# Safety Data Sheet

## SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

### 1.1 Product Identifier

Product Name: RED  Product Code: LED-022KG4

### 1.2 Relevant identified uses of the substance or mixture

Trade Name:  ULTRA VIOLET SCREEN PRINTING INK

### 1.3 Details of the Supplier of the safety data sheet


North America:
**NOR-COTE INTERNATIONAL,  INC.**
506 Lafayette Avenue
Crawfordsville, Indiana 47933  USA
Phone: 765-362-9180 (day phone)
MSDS Issuer: EHS Department
jasong@norcote.com

Europe:
**NOR-COTE INTERNATIONAL LTD.**
Unit 8 Warrior Park, Eagle Close
Chandlers Ford Industrial Estate
Eastleigh, Hampshire
SO53 4NF  England
Tel: +44 (0) 23 80270542 (day phone)

Asia:
**NOR-COTE INTERNATIONAL PTE. LTD.**
Blk 4012 Ang Mo Kio Ave 10,
#05-08 Techplace 1,
Singapore 569628
Tel +65 6291-0898 (day phone)


### 1.4 Emergency Telephone Number

**CHEMTREC (United States)**
**800-424-9300**

**CHEMTREC (Outside U.S.)**
**703-527-3887**

**CHEMTREC  (Outside U.S.)**
**703-527-3887**

## SECTION 2 - HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

**Classification according to the Globally Harmonized System (GHS).**

### GHS Ratings:

| | | |
|---|---|---|
| Oral Toxicity | Acute Tox. 4 | Oral>300+<=2000mg/kg |
| Dermal Toxicity | Acute Tox. 4 | Dermal>1000+<=2000mg/kg |
| Inhalation Toxicity | Acute Tox. 4 | Gases>2500+<=5000ppm, Vapors>10+<=20mg/l, Dusts&mists>1+<=5mg/l |
| Skin Corrosive | 2 | Reversible adverse effects in dermal tissue, Draize score: >= 2.3 < 4.0 or persistent inflammation |
| Eye Corrosive | 2A | Eye irritant: Subcategory 2A, Reversible in 21 days |
| Respiratory sensitizer | 1 | Respiratory sensitizer |
| Skin sensitizer | 1 | Skin sensitizer |
| Carcinogen | 2 | Limited evidence of human or animal carcinogenicity |
| Reproductive Toxin | 2 | Human or animal evidence possibly with other information |
| Organ Toxin Single Exposure | 1 | Significant toxicity in humans- Reliable, good quality human case studies or epidemiological studies, Presumed significant toxicity in humans- Animal studies with significant and/or severe toxic effects relevant to humans at generally low exposure (guidan |

| | | |
|---|---|---|
| Organ Toxin Repeated Exposure | 1 | Significant toxicity in humans- Reliable, good quality human case studies or epidemiological studies Presumed significant toxicity in humans- Animal studies with significant and/or severe toxic effects relevant to humans at generally low exposure (guidanc |
| Aquatic Toxicity | A3 | Acute toxicity <= 10.0 but < 100 mg/l |

**2.2 Label Elements**

## GHS Hazards

| | |
|---|---|
| H302 | Harmful if swallowed |
| H312 | Harmful in contact with skin |
| H315 | Causes skin irritation |
| H317 | May cause an allergic skin reaction |
| H319 | Causes serious eye irritation |
| H332 | Harmful if inhaled |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled |
| H351 | Suspected of causing cancer |
| H361 | Suspected of damaging fertility or the unborn child |
| H370 | Causes damage to organs |
| H372 | Causes damage to organs through prolonged or repeated exposure |
| H402 | Harmful to aquatic life |

## GHS Precautions

| | |
|---|---|
| P202 | Do not handle until all safety precautions have been read and understood |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray |
| P271 | Use only outdoors or in a well-ventilated area |
| P273 | Avoid release to the environment |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection |
| P285 | In case of inadequate ventilation wear respiratory protection |
| P314 | Get Medical advice/attention if you feel unwell |
| P330 | Rinse mouth |
| P363 | Wash contaminated clothing before reuse |
| P301+P312 | IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell |
| P302+P352 | IF ON SKIN: Wash with soap and water |
| P304+P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing |
| P305+P351+P338 | IF IN EYES: Rinse continuously 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 |
| P333+P313 | If skin irritation or a rash occurs: Get medical advice/attention |

**Danger**

**EMERGENCY OVERVIEW:** Product is a liquid with mild acrylic odor that may be harmful if inhaled or swallowed. Product may cause serious damage to eyes, allergic skin reactions and irritation to respiratory system. Avoid breathing vapors. Avoid spillage to sewers or waterways.

