

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

1. Product and Company Identification

Product Code: R1457
Trade Name: ILR-1457
Product Type: Polyimide Resin (~25% w/w) in NMP
Recommended Use: Thermoset resin
Restrictions: Food, drug, pesticide or biocidal product use.
Company: Designer Molecules, Inc.
10080 Willow Creek Rd.
San Diego, CA 92131
Telephone: 858-348-1122

Emergency phone number (spill, leak, fire, exposure or accident):
US Domestic (800) 535-5053 (INFOTRAC) Includes Canada and Mexico
International +1 (352) 323-3500
China Specific (86) 400-120-0761
Germany Specific (49) 0800-181-2924
Australia Specific (61) 1-300-366-961

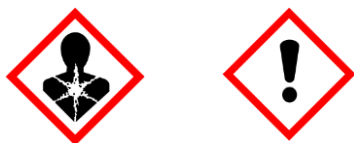
2. Hazards Identification

EMERGENCY OVERVIEW:

GHS Classification:

Flammable liquid	Category 4
Skin Irritation	Category 2
Eye Irritation	Category 2A
Reproductive Toxicity	Category 1B
Specific target organ toxicity – single exposure	Category 3 – Respiratory system

PICTOGRAM



SIGNAL WORD

Danger

HAZARD STATEMENT(S)

H227	Combustible liquid
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H360	May damage fertility or unborn child.

PRECAUTIONARY STATEMENT(S)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P261	Avoid breathing mist or vapors.

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 If exposed or concerned: Get medical advice/ attention.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

3. Composition On Ingredients

SUBSTANCE / MIXTURE MIXTURE
GENERIC NAME R1457, Resin solution, ILR-1457

INGREDIENT	Modified Polyimide Resin	n-Methyl-2-pyrrolidone
RATIO	20 - 30 wt%	70 - 80 wt%
CAS REGISTRY No.	3027864-14-5	872-50-4

4. First Aid Measures

GENERAL ADVICE:

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

INHALATION

Remove the victim to fresh air. If not breathing, give artificial respiration. Consult a physician.

SKIN CONTACT

Remove all contaminated clothing, shoes and socks from the affected areas as quickly as possible. Wash the affected area under tepid running water using a mild soap.

EYE CONTACT

Gently rinse the affected eyes with clean water for at least 15 minutes. Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

INGESTION

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

5. Fire and Explosion Hazard Data

SPECIFIC HAZARDS WITH REGARD TO FIRE-EXTINGUISHING MEASURES

Shut off the supply. Use extinguishing equipment from the up-wind side. If necessary, wear protective clothing including a breathing apparatus.

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

If the fire extends to the surrounding area, cool the facilities by splaying with water. Immediately move containers to a safe place if possible.

EXTINGUISHING MEDIA

In case of fire use water, dry sand, alcohol-resistant foam, dry chemical powder, carbon dioxide, foam

6. Accidental Release Measures

CAUTIONS FOR PERSONNEL

Wear proper equipment and avoid contact with skin and inhalation of vapor. Keep personnel away from downwind of any fire. Shut off all sources of ignition.

CAUTIONS FOR ENVIRONMENT

Prevent spills from entering waterways.

REMOVAL MEASURE

Shut off the leakage source to stop the leakage. For small spill, absorb spill with absorbent and collect in chemical waste container. For large spill, prevent contamination of surrounding area and move material to a safe place for collection.

PREVENTION OF SECOND ACCIDENT

Remove nearby sources of ignition and prepare extinguishing media.

7. Handling and Storage

Respiratory protection - particulate:

HANDLING

Engineering measures

Wear proper protective equipment to prevent contact with skin or inhalation of the vapor. Pay attention to fire.

Cautions for safety handling

Use with an enclosed system or a local exhaust ventilation to prevent exposure to vapors.

STORAGE

Adequate storage condition

Store at room temperature, keep package tightly closed. Avoid direct rays from the sun. No fire.

Safety adequate container materials

Glass, plastic, metal

8. Exposure Controls and Personal Protection Measures

CONTROL PARAMETERS

COMPONENTS WITH WORKPLACE CONTROL LIMITS

Component	CAS-No	Value	Control parameters	Basis
N-methyl-2-pyrrolidone	872-50-4	TWA	15 ppm 60 mg/m3	USA. Workplace Environmental Exposure Levels (WEEL)
	Remarks	Skin		
		STEL	30 ppm 120 mg/m3	USA. Workplace Environmental Exposure Levels (WEEL)
		Skin		
		PEL	1 ppm 4 mg/m3	California permissible exposure limits for

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

				chemical contaminants (Title 8, Article 107)
--	--	--	--	---

BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
N-methyl-2-pyrrolidone	872-50-4	5-HydroxyN-methyl-2-pyrrolidone	100 mg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

ENGINEERING MEASURES

Use only with adequate ventilation and in closed systems.

