SAFETY DATA SHEET
THE DOW CHEMICAL COMPANY

Product name: ADCOTE™ HS 33-216

Issue Date: 07/28/2020
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THE DOW CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. IDENTIFICATION

Product name: ADCOTE™ HS 33-216

Recommended use of the chemical and restrictions on use
Identified uses: Packaging laminating adhesives

COMPANY IDENTIFICATION
THE DOW CHEMICAL COMPANY
2211 H.H. DOW WAY
MIDLAND MI 48674
UNITED STATES

Customer Information Number: 800-258-2436
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: CHEMTREC +1 800-424-9300
Local Emergency Contact: 800-424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
GHS classification in accordance with 29 CFR 1910.1200
Flammable liquids - Category 2
Skin irritation - Category 2
Eye irritation - Category 2A
Specific target organ toxicity - single exposure - Category 3
Aspiration hazard - Category 1

Label elements
Hazard pictograms

Signal word: **DANGER!**

Hazards
Highly flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.

Precautionary statements

Prevention
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.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

Response
IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice and/or attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

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

Disposal
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration

Propyl acetate	109-60-4	>= 30.0 - < 35.0 %
Naphtha, light aliphatic	64742-89-8	>= 20.0 - < 25.0 %
Naphtha, petroleum, hydrotreated light	64742-49-0	>= 10.0 - < 15.0 %
Ethylene/Vinyl Acetate Copolymer	Not Hazardous	>= 5.0 - < 10.0 %
Styrene/butadiene polymer	Not Hazardous	>= 5.0 - < 10.0 %
Heptane	142-82-5	>= 5.0 - < 10.0 %
Octane	111-65-9	>= 1.0 - < 5.0 %
Cyclohexane	110-82-7	>= 1.0 - < 5.0 %

4. FIRST AID MEASURES

Description of first aid measures
Inhalation: Move to fresh air. Give artificial respiration if breathing has stopped. In case of shortness of breath, give oxygen. Call a physician immediately.

Skin contact: Wash off with soap and plenty of water. Remove contaminated clothing. Consult a physician. Wash contaminated clothing before re-use. Do not take clothing home to be laundered. Discard contaminated shoes, belts, and other articles made of leather.

Eye contact: Immediately flush eye(s) with plenty of water. If eye irritation persists, consult a specialist.

Ingestion: Do NOT induce vomiting. Drink 1 or 2 glasses of water. Get prompt medical attention. If vomiting occurs spontaneously, keep airway clear. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Use the following extinguishing media when fighting fires involving this material:. Water spray. Foam. Carbon dioxide (CO2). Dry chemical.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: No data available

Unusual Fire and Explosion Hazards: Vapors can travel to a source of ignition and flash back.. Heated material can form flammable or explosive vapors with air.. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat.. During a fire, irritating and highly toxic gases and/or fumes may be generated during combustion or decomposition..

Advice for firefighters

Fire Fighting Procedures: EXPLOSION HAZARD. Fight advanced fires from a protected location.. Cool closed containers exposed to fire with water spray.. Remain upwind.. Avoid breathing smoke.. Contain run-off..

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus..

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. MATERIAL IS A POTENTIAL SENSITIZER. If exposed to material during clean-up operations, IMMEDIATELY remove all contaminated clothing and wash exposed skin areas with soap and water. See SECTION 4, First Aid Measures, for further information. Wash contaminated clothing before re-use. Do not take clothing home to be laundered.

Environmental precautions: CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

Methods and materials for containment and cleaning up: Eliminate all ignition sources. Evacuate personnel to safe areas. Ventilate the area. Floor may be slippery; use care to avoid falling. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up or vacuum up spillage and collect in suitable container for disposal. No sparking tools should be used. Avoid all contact. Avoid breathing vapor. NOTE: Spills on porous surfaces can contaminate groundwater.

7. HANDLING AND STORAGE

Precautions for safe handling: Vapors can be evolved when material is heated during processing operations. See SECTION 8, Exposure Controls/Personal Protection, for types of ventilation required. Use non-sparking tools and grounding cables when transferring. This material is a potential skin sensitizer. See SECTION 8, Exposure Controls/Personal Protection, prior to handling. Wash after handling and shower at end of work period.

