor Threshold

Not known

pH

Not known

Melting Point/Freezing Point

Not known

Initial Boiling Point

Not known

Flash Point

29 - 37°C (84 - 99°F)

Evaporation Rate

Not known

Flammability

Flammable liquid

Upper/Lower Flammability or Explosive Limits

Not known

Vapor Pressure

Not known

Vapor Density

Not known

Relative Density/Specific Gravity

1.03 @ 25°C

Solubility

Not known

Partition Coefficient

Not known

Auto-ignition Temperature

Not known

Decomposition Temperature

Not known

Viscosity

6 – 10 Poise

% Volatiles

87 - 89

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

Conditions to Avoid

All sources of ignition – heat, sparks, and open flames.

Incompatible Materials

Strong oxidizing agents, strong alkali

Hazardous Decomposition Products

Oxides of carbon.

Hazardous Polymerization

Does 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. May cause respiratory tract irritation. May damage fertility or the unborn child.

Delayed and Immediate Effects

N-methyl-2-pyrrolidone

Inhalation 4 hour LC50: 3,914 mg/kg in rats

Dermal LD50: 8000 mg/kg in rabbits

Oral LD50: 4320 mg/kg in rats

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.

Inhalation may initially include: irritation of the upper respiratory passages, with coughing, discomfort, and headache.

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.

Xylene

Inhalation 4 hour LC50: 6700 ppm in rats

Dermal LD50: 4320 mg/kg in rabbits

Oral LD50: 4500 mg/kg in rats

Skin: Skin contact may initially include: repeated or prolonged contact with the liquid will cause defatting of the skin, redness, blisters, dehydration, or irritation. Dermal exposure of rabbits resulted in narcosis.

Eye contact may initially include: eye irritation with discomfort, tearing, or blurring of vision.

Inhalation: Inhalation may initially include: nonspecific discomfort, such as nausea, headache, or weakness; and temporary nervous system depression with anesthetic effects such as dizziness, headache, confusion, lack of coordination, and loss of consciousness,

Ingestion may initially include: gastrointestinal irritation; non-specific discomfort, such as nausea, headache, or weakness; and temporary nervous system depression. Higher exposures may lead to cardiac stress, anemia and other blood changes, respiratory difficulties, mucosal hemorrhage, possible liver and kidney damage; or fatality from gross overexposure. Evidence suggests that skin permeation can occur in amounts capable of producing the effects of systemic toxicity. There are no reports of human sensitization.

Health Effects Summary

Chronic Effects (Following Short and Long Term Exposure)

Toxicological Data

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 NMP 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.

Toxicity described in animals from single exposures includes irregular and rapid respiration/ hyperemia, salivation and weight loss. Repeated exposures caused lethargy and irregular respiration at concentrations of 0.1 and 0.5 mg/L, and at 1.0 mg/L, bone marrow hypoplasia, thymus, spleen and lymph node changes occurred (reversible after 14 days post-exposure), and mortality. There were no observed effects from a study in which rats were exposed to 370 ppm for two weeks. Changes in rats exposed for two years to 10 or 100 ppm included reduced weight gain in male rats at the 100 ppm concentration level. No other significant changes occurred in this study.

Repeated exposure of dogs to 25, 79 or 250 mg/kg/day of the compound in the diet caused lower serum cholesterol, and increased platelet counts. Rats fed 800, 2000 or 5000 ppm exhibited minor effects which included increased thyroid weights in males, and increased urine pH and enzymatic changes in males and females.

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.

Toxicity described in animals from single exposures by inhalation includes upper respiratory irritation, central nervous system and behavioral effects including disrupted motor coordination and narcosis, decreased blood pressure/ and blood changes. Repeated exposures caused central nervous system effects such as lack of coordination, hearing loss, histological changes in liver, kidneys, adrenals, heart, spleen, lungs and bone marrow, blood changes and decreased growth. Long-term exposure caused increased liver enzymes and liver weights.

Ingestion: Animals administered the mixture in the diet resulted in central nervous system effects including lack of coordination, tremors and loss of hind leg movement. Animals administered repeated doses of the mixture in the diet resulted in central nervous system effects including lack of coordination and narcosis, and increased liver enzyme levels. Animal-s fed the mixture long-term in the diet had decreased body weight, and liver changes.

Individuals with preexisting diseases of the central nervous system, kidneys, liver, cardiovascular system, lungs, or bone marrow may have increased susceptibility to the toxicity of excessive exposures.

One published study reports limited data suggesting high oral doses caused an increase in malignant tumors in rats. However, other more extensive animal studies have demonstrated no evidence of carcinogenicity. Developmental toxicity was observed but only at concentrations that were maternally toxic.

The mixture does not produce heritable genetic damage in animals or genetic damage in bacterial or mammalian cell cultures. Although abnormal sperm were observed after an i.p. injection in rats, xylene did not produce heritable genetic damage in rats or mice or reproductive effects in rats.

Carcinogenicity

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

N-methyl-2-pyrrolidone

96-hr LC50 Bluegill

382 mg/l

96-LC 50 Fathead minnow

1072 mg/l

Xylene

96-hr LC 50 Fathead minnow

27 - 42 mg/l

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 systems. Dispose of in accordance with government regulations.

Section 14
Transport Information

UN Number: 2924
Proper shipping name: Flammable Liquids, Corrosive, N.O.S. (Xylene, Polyamic Acid Solution)
Hazard class: 3
Packing group: III

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	61-65	-
Xylene	1330-20-7	Yes	11-13	100

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).

Section 16
Other Information

Date of Preparation or Revision

June 01, 2015

GHS Label Hazard Statement Codes

Signal Word: DANGER

H226	Flammable liquid and vapor
H315	Causes skin irritation
H319	Causes serious eye irritation
H304	Aspiration hazard
H335	May cause respiratory irritation
H351	Suspected of causing cancer
H360	May damage fertility or the unborn child
H340	Germ cell mutagen
H335	Specific target organ toxicity - single exposure (Category 3, respiratory system)
H402	Harmful to aquatic life
H412	Harmful 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.
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+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.
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
C	Ceiling
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	US Code of Federal Regulations
CO2	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
LC50	Lethal concentration to 50% of exposed laboratory animals
LD50	Lethal dose to 50% of exposed laboratory animals
MSHA	US Mine Safety and Health Administration
NIOSH	US National Institute of Occupational Safety and Health
NA	Not available
NMP	N-methyl-2-pyrrolidone
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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