



# Material Safety Data Sheet

DATE: 6/4/2013

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: PROTAL ARO PART A RESIN  
Product Use Description: Epoxy Resin  
Manufacturer / Importer/ Distributor: Denso North America  
9747 Whithorn Drive  
Houston, Texas 77095  
281-821-3355 (Office)  
281-821-0304 (Fax)  
Telephone: 1-281-821-3355 Corporate  
1-888-821-2300 Toll Free Number  
Emergency Telephone Number (24Hour): 1-801-629-0667

## 2. HAZARDS IDENTIFICATION

Emergency Overview  
**WARNING!**  
Irritant  
Causes eye and skin irritation.  
May cause allergic skin reaction  
May cause respiratory tract irritation.  
May cause abdominal pain, nausea, vomiting and diarrhea if swallowed.  
Heated material can cause thermal burns.  
May cause sensitization by skin contact.

Potential Health Effects  
Inhalation: Slightly irritating to the respiratory system.  
Ingestion: Not expected to be harmful under normal conditions of use.  
Eye contact: Irritating to eyes. Heated material can cause thermal burns.  
Skin contact: Irritating to skin. May cause sensitization by skin contact.  
Heated material can cause thermal burns.  
Chronic Health Hazard: Prolonged or repeated contact may irritate the skin, causing dermatitis.  
Not listed or regulated by IARC, NTP, OSHA, or ACGIH

Exposure guidelines  
Target Organs: Skin. Eyes. Respiratory system. Gastrointestinal tract.  
Symptoms: Repeated and/or prolonged exposure may cause respiratory tract irritation and coughing, skin irritation and redness, eye pain or irritation and watering and redness.

Potential environmental effects: No data is available.  
Aggravated Medical Condition: Pre-existing skin disorders may be aggravated by over-exposure to this product.  
See section 11 for more detailed toxicological information.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Components               | CAS Number  | Concentration |
|--------------------------|-------------|---------------|
| Epoxy Resin              | 25068-38-6  | 10-40%        |
| Petroleum Hydrocarbon    | Proprietary | 1-10%         |
| Aliphatic Glycidyl Ether | 68609-97-2  | 1-10%         |

CHEMICAL FAMILY : Epoxy Resin Mixture

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

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## 4. FIRST AID MEASURES

|                |  |
|----------------|--|
| General advice | Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.   |
| Eye contact    | Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.   |
| Skin contact   | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. For contact with hot product, flush contaminated skin with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze. Get medical attention immediately.   |
| Ingestion      | Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |
| Inhalation     | Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.  |

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## 5. FIRE-FIGHTING MEASURES

|  |   |
|--|---|
| Suitable extinguishing media                   | Alcohol-resistant foam.<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical.<br>Dry sand.<br>Limestone powder.   |
| Chronic Health Hazard                          | Decomposition products may include the following materials: carbon dioxides. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes.  |
| Special protective equipment for fire-fighters | Avoid contact with the skin. Fire-fighters should wear appropriate personal protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. |
| Further information                            | Do not allow run-off from fire fighting to enter drains or water courses.   |

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## 6. ACCIDENTAL RELEASE MEASURES

|                           |   |
|---------------------------|---|
| Personal precautions      | No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled materials. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).   |
| Environmental precautions | Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).   |
| Methods for cleaning up   | Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use absorbent with inert material. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal. |
| Additional advice         | Stop leak if without risk.  |

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## 7. HANDLING AND STORAGE

|                       |   |
|-----------------------|---|
| Handling              | Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking or smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breath vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| Storage               | Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.  |
| Technical Precautions | Do not store in reactive metal containers.  |

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

|   |   |
|---|---|
| Consult local authorities for accept exposure limits. | Product contains <100 ppm (PEL - 10 ppm, mist) Naphthalene  |
| Recommended monitoring procedures                     | If this product contains ingredients with exposure limits, personal workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.   |
| Engineering measures                                  | Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.  |
| Hygiene measures                                      | Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing or discard as necessary. Ensure that eyewash stations and safety showers are close to the workstation location. |



