MATERIAL SAFETY DATA SHEET

1. PRODUCT INDETIFICATION

Product name: NXR-3020 nanoimprint resist (underlayer) Revision date: 09/04/2003

Supplier: Nanonex Corporation

1 Deer Park Drive, Suite O

Monmouth Junction, NJ 08852

Tel.: +1 732-355-1600 Fax.: +1 732-355-1608

2. Composition

Proprietary.

3. HAZARDS IDENTIFICATION

Label precautionary statements

Toxic.

May cause harm to the unborn child.

Harmful by inhalation and in contact with skin. Avoid inhalation and contact.

Irritating to eyes and skin.

Combustible.

Readily absorbed through skin.

Target organ(s)

Liver, kidneys, teratogen.

In case of accident or if you feel unwell, seek medical advice immediately.

Wear suitable protective clothing, gloves and eye/face protection.

Do not breathe vapor.

4. FIRST AID AND MEASURES

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

5. FIRE FIGHTING MEASURES

Extinguishing media

Carbon dioxide, dry chemical powder or appropriate foam.

Special firefighting procedures

Wear self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.

Unusual fire and explosions hazards

Emit toxic fumes under fire conditions.

6. ACCIDENTIAL RELEASE MEASURES

Evacuate area.

Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

Wear disposable coveralls and discard them after use.

Avoid raising dust.

Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.

Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

Refer to section 8.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Use only in a chemical fume hood.

Safety shower and eye bath.

Mechanical exhaust required.

Do not breathe vapor.

Do not get in eyes, on skin, on clothing.

Avoid prolonged or repeated exposure.

Wear NIOSH/MSHA-approved respirator, compatible chemical-resistant gloves, chemical safety goggles.

Wash thoroughly after handling.

Wash contaminated clothing before reuse.

Discard contaminated shoes.

Keep tightly closed.

Store in a cool dry place.

9. PHYSICAL AND CHEMICAL PROPERTIES OF SOLVENT

Appearance and odor: liquid

Boiling point: 153^{o}C

Melting point: -61^{o}C

Flash point: 57.77^{o}C

Explosion limits in air: 2.2-15.2%

Vapor pressure: 2.7 mmHg @ 20^{o}C

Vapor density: 2.5G/L

Specific gravity: 0.944

10. STABILITY AND REACTIVITY

Stability

Stable.

Incompatibilities

Strong oxidizing agents

Hazardous combustion or decomposition products

Thermal decomposition may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

Hazardous polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute effects

Causes skin irritation.

Harmful if absorbed through skin. Readily absorbed through skin.

Causes eye irritation.

Harmful if inhaled.

Material may be irritating to mucous membranes and upper respiratory tract.

May be harmful if swallowed.

Warning: Intolerance for alcohol can occur up to 4 days after exposure. The material is considered to be a potent liver toxin.

Exposure can cause stomach pains, vomiting, and diarrhea.

Chronic effects

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP or EPA classification.

May cause congenital malformation in the fetus.

Target organ(s)

Liver, kidneys, central nervous system, cardiovascular system, blood.

Irritation data

SKN-HMN 100%/24H MLD	BJIMAG 13,51,1956
EYE-RBT 100 MG RINSE SEV	DCTODJ 9,147,1986

Toxicity data

ORL-RAT LD50:2800 MG/KG	ZEKBAI 69,103,1967
ORL-RAT LD50:100 GM/KG	FAONAU 53A, 486, 1974
ORL-GPA LD50:100 GM/KG	FAONAU 53A, 486, 1974
IPR-RAT LD50:1400 MG/KG	BJIMAG 13,51,1956
SCU-RAT LD50:3800 MG/KG	ARZNAD 15,618,1965
IVN-RAT LD50:2 GM/KG	ZEKBAI 69,103,1967
UNR-MUS LD50:16 GM/KG	KHFZAN 19, 212, 1985

