



manufactured by: **D.W. ELECTROCHEMICALS LTD.**
3-97 Newkirk Road North, (Unit 3)
Richmond Hill, Ontario L4C 3G4
CANADA Phone: (905) 508-7500
Fax: (905) 508-7502

Number 1

TECHNICAL NOTE

Material Safety Data Sheet - Stabilant 22™ - Expires 01/02/2012

DESIGNATION

Name: Stabilant 22 - (No synonyms)
Use: Electrical contact enhancer
Chemical Name & Identity: 100% - falls under
CAS 9003-11-6 (a Modified Polyoxypropylene-
Polyoxyethylene Block Polymer of the
Polyglycol Family.
Family: Polyglycol

HAZARDOUS INGREDIENTS

Hazardous Ingredients: (EPA & TSCA) - None (WHMIS) - None

PHYSICAL DATA

Physical State: Liquid
Appearance: Cloudy to clear liquid
Odour: Faint Musty odour
Odour Threshold: No Data
Melting Point: Pour point 16° Celcius
Boiling Point: None
Specific Gravity: 1.05
Density: 1.05 gms/ml
Decomposition Temp: >210° C
Solubility in water: 100 grams per liter

PHYSICAL DATA cont.....

Viscosity:	50 mPa.s
Vapor Pressure:	No Tests Run
Vapor Density:	No Tests Run
Vapor Pressure(mm):	No Tests Run
Evaporation Rate:	No Tests Run
Refractive Index:	1.454 at 25° Celcius
Coefficient of Water/oil distribution:	No Tests Run
pH:	5 to 7.5 @ 10 g/l
Total Organic Carbon (TOC):	28%

FIRE & EXPLOSION HAZARDS

Flammibility:	Will support combustion on decomposition - eg. material temperature must have been raised above 200° Celcius
Lower Explosion Limit (% by Volume):	No Tests Run
Flash Point:	200° Celcius
Method:	COC
Hazardous Combustion Products:	None known
Extinguishing Media:	Water fog, CO ₂ , Foam, Dry Chemical
Special Procedures:	Self Contained Breathing Apparatus should be used when fighting a fire in a confined area or when exposed to contamination products.
Auto Ignition Temperatures:	No Tests Run
Explosion Data - Sensitivity to impact:	None known
Sensitivity to Static Discharge:	No Tests Run
Unusual Fire & Explosion Hazards:	Improperly Disposed of Stabilant soaked combustible materials might be subject to spontaneous combustion.
Dangerous Goods Class:	None

HEALTH EFFECTS DATA

Routes of Entry:	Not to be taken orally, no prolonged skin or eye irritation noted on prolonged exposure
LD₅₀:	5 grams/kilogram (Oral)
Tested on:	Rats
Skin Overexposure effects:	Prolonged skin or eye contact may cause light temporary irritation.
Skin Irritation:	Limited Tests indicate no significant long term irritation.
Eye Irritation:	Limited Tests indicate no significant long term irritation.
Inhalation Acute:	Very low vapour pressure suggests that this would not be applicable.
Inhalation Chronic:	Very low vapour pressure suggests that this would not be applicable.
Oral Ingestion:	Oral ingestion of small amounts will cause diarrhea. Oral Ingestion of large amounts could cause systemic collapse.
Effects of Acute Exposure:	Oral - see above; Skin or eye, Limited tests indicate no significant long term irritation.
Effects of Chronic Exposure:	Oral - see above; Skin or eye, Limited tests indicate no significant long term irritation.
Exposure Limits:	No Tests Run - Very low vapour pressure combined with the very low toxicity and the small surface areas of the material when applied to contacts suggests that for practical purposes it would be virtually impossible to reach an airborne concentration that would be injurious. Limited testing on skin exposure indicate no significant long term irritation or sensitization. We suggest a precautionary washing of the exposed areas with soap and water.
Sensitization to Material:	Limited Tests indicate no sensitization effects
Carcinogenicity:	None Known.
Reproductive Effects:	No Tests Run.
Teratogenicity:	No Tests Run.
Mutagenicity:	No Tests Run.
Synergistic Materials:	None Known.

REACTIVITY DATA

Stability: Stable

Conditions to avoid: Excessive Temperatures

Incompatibility: None known

Hazardous Decomposition Products: None known

Hazardous Polymerization or Reactivity: Will not occur

ECOLOGICAL DATA

Biodegradability: No Tests Run - No Data

Fish Toxicity At concentrations of up to 5 ppm. no toxic reactions were noted.