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|                                 |   |
|---------------------------------|---|
| Respiratory Protection          | Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicated this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.   |
| Eye Protection                  | Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. This may include, but is not limited to, safety glasses, goggles and face shields.  |
| Skin Protection                 | Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. This equipment may include, but is not limited to, impervious gloves, gauntlets, impervious shoes/boots, and protective clothing.<br>The breakthrough time of the selected protective glove(s), shoes, and clothing must be greater than the intended use period. |
| Environmental exposure controls | Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Environmental exposure controls may also include dikes or other liquid containment devices.  |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                        |                 |                           |                          |
|------------------------|-----------------|---------------------------|--------------------------|
| Form                   | Viscous Liquid. | Auto-ignition temperature | N/A                      |
| Color                  | Red.            | Odor threshold            | N/A                      |
| Odor                   | Irritating.     | Evaporation rate          | N/A                      |
| Flammable Limits       | N/A             | Viscosity                 | 140,000 cP @ 73oF (22oC) |
| Relative vapor density | N/A             | pH                        | 7                        |
| Relative Density       | 1.68            | Boiling point/range       | N/A                      |
| Vapor Pressure         | N/A             | Flash point               | N/A                      |
| Density at 70°F (21°C) | 14.0 lb/gal     | Water solubility          | Slight                   |

## 10. STABILITY AND REACTIVITY

|                                  |   |
|----------------------------------|---|
| Stability                        | The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.     |
| Conditions to avoid              | Strong oxidizers  |
| Materials to avoid               | Reactive or incompatible with the following materials:<br>Oxidizing materials<br>Strong acids<br>Strong alkalis |
| Other hazards                    | Reacts with considerable heat release with some curing agents.  |
| Hazardous decomposition products | Decomposition products may include the following materials:<br>Carbon oxides                                    |



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## 11. TOXICOLOGICAL INFORMATION

### Acute Health Hazard

|                                 |   |                |              |               |
|---------------------------------|---|----------------|--------------|---------------|
| Acute toxicity ingredient name  | 4,4'-isopropylidenediphenol-epichlorohydrin copolymer |                | Naphthalene  |               |
|                                 | LD50 Oral   | Rat            | 30,000 mg/kg | 490 mg/kg     |
|                                 | LD50 Dermal   | Rat            | >1,200 mg/kg | >20,000 mg/kg |
|                                 | LC50 Vapor  | Rat            |              | 170 ppm 4 hrs |
| Other toxicological information | Carcinogenicity                                       | Classification |              |               |

### Ingredient Name

|   |                |
|---|----------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin copolymer |                |
| ACGIH   | Not classified |
| IARC  | Not classified |
| NTP   | Not listed     |
| OSHA  | Not regulated  |
| EU  | Not classified |

|                           |   |
|---------------------------|---|
| Eye irritation/corrosion  | Irritating to the eye.  |
| Skin irritation/corrosion | Irritating to skin.   |
| Sensitization             | May cause sensitization by skin contact.                                |
| Inhalation                | Slightly irritating to respiratory tract.                               |
| Ingestion                 | Swallowing can cause abdominal irritation, nausea, vomiting & diarrhea. |
| Chronic Health Hazard     | The product or a component may be mutagenic, the data is inconclusive.  |

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

|                             |   |
|-----------------------------|---|
| Aquatic toxicity            | No data is available on the product itself. |
| Toxicity to other organisms | No data available.                          |

### Persistence and degradability

|                  |   |
|------------------|---|
| Biodegradability | No data is available on the product itself. |
| Mobility         | No data available.                          |
| Bioaccumulation  | No data is available on the product itself. |

## 13. DISPOSAL CONSIDERATIONS

|                |  |
|----------------|--|
| Waste disposal | The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contact with soil, waterways, drains and sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. |
|----------------|--|

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## 14. TRANSPORT INFORMATION

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation. For complete transportation information, contact an Denso customer service representative.

