

SAFETY DATA SHEET

Product name : LV-5411 Low VOC High Solid hardener
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MSDS No.: MS-QYLV-H5411
Version No.: 3.04

Section 1. Identification

Product name : LV-5411 Low VOC High Solid hardener
Product code : LV-5411
Supplier Name : Yatu Advanced Materials Co., Ltd.
Address : Sanlian Industrial Area 2, Gulao, Heshan Jiangmen, Guangdong, 529700
Telephone number : +86 750 8773296
Emergency telephone number : +86 750 8773296
Available hours : 8h-17h30 Monday to Friday
Recommended use : For automotive refinishing
Restrictions on use : For car only

Section 2. Hazards identification

Signal word : DANGER

Product classification :



Flammable liquids-Category 2.

Respiratory sensitization-Category 1.

Skin sensitization-Category 1.

Skin irritation-Category 2.

Serious eye irritation-Category 2A.

Specific target organ toxicity – single exposure-Category 3 Respiratory tract irritation.

Acute toxicity-inhalation-Category 4.

Hazard statement(s) : Highly flammable liquid and vapour. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Causes skin and serious eye irritation. May cause respiratory irritation. Harmful if inhaled.

Precautionary statement(s)

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. For large container, ground and bond container and receiving equipment. Use explosion-proof electrical, ventilating and lightning equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe mist, vapors and spray. Use only outdoors or in a well-ventilated area. In case of inadequate ventilation, wear respiratory protection. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, protective clothing, eye and face protection. Wash hands thoroughly after handling and any other part of the body that may have been exposed to the product.

Response: In case of fire: Use an appropriate extinguisher. IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or a doctor. Call a POISON CENTER or doctor if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. If skin irritation or a rash occurs: Get medical advice. 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. Take off contaminated clothing and wash it before reuse.

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

Disposal: Dispose of contents/container in accordance with local, regional, national and/or international regulations in force.

Other hazards: Moderately toxic by intravenous, intraperitoneal route and subcutaneous routes.

See toxicological information, section 11.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

No.	CAS No.	Common name and synonyms	Concentration (W/W)
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	31
2	79-20-9	Methyl acetate	40
3	98-56-6	para-Chlorobenzotrifluoride	11.8
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	3.48
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	0.2

Section 4. First aid measures

If swallowed, irritation, any type of overexposure or symptoms of overexposure occur during use of the product or persists after use, immediately contact a POISON CENTER, an EMERGENCY ROOM or a PHYSICIAN; ensure that the product safety data sheet is available.

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.

Inhalation: Move exposed person to fresh air. Keep this person warm and lying down. Loosen tight clothing such as a collar, tie, belt or waistband. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.

Ingestion: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Symptoms: Cough, breathing pain, eye redness and skin edema. The worker may develop cutaneous and respiratory hypersensitivity. We can observe headaches, nausea, vomiting and dizziness.

Effects (acute or delayed): May cause irritation of eyes, skin and respiratory tract. This product is a respiratory and skin sensitizer. May cause bronchoconstriction and pulmonary edema. Inhalation of high concentrations vapors can cause narcotic effect. Can cause depression of the central nervous system.

Immediate medical attention and special treatment: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Section 5. Fire-fighting measures

Suitable extinguishing media: Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media: Jets of water can facilitate the spread of fire.

Specific hazards arising from the hazardous product: Flammable. Vapors may form explosive mixtures with air. The vapors are heavier than air and may travel to an ignition source.

Hazardous combustion products: Carbon monoxide and dioxide. Nitrogen oxides. Hydrocyanic acid. Carboxylic acids.

Special protective equipment and precautions for fire-fighters: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).

Protective equipment and emergency procedures: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosionproof equipment. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling: Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure - obtain special instructions before use. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for safe storage: Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Incompatibility: Strong oxidizing agents. Strong acids and bases. Oxidizers. Reductive agents.

Section 8. Exposure controls/personal protection

No.	CAS No.	Common name and synonyms	IDHL mg/m ³	TWA mg/m ³	STEL mg/m ³	CEIL mg/m ³
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	Not available	Not available	Not available	Not available
2	79-20-9	Methyl acetate	3100	606	757	Not available
3	98-56-6	para-Chlorobenzotrifluoride	Not available	Not available	Not available	Not available
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	Not available	Not available	Not available	Not available
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	Not available	Not available	Not available	Not available

IDHL: Immediately Dangerous to Life or Health Concentrations

TWA : Time Weighted Average

STEL: Short -Term Exposure Limit

CEIL: Ceiling Limit

Appropriate engineering controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower

explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eyes: DO NOT WEAR CONTACT LENSES Wear anti-splash safety goggles.