**ROUTES OF ENTRY:** Dermal, Inhalation, Ingestion
**ACUTE HEALTH EFFECTS:** Irritant to skin, eyes and respiratory tract. Effects may be delayed for several hours.

None Known

**Skin Contact:** Potential irritant and can cause allergic skin reaction. Repeated or prolonged contact may cause sensitization.
**Eye Contact:** Liquid, vapors, or mists may cause eye irritation. Protect eyes from repeated or prolonged contact.
**Ingestion:** May be harmful if swallowed. Gastrointestinal tract irritation may result.
**Inhalation:** May be harmful if inhaled. May cause irritation to upper respiratory tract upon prolonged or repeated inhalation.

**Effects of Overexposure**

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Repeated and prolonged overexposure may increase the potential for adverse health effects.
**CHRONIC HEALTH EFFECTS:** No data available for mixture. Animal studies for N-Vinyl Pyrrolidone indicate that inhalation can cause liver and nasal damage. Possible cancer hazard associated with NVP, based on animal studies.

## SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

**3.2 Mixtures**

*Note: The exact concentrations of the below listed chemicals are being withheld as a trade secret

| Chemical Name | Percent Weight | CAS # | EC No. | Classification (GHS) |
|---|---|---|---|---|
| N-Vinyl-2-pyrrolidone | 10.00 - 20.00 % | 88-12-0 | 201-800-4 | H331, H311, H318, H370, H372 |
| Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide | 5.00 - 10.00 % | 75980-60-8 | | H361 |
| Trimethylolpropane triacrylate | 1.00 - 5.00 % | 15625-89-5 | 239-701-3 | H313, H319, H317, H411 |
| Phosphine oxide, phenylbis(2,4,6-trimethylbenzoyl)- | 1.00 - 5.00 % | 162881-26-7 | 423-340-5 | H317 |

## SECTION 4 - FIRST AID MEASURES

**4.1 Description of first aid measures**

**INHALATION:** Move subject to fresh air and keep warm. If subject is not breathing, administer artificial respiration. If breathing is difficult, have qualified personnel administer oxygen and get medical attention.
**EYE CONTACT:** Flush the eye and under lids with warm water for 15 minutes. Remove any contact lenses during the flushing. Get immediate medical attention if symptoms persist.
**SKIN CONTACT:** Remove and isolate contaminated clothing and shoes. Remove excess material from skin with clean cloth. Flush skin with running lukewarm water. Wash affected areas using mild soap.
**INGESTION:** If appreciable quantities are swallowed, seek immediate medical attention. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

## SECTION 5 - FIRE FIGHTING MEASURES

**5.1 Extinguising Media**

Evacuate area of all non-emergency personell. Firefighters must wear full emergency equipment with self contained breathing apparatus. At elevated temperatures hazardous polymerization may occur causing container rupture and in extreme cases, explosion. Fight fires from upwind and cool intact containers with water spray or stream at maximum range.

Flash Point: 100 C (212 F)

**FLAMMABLE/EXPLOSIVE LIMITS (Volume % in air):** Not established
**EXTINGUISHING METHOD:** Water fog, carbon dioxide ($CO_2$) or dry chemical

**5.2 Special Hazards arising from the substance or mixture:**

Thermal decomposition can lead to release of irritating gases and vapors

**5.3 Advice for firefighters**
**Protective Equipment:**

Wear full emergency equipment with selfcontained breathing apparatus.
Refer to Section 8

**5.4 Additional Information**

Heating causes a rise in pressue, risk of bursting and combustion
Shut off sources of ignition
Carbon monoxide and carbon dioxide may form upon combustion

**OSHA CLASSIFICATION:** Class IIIB Combustible

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures**

Remove all sources of ignition and ventilate area. Avoid skin and eye contact. Use respiratory protection.

