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***** IDENTIFICATION *****

NAME: 4922N SYNONYMS: SILVER COMPOSITION.
CHEM.FAMILY: Mixture. FORMULA: Proprietary.

MANUFACTURER: INFORMATION & EMERGENCY TELEPHONE NOS:
E.I.DuPont de Nemours & Co. INFORMATION: Product: (800)441-7515
Electronics Department EMERGENCIES: Medical: (800)441-3637
Wilmington, De 19898 Transport (CHEMTREC): (800)424-9300

All Ingredients in This Product are TSCA Listed/Reported.

***** PHYSICAL DATA *****

FORM: Viscous Liquid. ODOR: Sweet Aromatic.
APPEARANCE: Gray. SOLUBILITY IN WATER: Slight.

***** COMPONENTS *****

Material(s):	CAS#	V.P. mm Hg @ 20C	Weight %
1-Methoxy-2-Propanol Acetate.	108-65-6	3.7	10 - 30%
Silver (Metallic).	7440-22-4		> 60%
Acrylic Resin.	65859-05-4		5 - 10%

4922N/A01
01/26/07

***** HAZARDOUS REACTIVITY *****

INSTABILITY:

The product is normally stable.

INCOMPATIBILITY:

Avoid contact with:

Oxidizing agents; Acids; Bases; Acetylene; Ammonia; Hydrogen peroxide; Halogens; Chlorine trifluoride; Oxidizable materials; Nitric acid; Ethanol; Combustible materials; Strong bases; Strong acids; Strong oxidizers; Peroxides; Strong oxidizing agents; Halocarbons; Ethyleneimine; Oxalic acid; Tartaric acid; Bromoazide.

DECOMPOSITION:

Decomposition products:

Carbon Dioxide (CO₂); Metal fumes; Metal oxides; Carbon Monoxide (CO); Water; Methyl acrylate; Ethyl methacrylate.

POLYMERIZATION:

The product does not normally polymerize significantly.

***** FIRE & EXPLOSION DATA *****

FLASHPOINT: 123 F Closed cup

FIRE & EXPLOSION HAZARDS:

KEEP AWAY FROM SPARKS AND OPEN FLAMES. Do not smoke in area with open product;

If the product may be heated above its flashpoint during processing, remove sources of ignition such as open sparks, flames or static discharge to prevent vapor ignition.

EXTINGUISHING MEDIA:

Water spray, dry chemical or carbon dioxide.

SPECIAL FIREFIGHTING INFORMATION:

Toxic decomposition products may form under fire conditions. (See Decomposition Section.);
Wear full protective clothing and a full facepiece, positive pressure, self-contained breathing apparatus (SCBA);
Decontaminate contaminated clothing and equipment with soap and water. Dispose of residues per federal, state, and local regulation. (See Waste Disposal Section.).

***** HEALTH HAZARD INFORMATION *****

OVERVIEW: The most likely routes of worker exposure to components of this product are skin contact and inhalation.

Skin irritation and/or other effects of skin contact are easily avoided by: using proper gloves (See "Protection Information" section below); not touching exposed skin (like face, neck) or clothing with contaminated gloves; using proper techniques for removing gloves; washing affected areas immediately if skin contact occurs; washing hands before leaving the work area.

Inhalation exposure would occur by breathing the volatile components of this product. Volatile components begin to evaporate at room temperature when the product container is opened. Volatile component evaporation also occurs when the worker uses the product at room temperature, such as: while "thinning" the product; when mixing the product with a spatula; while dispensing the product onto a printing screen or stencil; during the screen printing or stenciling operation; and when removing the product from the equipment. Because of the low vapor pressures of the solvents and vehicles used in this product, evaporation of volatile components at room temperature is expected to be very slow.

However, the concentration of volatile components may increase under other conditions. Printing very large substrate surfaces or processing higher volumes or parts may increase the amount of available volatile components. Also, during drying (90 - 150 deg Celsius), elevated temperatures cause more rapid generation of volatile components from the printed substrates. Consideration should also be given to over-exposure to other chemicals used in the operation, for example, solvents used to clean equipment or to thin the product are additional sources of volatile substances.

Local ventilation, "plumbed-in" equipment ventilation and well-designed enclosures around equipment -like mixers, drying ovens, screen printers and laser trimmers- are effective ways to limit worker inhalation exposure where necessary. Also, hand-mixing of product should be done with local ventilation or in a fume hood where vapors and volatile components would be kept out of the worker's breathing zone. Personal protective equipment (e.g. cartridge respirator) also may be effective in reducing exposure if necessary. Well-designed area and personal air-sampling and analysis can show if exposures are within established limits. Discharge from the ventilation system(s) should comply with all local, state and federal laws, regulations and permits.