Respiratory protection - vapor:

Follow OSHA respirator regulations found in 29 CFR 1910.133 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Respiratory protection - particulates:

For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with chemically impervious gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good manufacturing practices. Wash and dry hands.

Eye protection:

Safety glasses with side shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and body protection:

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

9. Physical / Chemical Characteristics

APPEARLANCE, PHYSICAL STATE, COLOR, ODOR

Liquid, amber, amine odor

SPECIFIC TEMPERATURE or TEMPERATURE OF PHYSICAL CONDITIONS CHANGE

Boiling point	202°C <NMP>
Melting point	-24°C <NMP>
FLASH POINT	91°C <NMP>
EXPLOSION LIMIT	No data available
VAPOR PRESSURE	0.32 hPa (20°C) <NMP>
VAPOR DENSITY	3.42 <NMP>
SPECIFIC GRAVITY	1.028 g/ml (20°C) <NMP>
SOLUBILITY	Water ; soluble <NMP>

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

10. Reactivity Hazard Data

STABILITY	May polymerized on high temperature exposure
REACTIVITY	Strong bases, strong acids, strong oxidizers
INCOMPATIBILITY	Strong bases, strong acids, strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon monoxide

11. Toxicological Information

Information on toxicological effects

Acute toxicity - NMP

LD50 Oral - Rat - male and female - 4,150 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - > 5.1 mg/l - aerosol

(OECD Test Guideline 403)

LD50 Dermal - Rat - male and female - > 5,000 mg/kg

(OECD Test Guideline 402)

Skin corrosion/irritation - NMP

Skin - Rabbit

Result: Irritating to skin. - 24 h

(OECD Test Guideline 404)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation - NMP

Eyes - Rabbit

Result: Eye irritation

(OECD Test Guideline 405)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Respiratory or skin sensitization - NMP

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

Germ cell mutagenicity - NMP

Test Type: Ames test

Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: unscheduled DNA synthesis assay

Test system: rat hepatocytes

Method: OECD Test Guideline 482

Result: negative

Test Type: In vivo micronucleus test Species: Mouse

Cell type: Bone marrow

Application Route: Oral

Date printed: 1/2/2025

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

Method: OECD Test Guideline 474
Result: negative
Test Type: Chromosome aberration test
Species: Chinese hamster
Cell type: Bone marrow
Application Route: Oral
Method: OECD Test Guideline 475 Result: negative

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

May damage the unborn child.

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation. - Respiratory system

Specific target organ toxicity - repeated exposure No data available

Aspiration hazard No data available

12. Ecological Information

Hazardous to the Aquatic Environment (Acute)	No data available
Hazardous to the Aquatic Environment (Chronic)	No data available

13. Disposal Considerations

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Follow all regulations in your country.

14. Transport Information

DOT (US): (for containers greater than 119 gallons)

UN-Number: 1993 Class: None Packing group: III

Proper shipping name: Combustible liquid, n.o.s. (N-methyl-2-pyrrolidone)

Reportable Quantity (RQ):

Poison Inhalation Hazard: No

Poison Inhalation Hazard: No

IMDG:

Not dangerous goods

IATA:

Not dangerous goods

15. Regulatory Information

TSCA Status:

One component of the mixture is not listed on the TSCA inventory. For R&D use only.

SARA 302 Components:

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Designer Molecules, Inc.

Safety Data Sheet

Product: ILR-1457
MSDS ID: R1457

Revised Date: 01/02/25
Replaces Date: 10/13/24

SARA 313 Components:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards:

Acute health hazard

CALIFORNIA PROPOSITION 65:

Warning: This product can expose you to chemicals including N-Methyl pyrrolidone which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

16. Other Information

The opinions expressed herein are those of qualified experts within Designer Molecules Inc. We believe that the information contained herein is current, as of the date of this MSDS. Because the use of this information and of these opinions, and the conditions of use of this product, are not within the control of Designer Molecules Inc., it is the user's legal obligation to determine the conditions of safe use of this product.