Bacterial Inhibition in Influent: No Data

ENGINEERING CONTROLS

Bulk handling: Observe physical safety procedures commensurate with the size of the container involved.

Dilution: Precautions should be taken to be sure that diluted materials are properly labeled as to the diluant used.

SPECIAL PROTECTION INFORMATION

Ventilation: General mechanical ventilation is adequate

Respiratory Protection: Use an approved respirator if exposed to mists or aerosols

Protective Gloves: Rubber, Neoprene or Plastic when handling bulk amounts.

Eye Protection: Goggles or Face shield when handling bulk amounts.

Footwear: Non slip when handling bulk amounts.

Clothing: Plastic apron when handling bulk amounts,

Other: Not required

OTHER REGULATORY INFORMATION

United States: The materials in this product have been reviewed and are not reportable under SARA title III

This material is included in the TSCA inventory

OSHA Classification: Non-hazardous

Customs: The material is classified as Semiconductors, Other - under Harmonized Code # 8541.50.00.80

Canada: These material is included on Domestic Substances List under CEPA

NDSL - not listed

SPECIAL STORAGE PRECAUTIONS

Handling & Storage Procedures: Avoid eye contact and prolonged skin contact. Store in a cool dry location.

Special Shipping Information:

Shipping Name: Stabilant 22 - Semiconductor: Other
PIN (Product ID#) None
Packing Group -
Class : Non-toxic
Special Provision: None
Subsidiary Class: None
Schedule XII: Not applicable
(Harmonized Control Number - 8541.50.00.80)

FIRST AID - EMERGENCY

Fire: No special requirements known

Eyes: Flush immediately with flowing water for a period of at least 10 minutes and consult a physician.

Skin: Wash with soap and water. Remove and launder contaminated clothing before re-use. Consult a physician if irritation develops at site of exposure.

Ingestion: Induce vomiting and consult a physician.

Inhalation: If the material is sprayed in large quantities, excessive aerosol inhalation will cause irritation, congestion, and act as an expectorant. Consult a physician.

HOUSEKEEPING PROCEDURES

Clean-up of Leaks & Spills: As spilled material is quite slippery it should be covered with absorbent anti-skid material and cleaned up immediately.

Disposal of Waste: This product is not a hazardous waste when discarded as defined in 40CFR261.337.

This product is not a halogenated solvent when spent as defined in 40CFR261.317.

May be incinerated together with domestic waste so long as local regulations permit incineration.

Halogen content: 0 ppm (ug/g)

Sulfur content: 0 ppm (ug/g)

No chelating agent action.

OTHER DATA *(Excluded from waiver at end of MSDS)*

Heavy Metals: D.W. Electrochemicals Ltd. has a policy of not allowing any intentional addition of any heavy metals, such as lead, cadmium, mercury, or hexavalent chromium, or their compounds, to be used in inks or in the labels on our packaging and requires the total concentration of these materials, if present, to be so at a level of less than 100 parts per million and we so certify.

RoHS Legislation Article 4 (1) pertaining to Heavy Metals and other prohibited components: D.W. Electrochemicals Ltd., has a policy of not allowing any addition of heavy metals such as lead, cadmium, mercury, or hexavalent chromium, or their compounds in the Stabilants and requires the total concentration, if present to be so at a level of less than 100 parts per million and we so certify.

Nor does Stabilant contain any polybrominated biphenyl ethers (PBB's) or polybrominated diphenyl ethers (PBDE's) and we so certify.

Ozone Depleting Chemicals: Because of our corporate opposition to the use of ODC's either in the manufacture of, or as an inclusion in any of our products, D.W. Electrochemicals Ltd. has consistently refused to provide any of our products in aerosol-spray packaging and/or to supply any of our materials diluted with any Class 1 ODC, and we so certify.

PCB's We certify that this material has been subjected to tests capable of detecting PCB's to a level of less than 2 parts per million and no PCB's have been found.

Packaging: New standards are in place in an attempt to reduce the amount of plastics, tape and/or adhesives used and to ensure that our packaging may be reused or recycled.