**6.2 Environmental precautions**

Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained

**6.3 Methods and materials for containment and cleaning up**

Absorb with inert materials such as dry clay or sand and place in closed container for disposal as solid waste in accordance with all applicable regulations.

## SECTION 7 - HANDLING AND STORAGE

**7.1 Precautions for safe handling**

Avoid any unnecessary contact. Use protective clothing specified in Section 8.

**7.2 Conditions for safe storage, including and incompatibilities**

Store away from heat and sunlight to prevent spontaneous polymerization. Store below 90° F (32° C). Protect containers from physical damage. Storage of containers should conform to flammable and combustible liquid regulations.

## SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

**8.1 Control parameters**

**Exposure Limits:** Not established for mixture

| Chemical Name / CAS No. | OSHA Exposure Limits | ACGIH Exposure Limits | Other Exposure Limits |
|---|---|---|---|
| N-Vinyl-2-pyrrolidone<br>88-12-0 | | 0.05 ppm TWA | |
| Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide<br>75980-60-8 | | | |
| Trimethylolpropane triacrylate<br>15625-89-5 | | | |
| Phosphine oxide, phenylbis (2,4,6-trimethylbenzoyl)-<br>162881-26-7 | | | |

**8.2 Exposure Controls**

**VENTILATION:** Provide natural or mechanical ventilation to minimize exposure. If practical, use local mechanical exhaust ventilation at sources of air contamination.

**EYE PROTECTION:** Use splash-proof safety goggles or safety glasses that are ANSI approved to prevent eye contact. Eyewash availability is also recommended.
**HAND PROTECTION:** Use nitrile, butyl or other gloves that are resistant to chemicals in Section 2. Replace immediately if punctured or torn or when a change of appearance (color, elasticity, shape) occurs . A minimum of 0.45mm thick gloves for long duration exposure (up to 4 hours) or mechanical handling activities; single use, disposable gloves for short duration exposures not exceeding 30 minutes or where splashes are likely, are recommended.
**RESPIRATORY PROTECTION:** Use of NIOSH/MSHA approved respirators is recommended where exposure limits may be exceeded. Consult the respirator manufacturer for appropriate type and application.
**SKIN PROTECTION:** Protective or disposable outer clothing is recommended.

**Environmental Exposure Controls:** Avoid release to the environment. The product should not be allowed to enter drains, water courses or the soil.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties**

| | | | |
|---|---|---|---|
| **Appearance:** | Liquid with moderate viscosity | **Odor:** | Mild Acrylic odor |
| **Vapor Pressure:** | Not Established | **Vapor Density:** | Heavier than Air |
| **pH:** | Not Established | **Formula KG / Gal** | 4.09 |
| **Melting Point:** | Not Available | **Freezing Point:** | Not Available |
| **Solubility:** | Not Soluble in Water | **Boiling Range:** | Not Available |
| **Flash Point:** | See Section 5.1 | **Evaporation Rate:** | <1 |
| **Flammability:** | See Section 5.4 | **Explosive Limits:** | See Section 5.4 |
| **Viscosity:** | See Certificate of Analysis | **Specific Gravity (SG)** | 1.080 |
| **Grams VOC less water:** | <1% | **Partition Coefficient** | Not Available |
| **Auto-Ignition Temperature** | Not Available | **Decomposition Temperature** | Not Available |

## SECTION 10 - REACTIVITY / STABILITY HAZARD DATA

**10.1 Reactivity**

None known

**10.2 Chemical Stability**

This material is stable under recommended storage and handling conditions.

**10.3 Possibility of hazardous reaction**

Under certain conditions (excess temperatures and contamination) hazardous polymerization may occur. Avoid high temperature and contamination with foreign materials.

**10.4 CONDITIONS TO AVOID:**

Excessive heat, ignition sources and contamination with dirt and other foreign materials.

**10.5 Incompatible Materials:**

Avoid contamination or inappropriate mixing with strong oxidizing agents, peroxides, strongly caustic materials and metal corrosion products including rust. Do not expose to UV light during storage.

**10.6 Hazardous decomposition products**

Thermal oxidation or pyrolysis (as in fire) may yield carbon dioxide, carbon monoxide and volatile organic fragments which are flammable, irritating or toxic.

Hazardous polymerization will not occur.