Conditions for safe storage: Avoid temperature extremes during storage; ambient temperature preferred. Store away from excessive heat (e.g. steampipes,radiators), from sources of ignition and

from reactive materials. Material can burn; limit indoor storage to approved areas equipped with automatic sprinklers. Store out of direct sunlight in a cool place. Keep containers tightly closed in a cool, well-ventilated place. Avoid all ignition sources. Ground all metal containers during storage and handling.
Residual vapors in empty containers may explode on ignition. DO NOT cut, drill, grind or weld on or near container.

Storage stability
Other data: STIR WELL BEFORE USE.
Other data: CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied. Improper disposal or re-use of this container may be dangerous and illegal. Refer to applicable local, state and federal regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Propyl acetate	ACGIH	TWA	100 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation; (): Adopted values or notations enclosed are those for which changes are proposed in the NIC; See Notice of Intended Changes (NIC)		
	ACGIH	STEL	150 ppm
	Further information: URT irr: Upper Respiratory Tract irritation; eye irr: Eye irritation; (): Adopted values or notations enclosed are those for which changes are proposed in the NIC; See Notice of Intended Changes (NIC)		
	OSHA Z-1	TWA	840 mg/m3 200 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm
Naphtha, light aliphatic	Dow IHG	TWA	100 ppm
	Dow IHG	STEL	125 ppm
	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
Naphtha, petroleum, hydrotreated light	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
Heptane	Dow IHG	TWA	100 ppm
	ACGIH	TWA	400 ppm
	ACGIH	STEL	500 ppm
	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	OSHA P0	TWA	1,600 mg/m3 400 ppm
	OSHA P0	STEL	2,000 mg/m3 500 ppm
Octane	OSHA Z-1	TWA	2,350 mg/m3 500 ppm
	ACGIH	TWA	300 ppm
Cyclohexane	Dow IHG	TWA	100 ppm
	Dow IHG	STEL	300 ppm
	ACGIH	TWA	100 ppm
	OSHA Z-1	TWA	1,050 mg/m3 300 ppm

Exposure controls
Engineering controls: Use explosion-proof local exhaust ventilation with a minimum capture velocity of 100 ft/min (0.5 m/sec) at the point of vapor evolution. Refer to the current edition of Industrial

Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Individual protection measures

Eye/face protection: Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Eye protection worn must be compatible with respiratory protection system employed.

Skin protection

Hand protection: Chemical-resistant gloves should be worn whenever this material is handled. The glove(s) listed below may provide protection against permeation. (Gloves of other chemically resistant materials may not provide adequate protection): Neoprene gloves Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Rinse and remove gloves immediately after use. Wash hands with soap and water.

Other protection: Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact. Where splashing is possible, full chemically resistant protective clothing (e.g. acid suit) and boots are required.

Respiratory protection: A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in Exposure Limit Information. Up to 1000 ppm organic vapor: Wear a properly fitted NIOSH approved (or equivalent) full-facepiece, air-purifying respirator, OR full facepiece, airline respirator in the pressure demand mode. Above 1000 ppm organic vapor or Unknown: Wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode, OR full-facepiece, airline respirator in the pressure demand mode with emergency escape provision.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical state	liquid milky
Color	Straw color - yellow
Odor	No data available
Odor Threshold	No data available
pH	Not applicable
Melting point/range	No data available
Freezing point	No data available
Boiling point (760 mmHg)	No data available
Flash point	-4.00 °C (24.80 °F) *SETAFLASH CLOSED CUP*
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	0.8 % vol Solvent, naphtha
Upper explosion limit	8 % vol Solvent, naphtha
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available

Water solubility	insoluble
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	232 °C (450 °F) Solvent, naphtha
Decomposition temperature	No data available
Dynamic Viscosity	100 - 400 mPa.s
Kinematic Viscosity	No data available
Explosive properties	No data available
Oxidizing properties	No data available
Molecular weight	No data available
Percent volatility	79.0 - 81.0 %

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No data available

Chemical stability: No data available

Possibility of hazardous reactions: This material is considered stable. However, avoid contact with ignition sources (e.g. sparks, open flame, heated surfaces).
Product will not undergo polymerization.

Conditions to avoid: No data available

Incompatible materials: Acids Bases Oxidizing agents

Hazardous decomposition products: There are no known hazardous decomposition products for this material..

11. TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Information on likely routes of exposure
Inhalation, Skin contact, Eye contact.

Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)

Acute oral toxicity
Product test data not available.