MSDS PREPARATION DATA & EMERGENCY PHONE NUMBER

Prepared By: Wm Wright **Department:** Engineering
Preparation Date: January 2, 2009
Current Revision: General review - Revision 27
Emergency Phone: (905) 508-7500
Emergency Contact: Wm Wright

Patented Canada 1987, US Patent 4696632. Others Pending.

Printed in Canada

NATO/CAGE Supplier code #38948 - 15 mL Stabilant 22 has NATO Stock Number 5999-21-909-9981

D.W. Electrochemicals Ltd. urges each customer or recipient of this MSDS to study it carefully to become aware of/and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology or fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe use and handling of this product, each customer or recipient should (1) notify employees, agents, contractors and others who may use this material, of the information in this MSDS and any other information regarding hazards or safety, (2) Furnish this same information to each customer for the product, and (3) request customers to notify their employees, customers, and other users of the product of this information.

The information and recommendations contained herein are based on data believed to be correct, however no guarantee or warranty of any kind, expressed or implied, is made with respect to information and recommendations contained herein except where certified.

RoHS Article 4 (1) Compliant



Number 4

manufactured by: **D.W. ELECTROCHEMICALS LTD.**
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TECHNICAL NOTE

Material Safety Data Sheet - Stabilant 22A™ - Expires 01/02/2012

FIRE HAZARD - SOME HEALTH HAZARD (WHMIS Classification B-2, D-2B)

DESIGNATION

Name: Stabilant 22A - (No synonyms)

Product Use: Electric Contact Enhancer

Chemical Name & Identity:

- 80% Isopropanol -
[Fire & Some Health Hazard] - CAS 67-63-0
- 20% Stabilant 22 -
*- falls under
CAS 9003-11-6 (a Modified Polyoxypropylene-
Polyoxyethylene Block Polymer of the
Polyglycol Family.*

Family: 80% Alcohol - 20% Polyglycol

HAZARDOUS INGREDIENTS

Hazardous Ingredients: 80% Isopropanol

PHYSICAL DATA

Physical State: Liquid

Appearance: Thin clear liquid

Odour: Sharp alcohol odour

Odour Threshold: No Data

Melting Point: -89° Celcius

Boiling Point: 82.4° Celcius

Specific Gravity: 0.838

PHYSICAL DATA cont...

Decomposition Temp: No Tests Run
Solubility in water: >500 grams/liter
Viscosity: No Tests Run
Vapour Density: 2.01
Vapour Pressure(mm): 33 mmHg @ 20°Celcius
Evaporation Rate: No Tests Run
Refractive Index: No Tests Run
Coefficient of Water/oil distribution: No Tests Run
pH: Not Applicable
VOC: 80% (Reportable)

FIRE & EXPLOSION HAZARDS

Upper Explosion Limit (% by Volume): 12.0
Lower Explosion Limit (% by Volume): 2.0
Autoignition Temperature: 399° Celcius
Flash Point [Method]: 13° Celcius [Tag C.C.]
Hazardous Combustion Products: No Data
Extinguishing Media: Water fog, CO₂, Foam, Dry Chemical
Special Procedures: Do not use direct water stream as this could spread the fire. Self Contained Breathing Apparatus should be used when fighting a fire in a confined area or when exposed to contamination products.
Explosion Data - Sensitivity to impact: No Tests Run
Sensitivity to Static Discharge: No Tests Run
Unusual Fire & Explosion Hazards: Improperly Disposed of Stabilant soaked combustible materials might be subject to spontaneous combustion. Heat may build internal pressure in container leading to rupture of container.

HEALTH EFFECTS DATA

As the material is 80% isopropanol it exhibits all of the health hazards of isopropanol but to a lesser degree. The lower concentration of the isopropanol mitigates the defatting and drying effects of the near absolute alcohols on the skin although there is still a hazard on eye contact. If the container of Stabilant 22A is left uncapped for extended periods at normal room temperatures, the isopropanol will evaporate reducing the hazards somewhat. When applied to contacts the isopropanol will evaporate leaving the non-volatile portion of the material (Stabilant 22) on the surfaces, and reference should be made to the MSDS for Stabilant 22 as to the potential hazards of that product.

LD₅₀ (oral, rat): 5000 mg/kg

Skin Irritation: LD₅₀ (skin rabbit 12800mg/Kg) The material is a mild irritant and may cause defatting and drying of the skin.

Prolonged Skin Exposure: Prolonged and repeated contact may cause dermatitis.

