



MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

MSK-SERIES

UV CURABALE SCREEN PRINTING INK (Weights are in kilograms per gallon)

002 Mixing White (5.15)	049 Overprint Clear (4.15)	1020 Midnight Black (4.26)
005 Mixing Black (4.24)	050 Process Blue (4.20)	1046 Opaque White (6.08)
007 Brown (4.40)	060 Halftone Base (4.32)	1054 Non-Chalking White (5.17)
012 Radiant Yellow (4.22)	080 Halftone Process Cyan (4.32)	1056 Non-Chalking Opaque White (6.10)
017 Medium Yellow (4.36)	081 Halftone Process Magenta (4.33)	1085 Lens Clear (4.09)
019 Permanent Orange (4.17)	082 Halftone Process Yellow (4.36)	1187 Dk. LED Red (4.25)
020 Radiant Orange (4.22)	083 Halftone Process Black (4.36)	1400 Blue Shade White (5.79)
021 Cha Cha Red (4.24)	193 Transparent Green (4.26)	1593 H.V. Opaque White (5.85)
022 Red (4.24)	194 Transparent Blue (4.18)	2021 Opaque Process Blue (4.64)
023 Rhodamine Red (4.27)	195 Transparent Yellow (4.14)	2233 Opaque Yellow (4.45)
024 Rose (4.23k)	196 Transparent Orange (4.17)	2313 Weatherable Yellow (4.18)
026 Magenta (4.70)	197 Transparent Red Shade Blue (4.14)	2500 Super Dense Black (4.34)
030 Emerald Green (4.40)	434 High Density Permanent Blue (4.28)	2872 Weatherable Orange (4.21)
031 Spruce Green (4.38)	880 Process Cyan Toner (4.36)	9001 HD Process Cyan (4.27)
034 Permanent Blue (4.20)	881 Process Magenta Toner (4.28)	9002 HD Process Magenta (4.28)
035 Violet (4.21)	882 Process Yellow Toner (4.47)	9003 HD Process Yellow (4.36)
037 Reflex Blue (4.23)	883 Process Black Toner (4.38)	9004 HD Process Black (4.35)
038 Peacock Blue (4.70)	1019 Opaque Black (4.25)	

This MSDS applies to all MSK series inks except 1122, 1186, 4000, CL-2, and CL-6 which do not contain n-vinyl-2-pyrrolidone (NVP).

North America: NOR-COTE INTERNATIONAL, INC. 506 Lafayette Avenue Crawfordsville, Indiana 47933 USA Phone: 765-362-9180 (day phone) MSDS Issuer: EHS Department Emergency Phone: CHEMTREC (United States) 800-424-9300	Europe: NOR-COTE INTERNATIONAL LTD. Unit 7 Warrior Park Eagle Close Chandlers Ford Industrial Estate Eastleigh, Hampshire SO53 4NF England Tel: +44 (0) 23 80270542 (day phone) Emergency Phone: CHEMTREC (Outside U.S.) 703-527-3887	Asia: NOR-COTE INTERNATIONAL PTE. LTD. 768 North Bridge Road Singapore 198736 Tel: +65 6291-0898 (day phone) NOR-COTE (MALAYSIA) SDN. BHD. 510, Fifth Floor Manara Muitara; Sector 3 46000 Petaling Jaya Selangor, Malaysia Tel: 603 788 081 66 (day phone)
--	--	---

SECTION 2 INGREDIENTS

COMMON NAME	CHEMICAL NAME	PERCENT BY WEIGHT	CAS#	EXPOSURE LIMITS	EINECS#
Acrylated Oligomer Mixture	Proprietary	8-20%	Proprietary	Not established (NE)	Proprietary
V-Pyrol	N-Vinyl-2-Pyrrolidone	10-25%	88-12-0	0.05 PPM (VAPOR) ACGIH	201-800-4
Acrylated Monomer Mixture	Proprietary	12-35%	Proprietary	Not established (NE)	Proprietary
Photoinitiators	Proprietary	2-10%	Proprietary	Not established	Proprietary

SECTION 3 HAZARDS IDENTIFICATION

ROUTES OF ENTRY: Dermal, Inhalation, Ingestion

GENERAL HEALTH EFFECTS: Irritant to skin, eyes and respiratory tract. Effects may be delayed for several hours.

ACUTE

- **Skin Contact:** Harmful if absorbed through skin. Ingredients are potential irritant and can cause allergic skin reaction. Repeated or prolonged contact may cause sensitization.
- **Eye Contact:** May cause severe eye irritation. Protect eyes from repeated or prolonged contact.
- **Inhalation:** Harmful if inhaled. DO NOT INHALE VAPORS.
- **Ingestion:** May be harmful if swallowed.

CHRONIC: Animal studies for NVP indicate that inhalation can cause liver and nasal damage. Possible cancer hazard associated with NVP, based on animal studies.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing health disorders and pregnant women should consult their physician before using this product. Repeated and prolonged overexposure may increase the potential for adverse health effects.

HMSIS ® RATING: Health - 2 Flammability -1 Physical Hazard - 1 PPE - C

EC HAZARD SYMBOLS:



Xi - IRRITANT



N - DANGEROUS TO THE ENVIRONMENT

EC RISK/SAFETY PHRASES:

R20/21/22, R36/37, R40, R43, R51/53
S20/21, S23, S61, S26, S36/37, S24



MATERIAL SAFETY DATA SHEET

SECTION 4 FIRST AID MEASURES

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.

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.

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.

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

FLASHPOINT: >200° F (> 93.3°C)

FLAMMABLE/EXPLOSIVE LIMITS (Volume % in air): Not established

METHOD: Open Cup

EXTINGUISHING METHOD: Water fog, carbon dioxide (CO₂) or dry chemical

AUTO-IGNITION TEMPERATURE: Not established

Evacuate area of all non-emergency personnel. Fire fighters 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.

