MATERIAL SAFETY DATA SHEET

DUPONT®

***** IDENTIFICATION *****

NAME: 7164 SYNONYMS: CONDUCTOR COMPOSITION.
CHEM.FAMILY: Mixture. FORMULA: Proprietary.

MANUFACTURER:
E.I.DuPont de Nemours & Co.
Electronics Department
Wilmington, De 19898

INFORMATION & EMERGENCY TELEPHONE NOS:
INFORMATION: Product: (800)441-7515
EMERGENCIES: Medical: (800)441-3637
Transport (CHEMTREC): (800)424-9300

All Ingredients in This Product are TSCA Listed/Reported.

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

FORM: Viscous Liquid. ODOR: Mild Sweet.

APPEARANCE: Blue-gray. SOLUBILITY IN WATER: Insoluble.

***** COMPONENTS *****

Material(s):	CAS#	V.P. mm Hg @ 20C	Weight %
Silicone Compound.		< 5.	1 - 5%
Benzyl Alcohol.	100-51-6	0.1	30 - 60%
Polyether Resins.			10 - 30%
Antimony Compound.	68187-54-2		10 - 30%
Mica.	12001-26-2		10 - 30%

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

INSTABILITY:
The product is normally stable.

INCOMPATIBILITY:
Avoid contact with:
Acids; Bases; Oxidizing agents; Aluminum; Oxidizable materials; Alkalies; Strong acids; Strong oxidizers.

DECOMPOSITION:

Decomposition products:
Carbon Dioxide (CO_2); Formaldehyde; Metal oxides; Carbon Monoxide (CO); Mica particles; Water; Hydrogen chloride; Carbon oxides; Silicon oxides.

POLYMERIZATION:
The product does not normally polymerize significantly.

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

FLASHPOINT: 201 F Closed cup

FIRE & EXPLOSION HAZARDS:
The product is not an unusual fire or explosion hazard.

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 overexposure 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. Al so, hand-mixing of product should be done with local ventila tion 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 expo sures are within established limits. Discharge from the ven tilation 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:

>>>Silicone Compound
****Toxic effects described in animals include: Untested for animal sensitization; BY SKIN CONTACT: Not an irritant; BY INGESTION: Discomfort. ****Additional animal tests have shown: Tests in animals demonstrate no developmental toxicity; No reproductive toxicity based on testing; No animal data available to define carcinogenicity; No animal data available to define mutagenicity. ****Human health effects of overexposure may include: BY SKIN CONTACT: There are no reports of human sensitization; BY EYE CONTACT: Eye irritation with discomfort, tearing, or blurring of vision; BY INGESTION: Stomach pain; BY CONTACT, INHALATION, OR INGESTION: Systemic toxicity unlikely; Significant skin permeation appears unlikely. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY INHALATION: Irritation of the upper respiratory passages; BY CONTACT, INHALATION, OR INGESTION: No acceptable information to confidently predict effects of chronic human exposure.

>>>Benzyl Alcohol
****Toxic effects described in animals include: BY SKIN CONTACT: Severe eye irritation; Slight skin irritation; Tremors; Muscular paralysis; No skin sensitization; Incoordination; BY INHALATION: Pulmonary effects; Weight loss; Lethargy/inactivity; BY INGESTION: Altered respiratory rate; Weight loss. ****Additional animal tests have shown: Developmental toxicity at dosage levels showing maternal toxicity; Not tested for genetic damage in animals; Genetic damage in mammalian cell cultures; No genetic damage in bacterial cell cultures; No carcinogenic toxicity; No animal data available to define reproductive toxicity. ****Human health effects of overexposure may include: BY SKIN CONTACT: Infrequently associated with skin sensitization in humans; Skin irritation with discomfort or rash; Allergic skin rashes; BY EYE CONTACT: Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Irritation of the upper respiratory passages; BY INGESTION: Temporary nervous system depression with anaesthetic effects, e.g., dizziness, headache, confusion, incoordination, and loss of consciousness; Nonspecific discomfort, e.g., nausea, headache

or weakness. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY SKIN CONTACT: Prolonged contact may cause absorption by skin in amounts capable of producing toxic systemic effects; BY INGESTION: Coma or fatality from gross overexposure.