In addition to meeting exposure limits, significant differences in overall exposure can be made by practical steps:

- * Inhalation - minimize by keeping closed containers of products, solvents, and solvent-dampened

- clean wipes;
- * Skin - avoid contact by selecting proper gloves and using them properly;
 - * Eyes - wear chemical safety glasses when handling product, solvents and waste materials, and where there is potential for splashing, wear chemical goggles or face shield.
 - * Ingestion - avoid by washing hands before eating, drinking or smoking and restricting these activities to outside the work area.

PRINCIPAL HEALTH EFFECTS:

>>>1-Methoxy-2-Propanol Acetate

Toxic effects of repeated or prolonged animal exposures include: BY INHALATION: Renal effects; Degeneration of the olfactory epithelium; Hypothermia; Central nervous system effects; Toxic effects of chronic animal tests include: BY INHALATION: Lethargy/inactivity; ****Additional animal tests have shown: No data available to define carcinogenic potential; Mutagenicity negative in Ames Test; No genetic damage in bacterial or mammalian cell cultures; No developmental toxicity; Not tested for genetic damage in animals; No animal data available to define reproductive toxicity. ****Human health effects of overexposure may include: BY SKIN CONTACT: Skin irritation with discomfort or rash; BY EYE CONTACT: May cause corneal injury; Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Drowsiness; Lightheadedness; Incoordination; Wheezing; Nonspecific discomfort, e.g., nausea, headache or weakness; Dizziness; There are no reports of human sensitization; BY INGESTION: Headache; Drowsiness; Incoordination; Nausea; May cause irritation; Dizziness. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY SKIN CONTACT: Dizziness; Drowsiness; Redness; BY INHALATION: Irritation of the upper respiratory passages with coughing and discomfort; Shortness of breath; Liver damage; Kidney damage.

>>>Silver (Metallic)

****Toxic effects described in animals include: Liver damage. ****Additional animal tests have shown: Genetic damage in mammalian cell cultures; No genetic damage in bacterial cell cultures; No animal test reports are available to define carcinogenic, developmental, or reproductive hazards. ****Human health effects of overexposure may include: BY SKIN CONTACT: May cause irritation; BY EYE CONTACT: May cause irritation; Photophobia; BY INHALATION: Irritation of the

respiratory tract; BY INGESTION: Irritation of digestive tract; BY CONTACT, INHALATION, OR INGESTION: Argyria, a blue-gray discoloration of the skin, mucous membranes, inner surface of eyelids, cornea or lens. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY SKIN CONTACT: Dermatitis. ***In addition: There is no effective treatment for argyria. Cases of argyria have not resulted from exposure to silver concentrations in air of less than 0.01 mg/m³; Inhalation of fumes of this metal may cause metal fume fever.

>>>Acrylic Resin

****Toxic effects described in animals include: Slight skin irritation; Slight eye irritation. ****Additional animal tests have shown: BY CONTACT, INHALATION, OR INGESTION: No animal data available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of this material. ****Human health effects of overexposure may include: Nonspecific discomfort, e.g., nausea, headache or weakness; Eye irritation with discomfort, tearing, or blurring of vision; Irritation of the upper respiratory passages; Allergic skin rashes; Dizziness. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY CONTACT, INHALATION, OR INGESTION: No acceptable information to confidently predict effects of chronic human exposure.

Individuals may have increased susceptibility to the hazards of overexposure to ingredient(s) of this product if they have pre-existing diseases of the:

Skin; Central nervous system; Eyes; Spleen; Lungs; Liver; Kidneys.

ANIMAL DATA:

>>>1-Methoxy-2-Propanol Acetate

Inhalation 6 hr LC50 [Rats]:	4,345 ppm
Skin LD50 [Rabbits]:	5,000 mg/kg
Oral LD50 [Female Rats]:	8,532 mg/kg
Oral LD50 [Male Rats]:	10,000 mg/kg.

>>>Silver (Metallic)

Inhalation 4 hr LC50 [Rat]:	No information found
Skin Absorption LD50 [Rabbit]:	>2,000 mg/kg
Oral LD50 [Mouse]:	>5,000 mg/kg.

>>>Acrylic Resin

INHALATION 1 hr LC50 [Rat] : 2 mg/L
 SKIN Absorption LD50 [Rabbit]: >3,000 mg/kg
 ORAL LD50 [Rat] : >5,000 mg/kg.

CARCINOGENICITY LISTING:

No ingredients of this product are designated by IARC, NTP, OSHA, ACGIH or Dupont as potential carcinogens.