SECTION 6 ACCIDENTAL RELEASE MEASURES

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

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

STORAGE: Store away from heat and sunlight to prevent spontaneous polymerization. Store below 120° F (49° C). Protect containers from physical damage. Storage of containers should conform to flammable and combustible liquid regulations.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

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. RadTech recommends a minimum of 0.45mm thick, nitrile gloves for long duration exposure (up to 4 hours on most UV/EB-curing acrylates) or mechanical handling activities. Single use, disposable nitrile gloves are recommended by RadTech for short duration exposures not exceeding 30 minutes, in situations where only splashes are likely.

EYE PROTECTION: Use splash-proof safety goggles, safety glasses, or face shields that are ANSI approved to prevent eye contact. Eyewash availability is also recommended.

SKIN PROTECTION: Protective or disposable outer clothing is recommended.

RESPIRATORY PROTECTION: Use local exhaust to control vapors and mists. Use of NIOSH approved respirators for organic vapors, is recommended where TLV is exceeded.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Moderate viscosity with mild odor

BOILING POINT (°F): Not available

SPECIFIC GRAVITY: Not established

VAPOR PRESSURE (mm Hg): Not established

SOLUBILITY IN WATER: Not soluble

pH: NA

PHYSICAL STATE: Liquid

FREEZING POINT: Not available

EVAPORATION RATE: <1

VAPOR DENSITY: Heavier than air

VOC: < 7.0 grams/liter

SECTION 10 REACTIVITY / STABILITY HAZARD DATA

STABILITY: This material is stable under recommended storage and handling conditions.

CONDITIONS TO AVOID: Excessive heat, ignition sources and contamination with dirt and other foreign materials.



MATERIAL SAFETY DATA SHEET

INCOMPATIBILITY: 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.

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

SECTION 11 TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA: Slightly toxic by ingestion. Prolonged or repeated exposure may result in sensitization. Possible cancer hazard associated with NVP based on animal studies.

LD50 – Greater than 1000 mg/kg of body weight. The test article is not a poisonous material as defined in 49 CFR 173.132 (a)(1)(ii).

LC50 – Not determined

REPRODUCTIVE TOXICITY: Not determined

TERATOGENICITY: Not determined

MUTAGENICITY: Not determined

CARCINOGENICITY: IARC? No

NTP? No

OSHA? No

SECTION 12 ECOLOGICAL INFORMATION

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.

SECTION 13 DISPOSAL CONSIDERATIONS

Dispose of this product in accordance with all applicable 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).

SECTION 15 REGULATORY INFORMATION

This Material Safety Data Sheet has been formatted to the best of our ability in accordance with American National Standards Institute (ANSI), European Communities (EC), and contains hazard criteria and all information required by the Canadian Controlled Products Regulation (CPR) in regard to this product.

INTERNATIONAL REGULATIONS

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).

Canadian Workplace Hazardous Material Information System (WHMIS): The following chemicals are on the ingredient disclosure list: N-Vinyl-2-Pyrrolidone

European Inventory Status: Components of this product are listed on the European Inventory of Existing Commercial Substances (EINICS), the European List of Notified Chemical Substances (ELINCS), or are exempt from being listed. This product is classified and labeled in accordance with EC directives.

U.S. FEDERAL REGULATIONS

California Proposition 65 RTK: This product may contain trace chemicals not added as a part of the formulation but remaining as residuals from the manufacturing process of our raw materials suppliers, that are considered by the state of California to cause cancer.

Clean Air Act- Hazardous Air Pollutants (HAP): This product and its components do not contain any Hazardous Air Pollutants.

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



MATERIAL SAFETY DATA SHEET

Clean Water Act – Priority Pollutants (PP): This product and its components do not contain Priority Pollutants.

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.

Food and Drug Administration (FDA) Food Packaging Status: This product has not been cleared by the FDA for use in food packaging and/or other applications as an indirect food additive.

Occupational Safety and Health Act (OSHA): This product is classified as a Class IIIB combustible liquid.

Resource Conservation and Recovery Act (RCRA): This product is not regulated as a hazardous substance under 40 CFR 261.

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

Section 302 – Extremely Hazardous Substances (EHS): This product is not regulated as an EHS.

Section 304 - CERCLA: This product is not regulated for emergency release notification.

Section 311/312 – Hazard Communication Standard (HCS): This product is classified as an acute hazard.

Section 313 – Toxic Chemical List (TCL): This product contains the following components that are regulated under the Toxic Chemical Release Reporting requirements 40 CFR 372: Chemical category Glycol Ethers <15 %

Toxic Substances Control Act (TSCA)

Section 5(e): This product is not regulated under the Consent Order/Significant New Use Rule.

Section 8(b) – Inventory Status: All chemicals in this product are TSCA listed.

SECTION 16 OTHER INFORMATION

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

EU Risk/Safety Phrases

- R20/21/22 = Harmful by inhalation, in contact with skin or if swallowed.
- R36/37 = Irritating to eyes, respiratory system.
- R40 = Limited evidence of a carcinogenic effect.
- R43 = May cause sensitization by skin contact.
- R51/53 = Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- S20/21 = When using, do not eat, drink, or smoke.
- S23 = Do not breathe vapour.
- S24 = Avoid contact with skin.
- S26 = In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37 = Wear suitable protective clothing and gloves
- S61 = Avoid release to the environment. Refer to special instructions/safety data sheets.

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

Revision History:

- 04/05/2004 – Changed MSDS format.
- 04/22/2004 – Added CHEMTREC as emergency contact.
- 06/29/2004 - HMIS® Rating format change and removal of 4000 from list, since it does not contain NVP.

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.