First Aid on Skin Exposure: Major spills on clothing require removal of contaminated clothing, then flush area with running water and wash with soap and water. Small area contact, wash with running water, then soap and water. Obtain medical advice.

Eye Irritation: The vapour is a mild irritant which may cause conjunctivitis and corneal damage. The liquid is a severe eye irritant which may cause permanent eye damage.

First Aid on Eye Exposure: Flush eyes with running water for at least 20 minutes holding eyelids open. Obtain medical attention immediately! Treat for isopropanol exposure.

Exposure when Inhaled: LC 50 (inhalation rat (16000 ppm/8H) May cause irritation of the eyes, nose and throat and of the respiratory tract. Overexposure could cause Central Nervous System Depression characterized by headache, dizziness, drowsiness, nausea, vomiting, abdominal pain and incoordination. Severe overexposure could lead to coma and possibly death due to respiratory failure.

First Aid when Inhaled: Remove to fresh air. If not breathing give artificial respiration. Obtain medical attention immediately.

HEALTH EFFECTS DATA cont....

- Oral Ingestion:** If victim is alert and not convulsing, rinse out mouth and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water.
Transport victim to an emergency facility IMMEDIATELY!
- Emergency Medical Care:** Extreme care must be taken to avoid aspiration of product into lungs, which may result in pulmonary edema.
- Exposure Limits:** No Tests Run
- Sensitization to Material:** Limited tests indicate no sensitization effects
- Carcinogenicity:** None Known.
- Reproductive Effects:** No Tests Run.
- Teratogenicity:** No Tests Run.
- Mutagenicity:** No Tests Run.
- Synergistic Materials:** None Known.

REACTIVITY DATA

- Stability under normal conditions:** Stable
- Stability under fire conditions:** Inflammable
- Conditions to avoid:** Excessive Temperatures, sparks, open flames and all other sources of ignition.
- Incompatibility:** Strong oxidizers, also may react with aluminum at high temperatures.
- Hazardous Decomposition Products:** CO, CO₂
- Hazardous Polymerization or Reactivity:** Avoid oxidizing materials. Can react violently with potassium oxides and potassium. Can ignite in contact with platinum-black catalyst.

ECOLOGICAL DATA

- Biodegradability:** No Tests Run - No Data
- Fish Toxicity** Harmful to aquatic life at low concentrations. No quantitative data known.
- Bacterial Inhibition in Influent:** No Data

ENGINEERING CONTROLS & SPECIAL PROTECTION INFORMATION

Note: Conditions of use, adequacy of engineering or of other control measures and actual exposure will dictate the need for specific protective devices at the workplace. The recommendations listed in this section indicate the type of equipment which will prevent overexposure to the product.

- Ventilation:** Where the material is being applied by swab or small brush, or from a dropper bottle, it is highly unlikely that sufficient air concentration of the isopropanol could occur under normal ventilation such that a health hazard could be created. Whenever large volumes of the material are being used (>250 mL) or whenever the continually exposed surface area of the material is in excess of 3 ft.2 it is suggested that local exhaust ventilation be provided.
- Respiratory Protection:** Where small amounts are being used with a swab or small brush, or are being dispensed from a dropper bottle, respiratory protection is not needed under normal ventilation conditions.
- Where large volumes of the material (>250 mL) are being used or where large surface areas are being exposed (e.g. - dipping tanks) the use of a NIOSH/MSHA approved air purifying respirator equipped with organic vapour cartridges be used if exposed to concentrations up to 1000 ppm. Use an air-supplied unit if exposed to higher or unknown concentrations. (Such as in bulk handling)
- Protective Gloves:** Rubber, or Neoprene gloves should be worn when the handling of circuit boards or connectors requires constant skin contact with the material.
- Eye Protection:** Goggles or Face shield when there is a potential for eye contact.
- Footwear:** Non slip when handling bulk amounts.
- Clothing:** Rubber or Neoprene protective clothing when handling bulk amounts
- Other:** Not required
- Bulk Handling:** Ground equipment to prevent static discharge accumulation. Observe physical safety procedures commensurate with the size of the container involved.

SPECIAL STORAGE PRECAUTIONS

Storage Procedures: Store in a cool, dry, well ventilated location away from strong oxidizers.

