

Material Safety Data Sheet: nora[®] 685 Adhesive

Date: 01.04.2011

1) Chemical Product and Company Identification

Product details:

Manufacturer/Supplier:
 nora systems, Inc.
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Trade Name and Synonyms: 685 Conductive Acrylic Adhesive
 Product Description: Waterborne conductive acrylic dispersion adhesive

2) Composition/Information on Ingredients

Exposure guidelines:

Material	% by Weight	CAS number	TLV	ACGIH TLV-TWA	OSHA PEL-STEL
Titanium dioxide	10-15	13463-67-7	15 mg/M ³	15 mg/M ³	10 mg/M ³

3) Hazardous Identifications

Emergency overview: Can cause eye irritation. Can cause severe respiratory irritation. Can cause severe central nervous system depression. Smoking and/or consumption of alcoholic beverages may increase toxic effects of this material.

Potential health effects:

Eye contact: May cause severe irritation. May damage eyes.

Skin contact: Prolonged exposure may cause skin irritation May cause drying or flaking of skin. Skin absorption of material may cause systemic toxicity.

Ingestion: Ingestion may cause severe injury to intestinal tract, liver, kidneys, stomach, throat, lungs, mouth and mucous membranes. Harmful or fatal if swallowed. Do not ingest.

Inhalation: Overexposure may cause severe respiratory tract irritation. Prolonged overexposure may cause central nervous system depression with narcotic effects (headaches, dizziness, unconsciousness). Keep exposure below OSHA exposure limits.

4) First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin: Wash with soap and water. Get medical attention if irritation develops or persists. Immediately remove contaminated clothing.

Ingestion: If swallowed, seek medical attention immediately. Do not induce vomiting. Can enter lungs and cause damage.

Inhalation: Remove to fresh air. Restore breathing if necessary. Get medical attention. This material can cause lung damage.

Do not leave victim unattended.

5) Fire-Fighting Measures and Fire Hazards

OSHA flammability class: IIIB
Flashpoint: >200°F, >93°C (Setaflash method)
Lower explosive limit: Not available
Upper explosive limit: Not available

General hazard: Toxic gases will form upon combustion. Closed containers may explode when exposed to extreme heat. Vapors are heavier than air and may travel a considerable distance.

Fire fighting equipment: Respiratory and eye protection required for firefighting personnel. Full protective equipment and a self-contained breathing apparatus (SCBA) should be used in all indoor fires and any large outdoor fires.

Hazardous combustion products: Carbon monoxide, carbon dioxide, smoke and fumes, hydrocarbon fragments.

6) Accidental Release Measures (Spills or Leaks)

General instructions: Keep all sources of ignition and hot metal surfaces away from spill. Isolate the danger area and keep out unauthorized personnel. Stop spill if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see section 8). Prevent additional discharge of material. Notify the appropriate authorities immediately. Contain spilled liquid with sand, earth or other non-combustible inert absorbent material. Prevent run-off from entering storm sewers, ditches or waterways. Transfer absorbed waste material into properly identified drums. Treat waste material with same precautions as the adhesive.

Do not use solvent or flammable liquid to help clean up an accidental release. Release to the environment may be reportable under environmental regulations.

7) Handling and Storage

Handling: Open container slowly to relieve any pressure. Do not enter confined spaces such as tanks without following proper entry procedures as described in OSHA regulations at 29 CFR 1910.146. Do not breathe vapors. The use of respiratory protection is recommended when airborne concentrations of vapor exceed exposure guidelines. Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Wear appropriate protective gloves and clothing to prevent prolonged or repeated skin contact. Avoid contact with eyes.

Storage: Keep containers tightly closed. Use and store this material in a cool, dry, well-ventilated area away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flames". Store only in approved containers. Protect containers against physical damage. Indoor storage should meet OSHA standards and appropriate fire codes.

Empty containers: May contain liquid and vapor residue and may be dangerous. Do not pressurize, cut weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in accordance with governmental regulations. Wash with soap and water before eating, drinking, smoking or using toilet facilities.

Consult NFPA and OSHA codes.

8) Exposure Controls, Personal Protection

Respiratory protection: A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge may be used under conditions where airborne concentrations are expected to exceed exposure guidelines. Protection provided by air purifying respirators is limited. Refer to respirator manufacturer's selection guide for appropriate respirator for conditions encountered. If in doubt, seek the advice of an industrial hygienist or safety professional for appropriate air purifying respiratory equipment.

Use positive pressure air supplied respirator if there is potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection. When respiratory protection is used, a respiratory protection program meeting OSHA regulations at 29 CFR 1910.134 must be followed.

Skin protection: The use of gloves impermeable to the specific material handled is advised to prevent prolonged or repeated skin contact. Where splashing is likely to occur, aprons impermeable to the specific material may be worn. Refer to the glove and protective clothing manufacturer's selection guide for appropriate material.

Eye protection: Approved chemical splash goggles should be worn to safeguard against potential eye contact, irritation or injury. Where splashing is likely to occur, hard hats and face shields may be used to provide additional protection. Eye wash facilities should be available in the work area.

Engineering controls: Provide sufficient mechanical ventilation to maintain exposure below TLV(s). The use of local exhaust ventilation is recommended. Provide mechanical ventilation of confined spaces. If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure guidelines, additional ventilation or exhaust systems may be required.