| Regulatory Information | UN/ID No. | Proper shipping name | Class or Division Packing group | Reportable Quantities |
|------------------------|-----------|----------------------|---------------------------------|-----------------------|
| CFR                    | N/A       | Non-regulated        | N/A                             | N/A                   |
| TDG                    | N/A       | Non-regulated        | N/A                             | N/A                   |
| IMO/IMDG               | N/A       | Non-regulated        | N/A                             | N/A                   |
| IATA                   | N/A       | Non-regulated        | N/A                             | N/A                   |

## 15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Components(s).  
None.

OSHA Hazard Communication Standard (29 CFR 1910.1 200) Hazard Class(es)  
Irritant. Sensitizer.

| Country     | Regulatory List | Notification                       |
|-------------|-----------------|------------------------------------|
| USA         | TSCA 8b         | All components listed or exempted. |
| Canada      | DSL             | All components listed or exempted. |
| EU          | EINECS          | All components listed or exempted. |
| Australia   | AICS            | All components listed or exempted. |
| Japan       | ENCS            | All components listed or exempted. |
| South Korea | KECI            | All components listed or exempted. |
| China       | IECSC           | All components listed or exempted. |
| Philippines | PICCS           | All components listed or exempted. |

HCS Classification Irritating material, Sensitizing material

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification  
Immediate Health Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level  
None.

EPA SARA Title III Section 302 Extremely Hazardous Substances  
None.

State regulations  
 Massachusetts RTK Substances - Naphthalene  
 New Jersey RTK Substances - Naphthalene.  
 Pennsylvania RTK Substances - Naphthalene  
 California Proposition 65 - WARNING: This product contains a chemical known to the State of California to cause cancer. Oxirane, (phenoxyethyl)- CAS 122-60-1, Naphthalene - CAS 91-20-6

WHMIS Hazard  
 Classification (Canada) Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists Canadian NPRI: Naphthalene.

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## 16. OTHER INFORMATION

### HMIS<sup>®</sup>

|                 |   |
|-----------------|---|
| Health          | 2 |
| Flammability    | 1 |
| Physical hazard | 0 |
| Chronic         |   |

**Caution:** HMIS<sup>®</sup> ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS<sup>®</sup> ratings are not required on MSDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS<sup>®</sup> ratings are to be used with a fully implemented HMIS<sup>®</sup> program. HMIS<sup>®</sup> is a registered mark of the National Paint & Coatings Association (NPCA). HMIS<sup>®</sup> materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

|                  |  |
|------------------|--|
| Prepared by      | Denso EH & S Department  |
| Telephone        | 1-281-821-3355 Corporate<br>1-801-629-0667 Emergency (24 hour) |
| Date of Issue    | 4-Jun-13   |
| Date of Printing | 4-Jun-13   |
| Version          | 1  |

### Notice to reader

The information provided herein was believed by Denso North America ("Denso") to be accurate at the time of preparation of prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Denso are subject to Denso's terms and conditions of sale. DENSO MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY DENSO, except that the product shall conform to Denso's specifications. Nothing contained herein constitutes an offer for the sale of any product.



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## 1. PRODUCT AND COMPANY IDENTIFICATION

|                                      |   |
|--------------------------------------|---|
| Product Name                         | PROTAL ARO PART B HARDENER  |
| Product Use Description              | Curing Agent Epoxy  |
| Manufacturer / Importer/ Distributor | Denso North America<br>9747 Whithorn Drive<br>Houston, Texas 77095<br>281-821-3355 (Office)<br>281-821-0304 (Fax) |
| Telephone                            | 1-281-821-3355 Corporate<br>1-888-821-2300 Toll Free Number   |
| Emergency Telephone Number (24Hour)  | 1-801-629-0667  |