EXPOSURE LIMITS:

Workplace exposures should be kept below the following limits:

Name/Units	AIHA		ACGIH		OSHA	
	8hr	15min	8hr	15min	8hr	15min
METHYL ACRYLATE						
Units: ppm			2	(S)	10	(S)
Silver, Metallic as Ag						
Units: mg/m3			0.1		0.01	
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE						
Units: ppm	100					

Also, DuPont has established and observes the following limits:

Name/Units	12 hr	8hr	15min	Ceiling
METHYL ACRYLATE				
Units: ppm	2	2		(S)
ETHYL METHACRYLATE				
Units: ppm		25		
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE				
Units: ppm		10	100	

NOTES ON EXPOSURE LIMITS:

PELs - OSHA Permissible Exposure Limits - 29 CFR 1910.1000, Subpart Z, or specific substance standards;
 TLVs - ACGIH Threshold Limit Values - published by American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Cincinnati, OH 45211;
 WEELs- AIHA Workplace Environmental Exposure Limits - published by the American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031;
 AELs - Dupont Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits are lower than AEL in effect, government limits shall take precedence;
 (C) = "ceiling", limit not to be exceeded for any time period;

(S) = "skin" , skin absorption may contribute significantly to the ingredient's internal toxicity.

***** FIRST AID INSTRUCTIONS *****

Skin Contact: For skin contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.

Eye Contact: For eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Inhalation: If inhaled, remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

NOTES TO PHYSICIAN: Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional substances. Activated charcoal may induce vomiting, but may be given after emesis or lavage to absorb toxic additives. THIS MATERIAL MAY MAKE THE HEART MORE SUSCEPTIBLE TO ARRHYTHMIAS. Catecholamines such as adrenaline, epinephrine and other compounds having similar effects, should be reserved for emergencies and then used only with special caution.

***** PROTECTION INFORMATION *****

Respiratory Protection:

If respirators are needed to meet applicable limits, a respiratory protection program up to the level of OSHA Standard 29 CFR 1910.134 is mandatory. This includes air monitoring, selection, medical approval, training, fit testing, inspection, maintenance, cleaning, storage, etc.. Selection of a suitable respirator will depend on the properties of the contaminant(s) and their actual or expected air concentration(s) versus applicable limits. Consult ANSI Standard Z88.2 for decision logic to select appropriate NIOSH/MESA approved respirators;

Respirators with organic vapor cartridges provide adequate protection, within use limitations, for the following components in this product:
Toluene;

Gloves:

Gloves should be used when the possibility of skin contact exists;

The suitability of a particular glove and glove material should be determined as part of an overall glove program. Considerations may include chemical breakthrough time; permeation rate; abrasion, cut and puncture resistance; flexibility; duration of contact; etc.

Recommended glove materials:

NBR (nitrile-butadiene rubber), polyethylene or vinyl for very limited exposure based on Du Pont experience. Because the product is a complex mixture, glove testing may be appropriate as part of the glove selection process.

Other Protection Practices:

Appropriate eye protection such as chemical splash goggles should be used if the possibility of eye contact exists; Protective outer clothing should be used where the possibility of body contact exists. Contaminated work clothing should not be allowed out of the workplace; Do not smoke, consume or store food or drinks in areas where the product is handled or stored. After handling the product, wash hands thoroughly before leaving the work area;

Additional engineering controls, work practices and training may be required depending on exposure levels. These are discussed in the OSHA Respiratory Protection Standard (29 CFR 1910.134) and OSHA Hazard Communication Standard (29 CFR 1910.1200);

Do not breath dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.

***** DISPOSAL INFORMATION *****

Spill, Leak or Release:

FOR SMALL SPILLS, absorb on rags, sand or other absorbant material;

FOR LARGE SPILLS, get workers out of affected area. If flammable liquids or vapors may be present, turn off electrical devices or other sources of sparks or flames. WEAR PROTECTIVE EQUIPMENT. Use supplied-air respiratory protection if vapor concentrations are not known;

Contain spill at source by diking or absorbing with sand. Do

not allow spill to spread to or intentionally flush to sewer or ground. Wash area thoroughly. Adequately ventilate area; Spill residue, cleaning rags and absorbant may be refined to recover the precious metal content.

Waste Disposal:

Components of this product may be considered hazardous; Waste product may be refined to recover precious metal content.

***** PRODUCT INFORMATION *****

Contaminated Items:

Empty product containers, contaminated clothing and cleaning materials, etc. should be considered hazardous until decontaminated or properly disposed of. (See Waste Disposal Section.).

***** ADDITIONAL INFORMATION *****

SPECIAL NOTES:

The following ingredients are subject to the reporting requirements of section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

INGREDIENT(S)	Weight %
Silver, 7440-22-4	> 60%

CALIFORNIA PROPOSITION 65: WARNING: This product contains chemicals known to the state of California to cause cancer, birth defects, or other reproductive harm:

INGREDIENT(S)	Weight %
Toluene, 108-88-3	< .1%

This product is a physical mixture. The health effects information about this product is based on the individual ingredients; The data in this Material Safety Data Sheet relates only to the specific product designated herein and does not relate to its use in combination with any other material or in any process.

Canadian WHMIS Classification (Untested Mixture):
Class B, Division 3
Class D, Division 2, Subdivision B.

Date of latest MSDS revision: 01/26/07

Person Responsible for MSDS:

Environmental Engineer - MSDS
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