Hands: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties.

Respiratory: If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Others: Wear protective clothing with long sleeves and appropriate safety shoes at all times.

Section 9. Physical and chemical properties

Physical state	: Liquid
Colour	: Colorless
Odour	: Solvent
Odour threshold	: Not available
pH	: Not available
Melting/Freezing point	: < 0 °C (32 °F)
Initial boiling point/boiling range	: > 57 °C (134.6 °F)
Flash point (closed cup)	: -10°C (14°F)
Lower flammable/explosive limit	: 0.9% at 25 °C
Upper flammable/explosive limit	: 8.0% at 25 °C
Auto-ignition temperature	: 170 °C (338 °F)
Evaporation rate	: > 1 (ether=1)
Vapor pressure	: > 12.5mm Hg at 20°C
Vapor density	: > 1 (air=1)
Specific gravity	: 1.029 kg/L at 20 °C (water = 1)
Solubility in water	: Insoluble
Partition coefficient - n-octanol/water	: Not available
Decomposition temperature	: Not available
Kinematic viscosity	: Not available

Section 10. Stability and reactivity

Reactivity: Stable under recommended conditions of storage and handling.

Chemical stability: The product is chemically stable under normal conditions of use.

Possibility of hazardous reactions: Danger of explosion when heated. No dangerous or polymerization reactions will not occur under normal conditions of use.

Conditions to avoid: Avoid electrical discharge. Keep away from sources of ignition, open flames and sparks, Keep away from incompatible products.

Incompatible materials: This product can attack certain types of plastic, rubber or coatings.

Hazardous decomposition products: Carbon monoxide and dioxide. Nitrogen oxides. Hydrocyanic acid. Carboxylic acids.

Section 11. Toxicological information

No.	CAS No.	Common name and synonyms	(1) LD oral	(2) LD skin	(3) LD skin	(4) LC gases	(5) LC vapors	(6) LC dusts-mist
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	Not available	Not available	Not available	Not available	11.00	1.50
2	79-20-9	Methyl acetate	6482	>2000	>2000	Not available	>48.48	>5.00
3	98-56-6	para-Chlorobenzotrifluoride	13000	Not available	3300	Not available	22.00	>5.00
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	Not available	Not available	Not available	Not available	Not available	>5.00
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	2234	>5000	>5000	Not available	>20.00	>5.00

(1) LD₅₀ oral mg/kg

(2) LD₅₀ skin mg/kg

(3) LD₅₀ skin mg/kg

(4) LC₅₀ inhalationppmV 4h gases

(5) LC₅₀ inhalation mg/l 4h vapors

(6) LC₅₀ inhalation mg/l 4h dusts-mist

Routes of exposure: This product is absorbed through the respiratory tract, skin and gastrointestinal tract.

Symptoms: Cough, breathing pain, eye redness and skin edema. The worker may develop cutaneous and respiratory hypersensitivity. We can observe headaches, nausea, vomiting and dizziness.

Delayed and immediate effects: May cause irritation of eyes, skin and respiratory tract. This product is a respiratory and skin sensitizer. May cause bronchoconstriction and pulmonary edema. Inhalation of high concentrations vapors can cause narcotic effect. Can cause depression of the central nervous system.

No.	CAS No.	Common name and synonyms	IARC	ACGIH	Mutagenicity	Effect on reproduction
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	4	A5	No effects shown	Not available
2	79-20-9	Methyl acetate	4	A5	The data do not allow for an adequate assessment of mutagenic effects.	Not available
3	98-56-6	para-Chlorobenzotrifluoride	4	A5	The data do not allow for an adequate assessment of mutagenic effects.	Not available
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	Not available	Not available	Not available	Not available
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	Not available	Not available	Not available	Not available

Cancer classification under IARC (International Agency for Research on Cancer)

- Group 1: carcinogenic to humans.
- Group 2A: probably carcinogenic to humans.
- Group 2B: possibly carcinogenic to humans.
- Group 3: not classifiable as to its carcinogenicity to humans.
- Group 4: probably not carcinogenic to humans.