## SECTION 11 - TOXICOLOGICAL INFORMATION

**Component Toxicity:**

| Component Description<br>Oral, Dermal, Inhalation<br>Toxicity | Ecotoxocity: |
|---|---|
| N-Vinyl-2-pyrrolidone<br>Oral:830.00 mg/kg (Rat)<br>Dermal: 560.00 mg/kg (Rabbit)<br>Inhalation: Rat mg/L (Rat) | 48 Hr EC50 Daphnia species: 45 mg/L<br>72 Hr EC50 Desmodesmus subspicatus: 780 mg/L |
| Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide | N/A |
| Trimethylolpropane triacrylate<br>Dermal: 5,000.00 mg/kg (Rabbit) | N/A |
| Phosphine oxide, phenylbis(2,4,6-trimethylbenzoyl)- | N/A |

**TOXICOLOGICAL DATA:** Slightly Toxic by injestion. Prolonged or repeated exposure may result in sensitization.
**LC50** - No additional information
**LD50** - No additional information
**MUTAGENICITY:** No additional information
**REPRODUCTIVE EFFECTS:**
No additional information
**CARCINOGENICITY:**
NVP, cas # 88-12-0, one component of this product is a possible cancer hazard based upon animal studies. Acute Oral LD50 is 1470 mg/kg (rat). Acute Dermal LD50 is 560 mg/kg (rabbit). Acute Inhalation LC50 is 3.2 mg/l (rat).

Negative results and no chromosome-damaging effects were found with mutagenicity studies. Carcinogenicity studies (Rat, 2-year inhalation) showed tumors observed in nasal mucosa of both sexes at 20 ppm and in males at 10pm. Liver and laryngeal tumors at 20ppm and liver damage at 5ppm in both sexes.

None Known

Carcinogenicity:

## SECTION 12 - ECOLOGICAL INFORMATION

### 12.1 Toxicity

No determination has been made on ecological impact. However, it is recommended to prevent contamination of the environment with this product, i.e. soil, landfills, drains, sewers, surface waters, etc.

### 12.2 Persistence and degradability

No determination has been made on ecological impact. however, it is highly recommended to prevent contamination of the environment with this product, i.e. soil, landfills, drains, sewers, surface waters, etc

### 12.3 Bioaccumulative potential

No determination has been made on ecological impact. However, it is highly recommended to prevent contamination of the environment with this product, i.e. soil, landfills, drains, sewers, surface waters, etc.

### 12.4 mobility in soil

No determination has been made on ecological impact. However, it is highly recommended to prevent contamination of the environment with this product, e.i. soil, landfille, drains, sewers, surface waters, etc.

## SECTION 13 - DISPOSAL CONSIDERATIONS

### 13.1 Waste Water methods

If material becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261 as supplied. Dispose of this material in accordance with all applicable federal, state, provincial, and local laws and regulations.

## SECTION 14 - TRANSPORTATION INFORMATION

Transport this product in accordance with all applicable laws and regulations. This product, as supplied, is not regulated nor classified as a hazardous material/dangerous good by United States Department of Transportation (DOT) , the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO), the Canadian Transportation of Dangerous Goods Act (TDG), or the International Air Transport Association (IATA).

**14.1 UN Number:** Not Applicable

**14.2 UN Proper Shipping Name:** Not Applicable

**14.3 Transport Hazard Class:** Not Applicable **DOT (49 CFR)/IATA/IMDG Hazard Class:** Not Applicable

**14.4 Packing Group:** Not Applicable

## SECTION 15 - REGULATORY INFORMATION

**15.1 Safety, Health and Environmental regulations / legislation specific for the substance or mixture**

This safety data sheet has been formatted to the best of our ability in accordance to Directive 67/548/EEC or Directive 1999/45EC, American National Standards Institute (ANSI) and contains hazard criteria and all information required by the Canadian Controlled Products Regulation (CPR) in regard to this product.

**Clean Air Act - Ozone Depleting Substances (ODS):** This product and its components do not contain Ozone Depleting Substances.

**Canadian Inventory Status:** Components of this product are currently listed on the Canadian Domestic Substance List (DSL) or the Canadian Non-Domestic Substance List (NDSL).

**Coalition of Northeastern Governors (CONEG):** This product meets the requirements of CONEG pertaining to heavy metals total content of no more than 100 PPM. No heavy metals are added as a part of the formulation, but raw materials may contain residual parts per million as naturally occurring elements.