Information for components:

Propyl acetate
LD50, Rat, male, 8,700 mg/kg

Naphtha, light aliphatic
LD50, Rat, male and female, > 5,000 mg/kg

Naphtha, petroleum, hydrotreated light
Typical for this family of materials. LD50, Rat, > 5,000 mg/kg

Heptane
For similar material(s): May cause nausea and vomiting. May cause central nervous system effects. LD50, Rat, male and female, > 5,000 mg/kg

Octane
For similar material(s): LD50, Rat, male and female, > 5,000 mg/kg OECD 401 or equivalent

Cyclohexane
LD50, Rat, male and female, > 5,000 mg/kg OECD 401 or equivalent No deaths occurred at this concentration.

Acute dermal toxicity
Product test data not available.

Information for components:

Propyl acetate
LD50, Rabbit, male, > 17,800 mg/kg

Naphtha, light aliphatic
LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Naphtha, petroleum, hydrotreated light
Typical for this family of materials. LD50, Rabbit, > 2,000 mg/kg

Heptane
For similar material(s): LD50, Rabbit, > 2,000 mg/kg No deaths occurred at this concentration.

Octane
For similar material(s): LD50, Rabbit, male and female, > 2,000 mg/kg OECD 402 or equivalent No deaths occurred at this concentration.

Cyclohexane
LD50, Rabbit, male and female, > 2,000 mg/kg OECD Test Guideline 402 No deaths occurred at this concentration.

Acute inhalation toxicity
Product test data not available.

Information for components:

Propyl acetate
Prolonged excessive exposure may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of

excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, Rat, 4 Hour, vapour, 32 mg/l

Naphtha, light aliphatic
LC50, Rat, male and female, 4 Hour, vapour, > 5.61 mg/l No deaths occurred following exposure to a saturated atmosphere.

Naphtha, petroleum, hydrotreated light
Typical for this family of materials. LC50, Rat, 6 Hour, vapour, > 12.0 mg/l

Heptane
LC50, Rat, male and female, 4 Hour, vapour, > 29.3 mg/l No deaths occurred at this concentration.

Octane
LC50, Rat, male and female, 4 Hour, vapour, > 24.88 mg/l OECD Test Guideline 403 No deaths occurred at this concentration.

Cyclohexane
LC50, Rat, male and female, 4 Hour, vapour, > 32 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation
Product test data not available.

Information for components:

Propyl acetate
Brief contact is essentially nonirritating to skin.
Prolonged contact may cause severe skin irritation with local redness and discomfort.
May cause more severe response on covered skin (under clothing, gloves).
Repeated exposure may cause skin dryness or cracking.

Naphtha, light aliphatic
Brief contact may cause moderate skin irritation with local redness.
Repeated contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

Naphtha, petroleum, hydrotreated light
Prolonged contact may cause skin irritation with local redness.
May cause drying and flaking of the skin.

Heptane
Brief contact may cause slight skin irritation with local redness.
May cause burning sensation.
May cause itching.
May cause drying and flaking of the skin.
May stain skin.

Octane
Prolonged contact may cause skin irritation with local redness.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
May cause pain.
May cause drying and flaking of the skin.

Cyclohexane
Prolonged contact may cause skin irritation with local redness.
May cause drying and flaking of the skin.
May cause more severe response on covered skin (under clothing, gloves).

Serious eye damage/eye irritation
Product test data not available.

Information for components:

Propyl acetate
May cause severe eye irritation.
May cause severe corneal injury.

Naphtha, light aliphatic
May cause slight eye irritation.
Corneal injury is unlikely.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Naphtha, petroleum, hydrotreated light
May cause slight eye irritation.
Corneal injury is unlikely.

Heptane
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.
May cause pain disproportionate to the level of irritation to eye tissues.

Octane
May cause pain disproportionate to the level of irritation to eye tissues.
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.

Cyclohexane
Vapor may cause eye irritation experienced as mild discomfort and redness.
May cause slight temporary eye irritation.
May cause slight temporary corneal injury.
May cause pain disproportionate to the level of irritation to eye tissues.

Sensitization
Product test data not available.

Information for components:

Propyl acetate
For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

Naphtha, light aliphatic
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Naphtha, petroleum, hydrotreated light
For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:
No relevant data found.

Heptane
For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Octane
For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Cyclohexane
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)
Product test data not available.

Information for components:

Propyl acetate
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Naphtha, light aliphatic
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Naphtha, petroleum, hydrotreated light
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Heptane
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Octane
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Cyclohexane
May cause drowsiness or dizziness.
Route of Exposure: Inhalation
Target Organs: Central nervous system

Aspiration Hazard
Product test data not available.