UNR-RAT LD50:>3 GM/KG	ARZNAD 18,645,1968
ORL-MUS LD50:2900 MG/KG	NTIS** OTS0521148
ORL-MUS LD50: > 40 GM/KG	FAONAU 40, 164, 1967
IHL-MUS LC50:9400 MG/M3/2H	TPKVAL 1,54,1961
IPR-MUS LD50:650 MG/KG	CNCRA6 30,9,1963
IPR-MUS LD50:12 GM/KG	FAONAU 53A, 486, 1974
SCU-MUS LD50:4500 MG/KG	ARZNAD 15,618,1965
IVN-MUS LD50:2500 MG/KG	ARZNAD 15,618,1965
IMS-MUS LD50:3900 MG/KG	ARZNAD 15,618,1965
IVN-DOG LD50:470 MG/KG	ARZNAD 15,618,1965
IPR-CAT LD50:500 MG/KG	BJIMAG 13,51,1956
ORL-RBT LD50:5 GM/KG	NTIS** OTS0520699
ORL-RBT LD50: 1040 MG/KG	VETNAL 61(12),68,1985
SKN-RBT LD50:4720 MG/KG	AIHAAP 30,470,1969
IPR-RBT LD50:1 GM/KG	BJIMAG 13,51,1956
IVN-RBT LD50:1800 MG/KG	ARZNAD 15,618,1965
IVN-GPG LD50:1050 MG/KG	ARZNAD 15,618,1965

Target organ data

Behavioral (somnolence)

Behavioral (muscle weakness)

Liver (other changes)

Kidney, ureter, bladder (other changes in urine composition)

Endocrine (effect on menstrual cycle)

Blood (Changes in cell count)

Paternal effects (spermatogenesis)

Maternal effects (other effects on female)

Effects on fertility (post-implantation mortality)

Effects on embryo or fetus (extra embryonic structures)

Effects on embryo or fetus (fetotoxicity)

Specific developmental abnormalities (body wall)

Specific developmental abnormalities (musculoskeletal system)

Specific developmental abnormalities (gastrointestinal system)

Nutritional and gross metabolic (weight loss or decreased weight gain)

Only selected registry of toxic effects of chemical substances (RTECS) data is presented here.

12. ECOLOGICAL INFORMATION

Data not yet available.

13. DISPOSAL CONSIDERATION

This combustible material may be burned in a chemical incinerator equipped with an afterburner and Scrubber. Observe all federal, state, and local environmental regulations.

14. TRANSPORT INFORMATION

Contact Nanonex Corporation for transportation information.

15. REGULATORY INFORMATION

European information

EC index #: 616-001-00-X

Toxic

R 61

May cause harm to the unborn child.

R 20/21

Harmful by inhalation and in contact with skin.

R 36

Irritating to eyes.

S 45

Do not breathe dust.

S 24/25

Avoid contact with skin and eyes.

In case of accident or if you feel unwell, seek medical advice immediately.