**European Inventory Status:** Components of this product are listed on the European Inventory of Existing Commercial Substances (EINECS), the European List of Notified Chemical Substances (ELINCS), or are exempt from being listed.

**Food and Drug Administration (FDA) Food Packaging Status:** Components of this product have not been cleared by FDA for use in food packaging and/or other applications as an indirect food additive .

**European Union Directive 2011/65/EC Restriction of Hazardous Substances (RoHS):** This product is in compliance with the requirements of the RoHS2 Directive.

**California Proposition 65 RTK:**

The following components of this mixture are listed under California Proposition 65:

- None

If CAS numbers 13463-67-7 and/or 1333-86-4 are listed they are not supplied in respirable form.

**The following substances from Section 3.2 are considered to be PBT, or vPvB**

- None

**REACH** : This product is compliant with the registration of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt and/or preregistered.

The following Substances of Very High Concern are present (updated December 17, 2015 to review for the 168 SVHC)

- None

- None

**Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III: Section 302:**

4098-71-9

**Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III: SARA 313:**
This product contains the following components that are regulated under the Toxic Chemical Release Reporting requirements 40 CFR 372:

- None

**Global Inventories:** The components of these products are listed in the following or exempt from listing:

Europe (EINECS): Yes
USA (TSCA): Yes
Canada (DSL): Yes
Japan (ENCS): Yes
Philippines (PICCS): Yes
China (IECSC): Yes
Australia (AICS): Yes
Korea (KECI): Yes
New Zealand (NZloC): Yes
Taiwan (ECSI): Yes

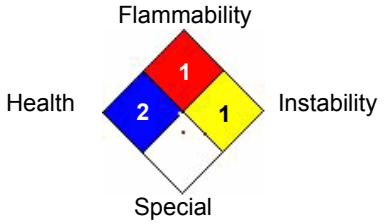
## SECTION 16 - OTHER INFORMATION

**Hazardous Material Information System (HMIS)**

| | |
|---|---|
| HEALTH | 2 |
| FLAMMABILITY | 1 |
| PHYSICAL HAZARD | 1 |
| PERSONAL PROTECTION | C |

**HMIS & NFPA Hazard Rating Legend**
*** = Chronic Health Hazard**
**0 = INSIGNIFICANT**
**1 = SLIGHT**
**2 = MODERATE**
**3 = HIGH**

**National Fire Protection Association (NFPA)**




**HMIS® ratings** are a registered trade and service mark of the National Paint and Coatings Association with the following scale:

| * = Chronic health effect | PPE Index |
|---|---|
| 4 = Severe Hazard | A = Safety Glasses |
| 3 = Serious Hazard | B = Safety Glasses and Gloves |
| 2 = Moderate Hazard | C = Safety Glasses, Gloves and Protective Apron |
| 1 = Slight Hazard | D = Face Shield, Gloves and Protective Apron |
| 0 = Minimal Hazard | E = Safety Glasses, Gloves and Respirator |

**Definitions**
TWA - Time Weighted Average
TLV - Threshold Limit Value
STEL - Short Term Exposure Limit
CAS# - Chemical Abstract Service Number
NTP - National Toxicology Program
PEL - Permissible Exposure Limit
IARC - International Agency for Research on Cancer
ANSI - American National Standards Institute

SKIN CORR. Skin corrosive
EYE Eye corrosive
RESP. SENS. Respiratory sensitizer
SKIN SENS. Skin sensitizer
MUTA. Mutagen

| | |
|---|---|
| CARC. | Carcinogen |
| REPR. | Reproductive toxin |
| STOT SE | Organ toxin single exposure |
| STOT RE | Organ toxin repeated exposure |
| AH | Aspiration hazard |
| HHNOC | Health hazard not otherwise classified |

**Disclaimer:** To the best of our knowledge, the product information contained herein is based upon data believed to be reliable, however Nor-Cote makes no warranty and disclaims any liability whatsoever for its accuracy or completeness. Since the actual use of the product is beyond our control, no guarantee expressed or implied, is made by Nor-Cote as to the effects of such uses nor does Nor-Cote assume liability arising out of the use of this product by others. It remains the responsibility of the user to ensure that the use of the product herein is in accordance with all applicable laws and regulations.