9) Physical and Chemical Properties

Appearance and odor:	Grey paste with low odor
Specific gravity:	1.02 (68°F – 20°C)
pH:	6.5-8.5
Boiling point:	Approx. 212°F, 100°C
Freezing point:	Approx. 32°F, 0°C
Soluble in water:	Soluble
% Solids (by weight):	71 ± 2%
% Volatile (by weight):	29 ± 2%
Vapor pressure (mm of mercury):	Same as water
Vapor density (air = 1):	Heavier than air
Evaporation rate (butyl acetate = 1):	Slower than butyl acetate
Evaporation rate (ethyl ether = 1):	Slower than ethyl ether

10) Stability and Reactivity

Chemical stability: Keep away from flames and spark producing equipment. Not dangerously unstable.

Incompatible materials: Strong oxidizing agents, strong reducing agents, acids, bases, or unstable chemicals, chloroform, nitric compounds, peroxides, sulfur dichloride, strong alkalis.

Hazardous decomposition products: Hazardous decomposition is unlikely to occur, but under fire or extreme heat conditions, carbon monoxide, carbon dioxide, smoke and fumes, and hydrocarbon fragments can be released.

Hazardous polymerization: Will not occur.

11) Toxicological Information

Material:	Skin (Dermal LD50):	Ingestion (oral LD50):
Titanium dioxide	>10 g/M ³ (Rat)	>24 g/kg Oral/Rat

Chronic: Liver and kidney damage from overexposure may cause central nervous system depression.

Chronic / carcinogenicity (cancer causing):

IARC: Group 2B - Possibly carcinogenic to humans. IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

OSHA: Not suspected as a human carcinogen.

NTP: Not suspected as a human carcinogen.

California (Proposition 65): No known carcinogenic or reproductive toxicity chemicals.

Other: None known.

12) Ecological Information

General notes: Do not allow product to reach ground water, water course or sewage system.

13) Disposal Considerations

Disposal: Incinerate at an EPA approved facility or dispose of in accordance with all federal, state/provincial and local regulations.

nora 685 is a hazardous waste if discarded (CFR., Vol 40, part 261, pgs. 51-114).

See Section 2, Page 1 of this MSDS for hazardous ingredients.

Proper waste disposal is the responsibility of the owner of the waste.

14) Transportation Information

D.O.T. / T.D.G.:

Not regulated: All packaged material must be labeled in accordance with DOT and OSHA standards.

15) Regulator Information

OSHA: Hazardous material by definition of hazard communication standard (29CFR 1910.1200).

Section 313: This product contains the following substances subject to the reporting requirements of Section 313 of TITLE III of Superfund Amendments and Reauthorization Act of 1986 and CFR Part 372: None known.

V.O.C.: 0 Lbs/Gal. (SCAQMD Rule 1168) 0 G/L

VHAP: 0 lb/lb solids

Hazard index:

- 0: Minimal Hazard
- 1: Slight Hazard
- 2: Moderate Hazard
- 3: Serious Hazard
- 4: Severe Hazard

HMIS ratings:

- Health = 1
- Flammability = 1
- Reactivity = 0

Personnel protection: Depends on application and ventilation.

TSCA: Components of this product are listed on the TSCA inventory.

WHMIS Information:

Class D, Division 2, Subdivision A

16) Other Information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

All employees or contractors, etc., who use this product must have access to this Material Safety Data Sheet.

PREPARED BY: nora systems, Inc.

17) Definitions

ACGIH : American Conference of Governmental Industrial Hygienists.

ASPIRATION HAZARD: The danger of drawing material into the lungs, leading to an inflammatory response that can be fatal.

CFR: Code of Federal Regulations (U.S.). A collection of regulations established by law.

CARCINOGEN: A material that either causes cancer in humans, or is considered capable of causing cancer in humans.

COMBUSTIBLE: A term used to classify certain materials with low flash points that ignite easily. For OSHA it has a flash point greater than 100°F (38°C) but below 200°F (93°C).

DOT: U.S. Dept. of Transportation.

FLAMMABLE: A material that gives off vapors that readily ignites at room temperatures. OSHA defines flammable as a material with a flash point less than 100°F (38°C).

FLASH POINT: The lowest point at which a liquid gives off sufficient vapor to form an ignitable mixture with air.

HAZARDOUS: Any substance or mixture of substances having properties capable of producing adverse effects on the health or safety of a human.

IARC: International Agency for Research on Cancer.

IRRITANT: A substance capable of causing an inflammatory effect on living tissue by chemical action at the site of contact.

LD50: Lethal Dose 50. The single dose of a substance that causes death of 50% of an animal population from exposure to the substance from any route other than inhalation.

LEL: Lower Explosive Limit. The lowest concentration of vapor that burns or explodes when an ignition source is present at ambient temperatures.

LFL: Lower Flammable Limit. See L.E.L.

MSHA: Mine Safety and Health Administration (U.S.).

NFPA: National Fire Protection Association (U.S.).

NIOSH: National Institute of Occupational Safety and Health (U.S.).

NTP: National Toxicology Program (U.S.).

OECD: Organization for Economic Co-operation and Development.

OSHA: The Occupational Safety and Health Administration (U.S.).

PEL-STEL: Permissible Exposure Limit, Short Term Exposure Limit.

SCBA: Self-contained breathing apparatus.

SYSTEMIC TOXICITY: Adverse effects induced by a substance which affects the body in a general manner rather than locally.

TDG: Transportation of Dangerous Goods (Canada).

TLV-TWA: Threshold Limit Value, Time Weighted Average.

TSCA: Toxic Substance Control Act.

TOXIC: Any chemical or material that has evidence of an acute or chronic health hazard and is listed in the NIOSH Registry of Toxic Effects of Chemical Substances.

VHAP: Volatile Hazardous Air Pollutant

V.O.C.: Volatile Organic Compound.

WHMIS: Workplace Hazardous Materials Information System (Canada).