Reviews, standards, and regulations

OEL=MAK

ACGIH TLV-NOT CLASSIFIABLE AS A HUMAN CARCINOGEN DTLVS* TLV/BEI,1999

ACGIH TLV-TWA 10 PPM (SKIN) DTLVS* TLV/BEI,1999

IARC CANCER REVIEW:HUMAN LIMITED EVIDENCE IMEMDT 47,171,1989

IARC CANCER REVIEW:ANIMAL INADEQUATE EVIDENCE IMEMDT 47,171,1989

IARC CANCER REVIEW:HUMAN INADEQUATE EVIDENCE IMEMDT 71,545,1999

IARC CANCER REVIEW:ANIMAL NO EVIDENCE IMEMDT 71,545,1999

IARC CANCER REVIEW:GROUP 3 IMEMDT 71,545,1999

IARC CANCER REVIEW:ANIMAL LIMITED EVIDENCE IMEMDT 19,461,1979

IARC CANCER REVIEW:ANIMAL LIMITED EVIDENCE IMEMDT 71,1181,1999

IARC CANCER REVIEW:HUMAN NO ADEQUATE DATA IMEMDT 19,461,1979

IARC CANCER REVIEW:HUMAN NO ADEQUATE DATA IMEMDT 71,1181,1999

IARC CANCER REVIEW:GROUP 3 IMEMDT 71,1181,1999

MSHA STANDARD-AIR:TWA 10 PPM (30 MG/M3) (SKIN) DTLVS* 3,90,1971

OSHA PEL (GEN INDU):8H TWA 10 PPM (30 MG/M3) (SKIN) CFRGBR 29,1910.1000,1994

OSHA PEL (CONSTRUC):8H TWA 10 PPM (30 MG/M3) (SKIN) CFRGBR 29,1926.55,1994

OSHA PEL (SHIPYARD):8H TWA 10 PPM (30 MG/M3) (SKIN) CFRGBR 29,1915.1000,1993

OSHA PEL (FED CONT):8H TWA 10 PPM (30 MG/M3) (SKIN) CFRGBR 41,50-204.50,1994

OEL-AUSTRALIA: TWA 10 PPM (30 MG/M3), SKIN, JAN1993

OEL-AUSTRIA: 10 PPM (30 MG/M3), SKIN, JAN1999

OEL-BELGIUM: TWA 10 PPM (30 MG/M3), SKIN, JAN1993

OEL-DENMARK: TWA 10 PPM (30 MG/M3), SKIN, JAN1999

OEL-FINLAND: TWA 10 PPM (30 MG/M3), STEL 20 PPM (60 MG/M3), SKIN, JAN1999

OEL-FRANCE: VME 10 PPM (30 MG/M3), SKIN, JAN1999

OEL-GERMANY: MAK 20 PPM (60 MG/M3), SKIN, JAN1999

OEL-HUNGARY: TWA 10 MG/M3, STEL 20 MG/M3, SKIN, JAN1993

OEL-JAPAN: OEL 10 PPM (30 MG/M3), SKIN, 2B CARCINOGEN, JAN1999

OEL-THE NETHERLANDS: MAC-TGG 10 PPM (30 MG/M3), SKIN, JAN1999

OEL-THE PHILIPPINES: TWA 10 PPM (30 MG/M3), SKIN, JAN1993

OEL-POLAND: MAC(TWA) 10 MG/M3, MAC(STEL) 60 MG/M3, JAN1999

OEL-RUSSIA: TWA 10 PPM, STEL 10 MG/M3, SKIN, JAN1993

OEL-SWEDEN: NGV 10 PPM (30 MG/M3), KTV 15 PPM (45 MG/M3), SKIN, JAN1999

OEL-SWITZERLAND: MAK-W 10 PPM (30 MG/M3), KZG-W 20 PPM (60 MG/M3), SKIN, JAN1999

OEL-TURKEY: TWA 10 PPM (30 MG/M3), SKIN, JAN1993

OEL-UNITED KINGDOM: TWA 10 PPM (30 MG/M3), STEL 20 PPM, SKIN, SEP2000

OEL IN ARGENTINA, BULGARIA, COLOMBIA, JORDAN, KOREA CHECK ACGIH TLV;

OEL IN NEW ZEALAND, SINGAPORE, VIETNAM CHECK ACGIH TLV

NIOSH REL TO DIMETHYLFORMAMIDE-AIR:10H TWA 10 PPM (SK)

NIOSH* DHHS #92-100,1992

NOHS 1974: HZD 26560; NIS 64; TNF 3115; NOS 71; TNE 69191

NOES 1983: HZD 26560; NIS 85; TNF 6209; NOS 93; TNE 124683; TFE 16011

NOHS 1974: HZD 81235; NIS 50; TNF 7856; NOS 63; TNE 102100

NOES 1983: HZD X7211; NIS 46; TNF 7688; NOS 63; TNE 161259; TFE 84819

EPA TSCA SECTION 8(B) CHEMICAL INVENTORY

EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES

EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001

EPA GENETOX PROGRAM 1988, NEGATIVE: SHE-CLONAL ASSAY; SPERM MORPHOLOGY-MOUSE

EPA GENETOX PROGRAM 1988, NEGATIVE: IN VITRO UDS IN RAT LIVER

EPA GENETOX PROGRAM 1988, INCONCLUSIVE: MAMMALIAN MICRONUCLEUS

EPA TSCA SECTION 8(B) CHEMICAL INVENTORY

EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES ON EPA IRIS DATABASE

EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JAN 2001

NTP TOXICITY STUDIES, RPT# TOX-22, OCT 2000

OSHA ANALYTICAL METHOD #ID-66

U.S. INFORMATION

This product is subject to SARA SECTION 313 reporting requirements.

16. OTHER INFORMATION

HMIS ratings: health – 2 flammability – 3 reactivity – 0

NFPA ratings: health – 2 flammability – 3 reactivity – 0

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. Nanonex shall not be held liable for any damage resulting from handling or from contact with the above product.