Cancer classification under ACGIH (American Conference of Governmental Industrial Hygienists)

- Group A1: confirmed human carcinogen.
- Group A2: suspected human carcinogen.
- Group A3: confirmed animal carcinogen with unknown relevance to humans.
- Group A4: not classifiable as a human carcinogen.
- Group A5: not suspected as a human carcinogen.

Section 12. Ecological information

No.	CAS No.	Common name and synonyms	%	Persistent	Bio-accumulation	Aquatic ecotoxicity
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	31	Yes	No	No
2	79-20-9	Methyl acetate	40	Yes	No	No
3	98-56-6	para-Chlorobenzotrifluoride	11.8	N/A	N/A	N/A
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	3.48	Yes	No	No
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	0.2	No	No	No

No.	CAS No.	Common name and synonyms	%	Ecotoxicity for aquatic organisms-Short term	Ecotoxicity for aquatic organisms-Long term	Aquatic ecotoxicity
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	31	Not available.	Harmful to aquatic life with long lasting effects	No known adverse effect to the environment
2	79-20-9	Methyl acetate	40	No known adverse effect to aquatic life	No known adverse effect to aquatic life.	No known adverse effect to the environment.
3	98-56-6	para-Chlorobenzotrifluoride	11.8	Not available.	Toxic to aquatic life with long lasting effects.	No known adverse effect to the environment.
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	3.48	No known adverse effect to aquatic life	No known adverse effect to aquatic life.	No known adverse effect to the environment.
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	0.2	No known adverse effect to aquatic life	No known adverse effect to aquatic life.	No known adverse effect to the environment.

Section 13. Disposal considerations

Methods of disposal: The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or

grind used containers unless they have been cleaned thoroughly internally.

Section 14. Transport information

	TDG	DOT	IMDG	IATA
UN number	1263	1263	1263	1263
Proper shipping name	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL	PAINT RELATED MATERIAL
Transport hazard class(es)	3	3	3	3
Packing group	III	III	III	III

Other information

Marine pollutant: No

IMDG: Not applicable

Exemption for limited quantity: 5 L

In accordance with the Canadian Transport of Dangerous Goods regulations by Road, we use the 1.17 exemption when applicable. In accordance with 49 CFR article 172.315 for transportation by a mode other than air, we use the Limited quantities exemption when applicable.

Special precautions: Not applicable

Others exemptions: No other exemption.

Section 15. Regulatory information

Canada

No.	CAS No.	Common name and synonyms	%	DSL	NDSL	NPRI
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	31	X		
2	79-20-9	Methyl acetate	40	X		
3	98-56-6	para-Chlorobenzotrifluoride	11.8	X		
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	3.48	X		
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	0.2	X		

United-States

No.	CAS No.	Common name and synonyms	%	TSCA	PROP-65	Right to know
1	28182-81-2	1,6-Hexamethylene diisocyanate oligomer (HDI)	31	X		
2	79-20-9	Methyl acetate	40	X		X
3	98-56-6	para-Chlorobenzotrifluoride	11.8	X		
4	53880-05-0	Isophorone diisocyanate, homopolymer (IPDI)	3.48	X		
5	4083-64-1	para-Toluenesulfonyl isocyanate, monomer	0.2	X		

*The customer is responsible for determining the PPE (personal protection equipment) code for this material.
The classification of the product and the SDS were developed in accordance with HPR and HazCom 2012.*

Section 16. Other information

Notice to the reader: The manufacturer hereby declares that the information disclosed herein have been based on governmental sites and/or rawmaterial suppliers. The manufacturer has no control over the nature and content of such information. The manufacturer fully reproduces all the information it holds on the constituent of the product, at the time it is manufactured. The manufacturer does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. By this data sheet, the manufacturer hereby discloses all the potential dangers it has knowledge of and which might be related to the using or manipulation of the product in order to allow the proper care to be brought and use with regard to the product. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist and notification is hereby given to the user. Notice is hereby given that injury can derive therefrom if the foregoing is not respected. The manufacturer assumes no responsibility for personal and/or material damage, lost or injury of whichever nature caused or which may occur following the wrongful, inappropriate, negligent or abusive use or handling of the product or from not having read the herein contained information.