Information for components:

Propyl acetate
Based on physical properties, not likely to be an aspiration hazard.

Naphtha, light aliphatic
May be fatal if swallowed and enters airways.

Naphtha, petroleum, hydrotreated light
May be fatal if swallowed and enters airways.

Heptane
May be fatal if swallowed and enters airways.

Octane
May be fatal if swallowed and enters airways.

Cyclohexane
Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

Specific Target Organ Systemic Toxicity (Repeated Exposure)
Product test data not available.

Information for components:

Propyl acetate
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Naphtha, light aliphatic
In animals, effects have been reported on the following organs:
Kidney.

Liver.

Naphtha, petroleum, hydrotreated light
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Heptane
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Heptane is part of a mixture which caused polyneuropathy. However, there is no clear evidence that heptane causes peripheral nervous system effects.

Octane
No relevant data found.

Cyclohexane
In animals, effects have been reported on the following organs:
Central nervous system.
Kidney.
Liver.
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

Carcinogenicity
Product test data not available.

Information for components:

Propyl acetate
Based on the metabolite(s): 1-Propanol. Acetic acid Did not cause cancer in laboratory animals.

Naphtha, light aliphatic
Did not cause cancer in laboratory animals.

Naphtha, petroleum, hydrotreated light
No relevant data found.

Heptane
No relevant data found.

Octane
No relevant data found.

Cyclohexane
Available data are inadequate to evaluate carcinogenicity.

Teratogenicity
Product test data not available.

Information for components:

Propyl acetate

Based on the metabolite(s): At extremely high concentrations, n-propanol has been reported to cause birth defects in rats. At progressively lower concentrations there were no birth defects. These concentrations exceed relevant human dose levels.

Naphtha, light aliphatic
Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Naphtha, petroleum, hydrotreated light
No relevant data found.

Heptane
For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Octane
For similar material(s): Did not cause birth defects in laboratory animals.

Cyclohexane
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
Product test data not available.

Information for components:

Propyl acetate
Based on the metabolite(s): 1-Propanol. In animal studies, has been shown to interfere with fertility in males. Effects are reversible. These concentrations exceed relevant human dose levels.

Naphtha, light aliphatic
In animal studies, did not interfere with reproduction.

Naphtha, petroleum, hydrotreated light
No relevant data found.

Heptane
For similar material(s): In animal studies, did not interfere with reproduction.

Octane
For similar material(s): In animal studies, did not interfere with reproduction.

Cyclohexane
In laboratory animal studies conducted on cyclohexane, body weight effects observed in adults and offspring were considered secondary to sedation.

Mutagenicity
Product test data not available.

Information for components:

Propyl acetate
In vitro genetic toxicity studies were inconclusive.

Naphtha, light aliphatic
In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Naphtha, petroleum, hydrotreated light
No relevant data found.

Heptane
In vitro genetic toxicity studies were negative.

Octane
For similar material(s): In vitro genetic toxicity studies were negative.

Cyclohexane
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Additional information
No toxicity data are available for this material.

12. ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

General Information
There is no data available for this product.

Toxicity

Propyl acetate

Acute toxicity to fish
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 60 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 91.5 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
ErC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate inhibition, 672 mg/l, OECD Test Guideline 201

Toxicity to bacteria
EC0, Pseudomonas putida, static test, 16 Hour, Growth inhibition, > 170 mg/l

Naphtha, light aliphatic

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), semi-static test, 96 Hour, 8.2 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna, static test, 48 Hour, 4.8 mg/l

Acute toxicity to algae/aquatic plants
ErC50, Selenastrum capricornutum (green algae), static test, 72 Hour, Growth rate, 3.1 mg/l, OECD Test Guideline 201

Chronic toxicity to aquatic invertebrates
NOEC, Daphnia magna (Water flea), 21 d, 2.6 mg/l

Naphtha, petroleum, hydrotreated light

Acute toxicity to fish
Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).
Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).
For this family of materials:
LL50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 12 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
EL50, water flea Daphnia magna, 48 Hour, 4.5 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
Based on data from similar materials
EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 30 - 100 mg/l, OECD Test Guideline 201, Test substance: Water Accommodated Fraction

Chronic toxicity to aquatic invertebrates
Based on data from similar materials
NOEC, Daphnia magna (Water flea), 21 d, 0.17 mg/l, Test substance: Water Accommodated Fraction

Heptane

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LL50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 5.738 mg/l

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 1.5 mg/l
EC50, crustacean Chaetogammarus marinus, 48 Hour, 0.2 mg/l

Acute toxicity to algae/aquatic plants
EL50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 4.34 mg/l
NOELR, Pseudokirchneriella subcapitata (green algae), 72 Hour, Biomass, 0.97 mg/l, Estimated.