## 2. HAZARDS IDENTIFICATION

|  |  |
|--|--|
| Emergency Overview   | <b>WARNING!</b><br>Corrosive. Irritant.<br>Toxic in contact with skin.<br>Harmful if inhaled or swallowed.<br>Severe respiratory irritant.<br>Severe skin irritant.<br>Severe eye irritant.<br>May cause sensitization by skin contact.<br>This product is hazardous according to OSHA 29 CFR 1910.1200. |
| Potential Health Effects                                   |  |
| Inhalation   | Can cause severe eye, skin and respiratory tract burns. May cause nose, throat, and lung irritation. Inhalation of vapors and / or aerosols in high concentration may cause irritation of respiratory system.  |
| Ingestion  | Harmful, if swallowed. If ingested, may cause severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.   |
| Eye contact  | Causes eye burns. May cause blindness. Severe eye irritation.  |
| Skin contact   | Toxic in contact with skin. Causes skin burns.   |
| Target Organs  | Skin. Eyes. Respiratory system. Gastrointestinal tract.  |
| Chronic Health Hazard                                      | This product contains no listed carcinogens according to IARC, ACGIH, NTP and / or OSHA in concentrations of 0.1 percent or greater. Prolonged contact may result in chemical burns and permanent damage. Repeated or prolonged contact causes sensitization, asthma and eczemas.                        |
| Potential Environmental Effects                            | Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  |
| Aggravated Medical Condition                               | Eye disease, Skin disorders and Allergies. Asthma.   |
| See section 11 for more detailed toxicological information |  |



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## 3. COMPOSITION / INFORMATION ON INGREDIENTS

| Components                  | CAS Number | Concentration |
|-----------------------------|------------|---------------|
| 1-(2-Aminoethyl) Piperazine | 140-31-8   | 20-30%        |
| Polyoxypropylenediamine     | 9046-10-0  | <5%           |
| Nonyl Phenol                | 25154-52-3 | 5-10%         |
| Bisphenol-A                 | 60-05-7    | <5%           |
| Epoxy Resin                 | 25068-38-6 | 5-10%         |

CHEMICAL FAMILY : Aliphatic Amine mixture.

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

## 4. FIRST AID MEASURES

|                |   |
|----------------|---|
| General advice | Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.  |
| Eye contact    | Check for and remove any contact lenses. Hold eyelids apart, initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Rinse immediately with plenty of water also under the eyelids for at least 20 minutes.   |
| Skin contact   | Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Initiate and maintain gentle and continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Cover wound with sterile dressing. Take off contaminated clothing and shoes immediately. NOTE TO PHYSICIANS: Application of corticosteroid cream has been effective in treating skin irritation. |
| Ingestion      | Never give anything by mouth to an unconscious person. If a person vomits when lying on his back, place him in the recovery position. Prevent aspiration of vomit. Turn victim's head to the side.  |
| Inhalation     | If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air.  |

## 5. FIRE-FIGHTING MEASURES

|  |  |
|--|--|
| Suitable extinguishing media                   | Alcohol-resistant foam.<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical. Dry sand. Limestone powder.  |
| Hazardous Combustion Products                  | May generate ammonia gas. May generate toxic nitrogen oxide gases. Use of water may result in the formation of very toxic aqueous solutions. Do not allow run-off from fire fighting to enter drains or water courses. Incomplete combustion may form carbon monoxide. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes. |
| Special protective equipment for fire-fighters | Avoid contact with the skin. A face shield should be worn. Use personal protective equipment. Wear self contained breathing apparatus for fire fighting if necessary.  |
| Further information                            | Do not allow run-off from fire fighting to enter drains or water courses.  |

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## 6. ACCIDENTAL RELEASE MEASURES

|                           |  |
|---------------------------|--|
| Personal precautions      | Use self-contained breathing apparatus and chemically protective clothing. Wear suitable protective clothing, gloves and eye/face protection. Evacuate personnel to safe areas. See Section 8 for Personal Protective Equipment. |
| Environmental precautions | Construct a dike to prevent spreading. Avoid discharge into drains, water courses, or onto the ground.   |
| Methods for cleaning up   | Approach suspected leak areas with caution. Contact Denso's Emergency Response Center (see Section 1) for advice. Cover with inert, absorbent material and place in appropriate waste container for disposal.                    |
| Additional advice         | If possible, stop flow of product. Clean up in accordance with all applicable regulations.   |

