Vanderbilt Chemicals, LLC
A Wholly Owned Subsidiary of R.T. Vanderbilt Holding Company, Inc.

SAFETY DATA SHEET

GHS
United States
English

Section 1. Product and company identification

Product name VANLUBE® RD

Code 50910

Supplier/Manufacturer Vanderbilt Chemicals, LLC
30 Winfield Street
Norwalk, CT 06855

In case of emergency
1-203-853-1400

Chemtrec: 1-800-424-9300
Outside US:
+1-703-527-3887

Chemical name Quinoline, 1,2-dihydro-2,2,4-trimethyl-,

Synonym Polymerized 1,2-dihydro-2,2,4-trimethylquinoline

Material uses Antioxidant.

Product type Solid.

Section 2. Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture COMBUSTIBLE DUSTS

GHS label elements

Signal word Warning

Hazard statements May form combustible dust concentrations in air.

Precautionary statements

Prevention Not applicable.

Response Not applicable.

Storage Not applicable.

Disposal Not applicable.

Supplemental label elements Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Prevent dust accumulation.

Hazards not otherwise classified Fine dust clouds may form explosive mixtures with air. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Ingredient name	CAS number	% by weight
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	26780-96-1	100

Occupational exposure limits, if available, are listed in Section 8.

Section 3. Composition/information on ingredients

Section 4. First aid measures

Description of necessary first aid measures

Eye contact
Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Skin contact
Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion
Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Inhalation
Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact
No known significant effects or critical hazards.

Ingestion
No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact
Adverse symptoms may include the following:
irritation
redness

Inhalation
Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact
No specific data.

Ingestion
No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician
In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments
No specific treatment.

Section 4. First aid measures

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media In case of fire, use water spray (fog), foam, dry chemical or CO_2.

Unsuitable extinguishing media Do not use water jet.

Specific hazards arising from the chemical Fine dust clouds may form explosive mixtures with air.

Hazardous thermal decomposition products Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides

Special protective actions for fire-fighters Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment 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.

Remark As with any dry material, pouring or allowing to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come in contact with the material or its container.

Remark(s) Dust suspended in air in critical proportions and in the presence of an ignition source presents an explosion hazard. The following characteristics apply to powder and also, are expected to apply to dust from pastilles if this form is reduced to a powder:

- Minimum explosive concentration: 0.03 oz/ft^3 (30 g/m^3)
- Minimum ignition energy (dust cloud)(E min)(mJ): 0.15 joules
- Maximum rate of pressure rise: 16,800 psi/sec at 0.1 oz/ft^3 (1,160 bars/sec at 100 g/m^3)
- Maximum pressure of explosion (Pmax)(bar): 66 psig at 0.5 oz/ft^3 (4.6 bars-gauge at 500 g/m^3)
- Explosion severity: 5.8 Severe
- Volume resistivity: 4.28 x 10^15 ohm-cm
- National Electrical Code (NFPA 70): Group G Dust

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel 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 flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

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

Small spill

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill

Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. 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.

Advice on general occupational hygiene

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. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

Do not store above the following temperature: 38°C (100.4°F). 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.

Although the risk of a dust explosion is low, as a precaution, implement the following safety measures:
Eliminate ignition sources (e.g., sparks, static buildup, excessive heat, etc.). Pouring product from its container may cause an electrostatic buildup which may be discharged as a spark. A spark can be an ignition source for solvent vapor/air mixtures. Bond, ground and properly vent conveyors, dust control devices and other transfer equipment. Prohibit flow of polymer, powder or dust through non-conductive ducts, vacuum hoses

Section 7. Handling and storage

or pipes, etc.; only use grounded, electrically conductive transfer lines when pneumatically conveying product. Prevent accumulation of dust (e.g., well-ventilated conditions, promptly vacuuming spills, cleaning overhead horizontal surfaces, etc.). A properly engineered explosion suppression system must be considered. See standards such as the National Fire Protection Association NFPA 654, “Standard for the Prevention of Dust Explosions in the Plastics Industry”; NFPA 69, “Explosion Prevention Systems”; NFPA 68, “Explosion Venting Protection”; NFPA 77, “Static Electricity” and other standards as the need exists.

Section 8. Exposure controls/personal protection

Control parameters

Exposure Limits for Total Product

As particles not otherwise specified (PNOS).
TLV® TWA: 10 mg/m3 inhalable particles (ACGIH)
3 mg/m3 respirable particles (ACGIH)

As particles not otherwise regulated (PNOR).
TWA: 15 mg/m3 total dust (OSHA)
5 mg/m3 respirable dust (OSHA)

Appropriate engineering controls

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, 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.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene 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.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles. Recommended: safety glasses with side-shields

Skin protection

Hand protection

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. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: lab coat

Section 8. Exposure controls/personal protection

Other skin protection
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection
Use a properly fitted, particulate filter 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.

Personal protective equipment (Pictograms)

Section 9. Physical and chemical properties

Appearance

Physical state Solid. [pastilles]

Color Amber to Brown. [Light]

Odor Aromatic. [Slight]

Odor threshold Not available.

pH Not available.

Melting point 82°C (179.6°F)

Boiling point Not available.

Flash point Open cup: 204°C (399.2°F) [Cleveland]

Burning time Not available.