>>>Polyether Resins
****Additional animal tests have shown: Studies have shown that this substance has produced in vitro mutagenic effects. ****Human health effects of overexposure may include: BY SKIN CONTACT: Irritation; BY EYE CONTACT: Excess redness and swelling of the conjuctiva may occur; Pain; Irritation; BY INHALATION: Irritation. ****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. ***In addition: BY SKIN CONTACT: May cause skin sensitization based on reports for humans and animals exposed to related epoxy resins; BY INHALATION: Respiratory sensitization has been reported for workers exposed to related epoxy resins.

>>>Antimony Compound
****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: BY EYE CONTACT: Irritation; BY INHALATION: Coughing; Irritation of the upper respiratory passages; Irritation of the nose and throat. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY INHALATION: Loss of sense of smell (anosmia); Dizziness; Chest pain; Nausea; Sleeplessness; Weight loss; Headache. ***In addition: __ Acute exposure to antimony ("Sb") by INHALATION in humans can cause skin rash with pustules, ("antimony spots") and eye inflammation, conjunctivitis. __ Chronic INHALATION exposure by humans to Sb can cause lung inflammation, bronchitis, emphysema, increased blood pressure, altered EKG readings, heart muscle damage. __ INGESTION: Sb is considered to have high acute toxicity based on animal studies.

>>>Mica
****Additional animal tests have shown: No animal data available to define the carcinogenicity, developmental, reproductive or mutagenic hazards of this material. ****Human health effects of overexposure may include: BY SKIN CONTACT: Skin irritation with itching, burning, redness, swelling or rash; Significant skin permeation appears unlikely; BY EYE

CONTACT: Eye irritation with discomfort, tearing, or blurring of vision; BY INHALATION: Irritation of the nose and throat; Sneezing; Runny nose; Sore throat. ****Human effects of higher level acute, repeated or chronic overexposure may include: BY INHALATION: Impaired lung function; Chronic lung disease.

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

ANIMAL DATA:

>>>Silicone Compound
Inhalation LC50 [Rats]: >535 mg/L
Skin Absorption [Rabbits]: >2,000 mg/kg
Oral LD50 [Rats]: >5,000 mg/kg.

>>>Benzyl Alcohol
Inhalation 4-hr ALC [Rat]: >250 ppm
Skin absorption LD50 [G. pig]: < 5 mL/kg
Oral LD50 [Rat]: 1250 mg/kg.

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

>>>Antimony Compound
Inhalation 4 hr LC50 [Rat]: No information found
Skin Absorption LD50 [Rabbit]: No information found
Oral LD50 [Rat]: No information found.

>>>Mica
Inhalation 4hr LC50 [Rat]: > 24 mg/L
Skin Absorption LD50 [Rabbit]: No information found
Oral LD50 [Rat]: No information found.

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:

.	AIHA		ACGIH		OSHA	
Name/Units	8hr	15min	8hr	15min	8hr	15min
Benzyl Alcohol						
Units: ppm	10					
Antimony Compounds (as Sb)						
Units: mg/m3			0.5		0.5	
Mica, respirable dust						
Units: mg/m3			3		3	

Also, DuPont has established and observes the following limits:

Name/Units	12 hr	8hr	15min	Ceiling
Benzyl Alcohol				
Units: ppm		10		
Antimony Compounds (as Sb)				
Units: mg/m3		0.2		

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 physican. 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. If not breathing, give artificial respiration. If breathing is

Inhalation: 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: Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400ml water and mix thoroughly. Administer 5ml/kg, or 350ml for an average adult.

***** 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 respitators;

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 Commmunication 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 considered hazardous. (See Waste Disposal Section.).

Waste Disposal:
Components of this product may be considered hazardous;
Consult applicable Federal, State, and local regulations for allowable disposal methods.

***** 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 require-

ments of section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

INGREDIENT(S)	Weight %
Antimony Compound(s)	10 - 30%

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):
D2B.

Date of latest MSDS revision: 10/08/12

Person Responsible for MSDS:

Environmental Engineer - MSDS
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