Octane

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Oryzias latipes (Orange-red killifish), 96 Hour, 0.42 mg/l

Acute toxicity to aquatic invertebrates

EC50, Daphnia magna (Water flea), 48 Hour, 0.3 mg/l, Method Not Specified.

Acute toxicity to algae/aquatic plants
Pseudokirchneriella subcapita, 72 Hour, Growth rate, >1.1 mg/l

Chronic toxicity to aquatic invertebrates
Based on data from similar materials
NOEC, Daphnia magna (Water flea), 21 d, 0.17 mg/l

Cyclohexane

Acute toxicity to fish
Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).
LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 4.53 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), static test, 48 Hour, 0.9 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants
EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 9.3 mg/l, OECD Test Guideline 201 or Equivalent
NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 0.94 mg/l, OECD Test Guideline 201 or Equivalent

Persistence and degradability

Propyl acetate

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 62 %
Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 2.04 mg/mg

Chemical Oxygen Demand: 2.04 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	62 %
10 d	80 %
20 d	72 %

Stability in Water (1/2-life)
Hydrolysis, half-life, 78 d

Photodegradation
Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals
Atmospheric half-life: 40 Hour
Method: Estimated.

Naphtha, light aliphatic
Biodegradability: No relevant data found.

Naphtha, petroleum, hydrotreated light
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 77 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

Heptane
Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.

Theoretical Oxygen Demand: 3.52 mg/g

Octane
Biodegradability: Material is expected to be readily biodegradable.

Biodegradation: > 60 %
Exposure time: 20 d
Method: Other guidelines

Cyclohexane
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
10-day Window: Pass
Biodegradation: 77 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.43 mg/mg

Photodegradation
Atmospheric half-life: 1.3 d
Method: Estimated.

Bioaccumulative potential

Propyl acetate
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1.4 at 25 °C Calculated.

Naphtha, light aliphatic
Bioaccumulation: No relevant data found.

Naphtha, petroleum, hydrotreated light
Bioaccumulation: Expert judgement

Partition coefficient: n-octanol/water(log Pow): > 4

Heptane

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 4.397 Estimated.
Bioconcentration factor (BCF): 552 Fish Measured

Octane

Partition coefficient: n-octanol/water(log Pow): 5.18 No information available.

Cyclohexane

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient: n-octanol/water(log Pow): 3.44 Measured
Bioconcentration factor (BCF): 167 Pimephales promelas (fathead minnow) Estimated.

Mobility in soil

Propyl acetate

Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient (Koc): 11 Estimated.

Naphtha, light aliphatic

No relevant data found.

Heptane

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): 2040 - 16000 Estimated.

Octane

No relevant data found.

Cyclohexane

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient (Koc): 770 Estimated.

13. DISPOSAL CONSIDERATIONS

Disposal methods:
Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Resin solution
UN number	UN 1866
Class	3
Packing group	II

Classification for SEA transport (IMO-IMDG):

Proper shipping name	RESIN SOLUTION
UN number	UN 1866
Class	3
Packing group	II
Marine pollutant	Naphtha, light aliphatic, Naphtha (petroleum), hydrotreated light
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Resin solution
UN number	UN 1866
Class	3
Packing group	II

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312
Flammable (gases, aerosols, liquids, or solids)
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
The following components are subject to reporting levels established by SARA Title III, Section 313:

Components	**CASRN**
Cyclohexane	110-82-7

Pennsylvania
Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

California Prop. 65
WARNING: This product can expose you to chemicals including Ethylbenzene, Naphthalene, which is/are known to the State of California to cause cancer, and Toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

United States TSCA Inventory (TSCA)
All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

16. OTHER INFORMATION

Hazard Rating System
HMIS

Health	Flammability	Physical Hazard
3*	3	0

* = Chronic Effects (See Hazards Identification)

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
STEL	Short term exposure limit
TWA	Time weighted average

Full text of other abbreviations
AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population

(Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

THE DOW CHEMICAL COMPANY urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
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