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## 7. HANDLING AND STORAGE

|                       |  |
|-----------------------|--|
| Handling              | Avoid contact with skin and eyes. Emergency showers and eye wash situations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid vapors and/or aerosols. Avoid contact with eyes. Use only in well-ventilated areas. Use personal protective equipment. When using, do not eat drink or smoke. Change contaminated clothing. |
| Storage               | Store in steel containers preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Keep containers tightly closed in dry, cool and well-ventilated place. Do not store near incompatible materials (See Section 10).   |
| Technical Precautions | Do not store in reactive metal containers.   |

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

|                                 |  |
|---------------------------------|--|
| Recommended Monitoring          | Consult with local authorities for acceptable exposure limits.   |
| Engineering measures            | Provide readily accessible eye wash stations and safety showers.<br>Provide natural or explosion-proof ventilation adequate to ensure concentrations are kept below exposure limits.   |
| Personal Protective Equipment   |  |
| Hand Protection                 | Wear impervious gloves to prevent any possibility of skin contact. The breakthrough time of the selected glove(s) must be greater than the intended use period. Frequent glove changes are recommended.  |
| Eye Protection                  | Wear approved safety glasses or goggles to prevent any possibility of eye contact. Wear a full-face shield as well when appropriate.   |
| Skin and Body Protection        | Wear impervious clothing and footwear to prevent any possibility of skin contact. The breakthrough time of the selected clothing and footwear must be greater than the intended use period. Change contaminated clothing and footwear immediately. |
| Respiratory Protection          | In case of inadequate ventilation, use suitable respiratory equipment with a filter for organic vapors. Change filters regularly.  |
| Environmental Exposure controls | Construct a dike or other barrier to prevent spreading.  |



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Special Instructions for protection and hygiene

Discard contaminated leather articles. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Provide readily accessible eye wash stations and safety showers. Wash at the end of each work shift and before eating, smoking or using the toilet. Provide readily accessible eye wash stations and safety showers.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                        |                    |                           |                         |
|------------------------|--------------------|---------------------------|-------------------------|
| Form                   | Viscous Liquid.    | Auto-ignition temperature | N/A                     |
| Color                  | Black.             | Odor threshold            | N/A                     |
| Odor                   | Irritating. Amine. | Evaporation rate          | N/A                     |
| Flammable limits       | N/A                | Viscosity                 | 25,000 cP @ 73oF (22oC) |
| Relative vapor density | N/A                | pH                        | >9                      |
| Relative Density       | 1.48               | Boiling point/range       | N/A                     |
| Vapor Pressure         | N/A                | Flash point               | N/A                     |
| Density at 70°F (21°C) | 12.4 lb/gal        | Water solubility          | Slight                  |

## 10. STABILITY AND REACTIVITY

|                                  |   |
|----------------------------------|---|
| Stability                        | Stable under normal conditions.   |
| Materials to avoid               | Strong oxidizing agents.<br>Strong acids.<br>Reactive organometallic compounds.<br>Product slowly corrodes copper, aluminum, zinc and galvanized surfaces.<br>Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. |
| Other hazards                    | Reacts with considerable heat release with some epoxy resins.   |
| Hazardous decomposition products | Decomposition products may include the following materials:<br>Nitric acid.<br>Ammonia.<br>Nitrogen oxides (NOx).<br>Nitrogen oxide can react with water vapors to form corrosive nitric acid.<br>Carbon monoxide.<br>Carbon dioxide.                                 |

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Data

| Acute toxicity ingredient name | CAS #      | LD50 Oral - Rat mg/kg | LD50 Dermal - Rabbit mg/kg |
|--------------------------------|------------|-----------------------|----------------------------|
| 1-(2-Aminoethyl) piperazine    | 140-31-8   | 2,108                 | >800                       |
| Polyoxypropylenediamine        | 9046-10-0  | 2,885                 | 2,980                      |
| Nonyl Phenol                   | 25154-52-3 | 1,412                 | 2,031                      |
| Bisphenol-A                    | 60-05-7    | 3,250                 | 3,000                      |
| Epoxy Resin                    | 25068-38-6 | 30,000                | >1,200                     |