SPECIAL SHIPPING DESCRIPTION (Under the TDG Act)

Special Shipping Information:

Shipping Name: Stabilant 22A - Isopropanol

NOTE: As 80% of material is Isopropanol the material should be treated as Isopropanol for shipment using:

PIN (Product ID#) UN1219

Packing Group - II

Class 3:

OTHER REGULATORY INFORMATION

United States: The quantity of materials in this product have been reviewed and are not reportable under SARA title III

These materials are included on the TSCA Inventory.

OSHA (29CFR1910.1200) Classification:

Flammable Liquid, Eye Irritant

Canada: These materials are included on the Domestic Substance

List under the CEPA. NDSL not listed.

Customs:

For tariff purposes the material is classified as:

Semiconductor, Other, Harmonized Code#8541.50.00.80

FIRST AID - EMERGENCY

Eyes: Flush eyes with running water for at least 20 minutes holding eyelids open. Obtain medical attention immediately! Treat for isopropanol exposure.

Skin: Wash with soap and water. Remove and launder contaminated clothing before re-use. Consult a physician if irritation develops at site of exposure.

First Aid-Emergency.....

- Ingestion:** If victim is alert and not convulsing, rinse out mouth and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Transport victim to an emergency facility IMMEDIATELY!
- Inhalation:** Remove to fresh air. If not breathing give artificial respiration. Obtain medical attention immediately.

HOUSEKEEPING PROCEDURES

Clean-up of Leaks & Spills: Eliminate all sources of ignition. Stop or reduce discharge if safe to do so. Prevent from entering water courses or sewers. Ventilate enclosed spaces. Contain by applying absorbent. Collect waste absorbent for disposal. For significant releases contact regulatory authorities.

Deactivating Chemicals: None known.

Disposal of Waste: Dispose of waste materials in an approved incinerator or waste treatment/disposal facility in accordance with applicable regulations. Do not dispose of in sewer or with normal waste.

OTHER DATA *(Excluded from waiver at end of MSDS)*

Heavy Metals: D.W. Electrochemicals Ltd. has a policy of not allowing any intentional addition of any heavy metals, such as lead, cadmium, mercury, or hexavalent chromium, or their compounds, to be used in inks or in the labels on our packaging and requires the total concentration of these materials, if present, to be so at a level of less than 100 parts per million and we so certify.

RoHS Legislation Article 4(1) pertaining to Heavy Metals in and other prohibited components: D. W. Electrochemicals Ltd., has a policy of not

allowing any addition of any heavy metals, such as lead, cadmium, mercury, or hexavalent chromium, or their compounds in the Stabilants and requires the total concentration, if present, to be so at a level of less than 100 parts per million, and we so certify.

Nor does Stabilant contain any polybrominated biphenyl ethers (PBB's) or polybrominated diphenyl ethers (PBDE's) and we so certify.

Ozone Depleting Chemicals: Because of our corporate opposition to the use of ODC's either in the manufacture of, or as an inclusion in any of our products, D.W. Electrochemicals Ltd. has consistently refused to provide any of our products in aerosol-spray packaging and/or to supply any of our materials diluted with any Class 1 ODC, and we so certify.

PCB's We certify that this material has been subjected to tests capable of detecting PCB's to a level of less than 2 parts per million and no PCB's have been found.

Packaging: New standards are in place in an attempt to reduce the amount of plastics, tape and/or adhesives used and to ensure that our packaging may be reused or recycled.

MSDS PREPARATION DATA & EMERGENCY PHONE NUMBER

Prepared By: Wm Wright **Department:** Engineering

Preparation Date: January, 2 2009

Current Revision: General review. - Revision 21

Emergency Phone: (905) 508-7500

Emergency Contact: Wm Wright

Patented Canada 1987, US Patent 4696832. Others Pending.

Printed in Canada

NATO/CAGE Supplier code #38848 - 15 mL Stabilant 22A has NATO Stock Number 5999-21-900-6937

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To promote safe use and handling of this product, each customer or recipient should (1) notify employees, agents, contractors and others who may use this material, of the information in this MSDS and any other information regarding hazards or safety, (2) Furnish this same information to each customer for the product, and (3) request customers to notify their employees, customers, and other users of the product of this information.

The information and recommendations contained herein are based on data believed to be correct, however no guarantee or warranty of any kind, expressed or implied, is made with respect to information and recommendations contained herein except when certified. RoHS Article 4(1) Compliant