Burning rate Not available.

Evaporation rate Not available.

Flammability (solid, gas) Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
As with any dry material, pouring or allowing to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come in contact with the material or its container.

Lower and upper explosive (flammable) limits Not applicable.

Vapor pressure Not available.

Vapor density Not applicable.

Density 1.1 g/cm³ [20°C (68°F)]

Relative density 1.03 to 1.09

Solubility Insoluble in the following materials: cold water.

Solubility in water Not available.

Partition coefficient: n-octanol/water Not applicable.

Auto-ignition temperature Not applicable.

Decomposition temperature >200°C (>392°F)

SADT Not available.

Viscosity Not applicable.

Section 10. Stability and reactivity

Reactivity

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability

The product is stable.

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid

Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). 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. Prevent dust accumulation.

Incompatible materials

Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	LD50 Dermal LD50 Oral	Rat Rat	5010 mg/kg 3190 mg/kg	- -

Irritation/Corrosion

Not available.

Conclusion/Summary

Skin Polymerized 1,2-dihydro-2,2,4-trimethylquinoline: Non-irritating to the skin. (Rabbit)

Eyes Polymerized 1,2-dihydro-2,2,4-trimethylquinoline: Non-irritating to the eyes. (Rabbit)

Sensitization

Product/ingredient name	Route of exposure	Species	Result
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	skin	Guinea pig	Not sensitizing

Mutagenicity

Product/ingredient name	Test	Experiment	Result
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	OECD 471 OECD 476	Experiment: In vitro Subject: Bacteria Experiment: In vitro Subject: Mammalian-Animal	Negative Negative

Section 11. Toxicological information

Carcinogenicity

Not available.

Conclusion/Summary Polymerized 1,2-dihydro-2,2,4-trimethylquinoline: Two year chronic feeding study in rats: no evidence of carcinogenicity.

Reproductive toxicity

Not available.

Conclusion/Summary Polymerized 1,2-dihydro-2,2,4-trimethylquinoline: Fetal toxicity noted only at levels that produced maternal toxicity.

Teratogenicity

Not available.

Conclusion/Summary Fetal toxicity noted only at levels that produced maternal toxicity..

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure Routes of entry anticipated: Oral, Inhalation, Eyes.

Potential acute health effects

Eye contact No known significant effects or critical hazards.

Inhalation No known significant effects or critical hazards.

Skin contact No known significant effects or critical hazards.

Ingestion May be harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Inhalation No specific data.

Skin contact No specific data.

Ingestion No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects Not available.

Potential delayed effects Not available.

Long term exposure

Section 11. Toxicological information

Potential immediate effects Not available.

Potential delayed effects Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	Chronic NOAEL Oral	Rat	12 mg/kg	-

General No known significant effects or critical hazards.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	3190 mg/kg

Other information Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	Acute EC50 >100 mg/l Acute EC50 56 mg/l Acute LC50 >100 mg/l	Algae Daphnia Fish - Zebra Danio	72 hours 48 hours 96 hours

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	-	0 % - Not readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
polymerized 1,2-dihydro-2,2,4-trimethylquinoline	1.2 to 7.7	477 to 1160	high

Mobility in soil

Section 12. Ecological information

Soil/water partition coefficient (K_{OC}) Not available.

Other adverse effects No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		-
TDG Classification	Not regulated.	-	-	-		-
ADR/RID Class	Not regulated.	-	-	-		-
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG* : Packing group

Section 15. Regulatory information

United States Inventory (TSCA 8b) All components are active or exempted.

U.S. Federal regulations

TSCA 8(a) CDR Exempt/Partial exemption: All components are listed or exempted.

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ Not applicable.

SARA 311/312

Section 15. Regulatory information

Classification COMBUSTIBLE DUSTS

Composition/information on ingredients

No products were found.

State regulations

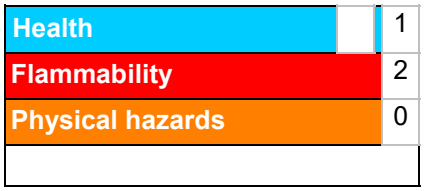
Massachusetts	None of the components are listed.
New York	None of the components are listed.
New Jersey	The following components are listed: Poly(1,2-dihydro-2,2,4-trimethylquinoline)
Pennsylvania	The following components are listed: Poly(1,2-dihydro-2,2,4-trimethylquinoline)
California Prop. 65	None of the components are listed.

International regulations

Australia Inventory (AIIC)	All components are listed or exempted.
Canada Inventory	All components are listed or exempted.
China Inventory (IECSC)	All components are listed or exempted.
Europe inventory	All components are listed or exempted.
Japan Inventory (CSCL)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC)	All components are listed or exempted.
Philippines Inventory (PICCS)	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.

Section 16. Other information

Hazardous Material Identification System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Section 16. Other information

History

Date of printing	10/20/2023
Validation date	10/20/2023
Date of previous issue	12/20/2021
Version	5.01
Key to abbreviations	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations
References	Not available.
Information contact	**Vanderbilt Global Services, LLC** **Corporate Risk Management** **1-203-295-2143**

Visit www.vanderbiltchemicals.com for more information.

Notice to reader

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