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## Acute Health Hazards

|                                  |   |
|----------------------------------|---|
| Epidemiology                     | Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure. |
| Eye irritation/corrosion         | Severe eye irritation.  |
| Skin irritation/corrosion        | Severe skin irritation.   |
| Sensitization                    | May cause sensitization by skin contact.  |
| Respiratory irritation/corrosion | May cause irritation of respiratory tract.  |
| Ingestion                        | Ingestion may cause irritation and malaise.   |

## Chronic Health Hazards

May cause damage to the liver and kidneys. No data is available regarding carcinogenicity, mutagenicity, or reproductive effects.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

|                             |  |
|-----------------------------|--|
| Aquatic toxicity            | No data is available on the product itself. Expected to be harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment. |
| Toxicity to other organisms | No data available.   |

### Persistence and degradability

Biodegradability No data is available on the product itself.

Mobility No data available.

Bioaccumulation No data is available on the product itself.

## 13. DISPOSAL CONSIDERATIONS

**Waste disposal** The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contact with soil, waterways, drains and sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. This material and/or its container must be disposed of as hazardous waste.

## 14. TRANSPORT INFORMATION

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation. For complete transportation information, contact an Denso customer service representative.

| Regulatory Information | UN/ID No. | Proper shipping name  | Class or Division<br>Packing group | Reportable<br>Quantities |
|------------------------|-----------|---|------------------------------------|--------------------------|
| CFR                    | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(n-Aminoethylpiperazine) | Class 8, PG III                    | N/A                      |
| TDG                    | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(n-Aminoethylpiperazine) | Class 8, PG III                    | N/A                      |
| IMO/IMDG               | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(n-Aminoethylpiperazine) | Class 8, PG III                    | N/A                      |
| IATA                   | UN2735    | AMINES, LIQUID, CORROSIVE, N.O.S.<br>(n-Aminoethylpiperazine) | Class 8, PG III                    | N/A                      |



# Material Safety Data Sheet

DATE: 5/16/2013

## 15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s).

None.

OSHA Hazard Communication Standard (29 CFR 1910.1 200) Hazard Class(es)

Corrosive. Sensitizer.

| Country     | Regulatory List | Notification           |
|-------------|-----------------|------------------------|
| USA         | TSCA            | Included on Inventory. |
| Canada      | DSL             | Included on Inventory. |
| EU          | EINECS          | Included on Inventory. |
| Australia   | AICS            | Included on Inventory. |
| Japan       | ENCS            | Included on Inventory. |
| South Korea | ECL             | Included on Inventory. |
| China       | SEPA            | Included on Inventory. |
| Philippines | PICCS           | Included on Inventory. |

HCS Classification Corrosive material, Sensitizing material

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification

Acute Health Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level

None.

EPA SARA Title III Section 302 Extremely Hazardous Substances

None.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

WHMIS Hazard

Classification (Canada) Class D-2B: Material causing other toxic effects (Toxic).

Canadian lists Canadian NPRI: None.

## 16. OTHER INFORMATION

HMIS<sup>®</sup>

|                 |   |
|-----------------|---|
| Health          | 3 |
| Flammability    | 1 |
| Physical hazard | 0 |

**Caution:** HMIS<sup>®</sup> ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS<sup>®</sup> ratings are not required on MSDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS<sup>®</sup> ratings are to be used with a fully implemented HMIS<sup>®</sup> program. HMIS<sup>®</sup> is a registered mark of the National Paint & Coatings Association (NPCA). HMIS<sup>®</sup> materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

Prepared by Denso EH & S Department

Telephone 1-281-821-3355 Corporate  
1-801-629-0667 Emergency (24 hour)

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