Meggitt Aircraft Braking Systems

MATERIAL HEALTH & SAFETY DATA SHEET

NUMBER 11 ISSUE 2 DATE: 04.07.12

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

TRADE NAME	**DMS 815/819 ANTIOXIDANT PAINT**
CHEMICAL NAME	
COMPANY ADDRESS	**MEGGITT AIRCRAFT BRAKING SYSTEMS** **HOLBROOK LANE** **COVENTRY** **CV6 4AA**
TELEPHONE NUMBER	**024 7666 6655**
FAX NUMBER	**024 7666 2294**
E MAIL	**toby.hutton@meggitt.com**

2. COMPOSITION/INFORMATION ON INGREDIENTS

The product is an antioxidant paint comprising the following components:	
Proprietary inorganic phosphate	
Phosphoric acid	**CAS 7664-38-2**
Acetic acid	**CAS 64-19-7**
Aluminium nitrate	**CAS 7784-27-2**
Boron nitride powder	**CAS 10043-11-5**
Silicic acid amorphous	**CAS 7631-86-9**
Water	**CAS 7732-18-5**

3. HAZARDS IDENTIFICATION

Emergency overview

Translucent liquid. Poison. May be fatal if swallowed. Extremely hazardous in case of eye contact (irritant). Very hazardous in case of skin contact (irritant, permeator) or inhalation (irritant)

MAIN HAZARDS	**Poison – may be fatal if swallowed**
HEALTH EFFECTS – EYES	**Vapour may cause watering and irritation to eyes. Liquid contact or mist (if formed) may cause burns to mucous membranes of eyes and may cause corneal damage and blindness.**
HEALTH EFFECTS – SKIN	**High vapour concentration may cause skin sensitization. Liquid or mist (if generated) may cause severe burns**
HEALTH EFFECTS – INHALATION	**Inhalation of concentrated vapour may cause irritation and damage mucous membranes of respiratory tract. Inhalation of mist (if formed) may cause severe irritation and damage mucous membranes of respiratory tract.**
HEALTH EFFECTS – INGESTION	**Poison. May be fatal if swallowed. Corrosion of the mouth, throat and digestive tract may result if swallowed.**

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Medical Conditions Aggravated by Exposure:

Persons with pre-existing skin conditions, eye conditions, or impaired respiratory function may be more susceptible to effects of exposure.

Routes of Entry: Eye contact, dermal contact, inhalation and ingestion

Carcinogens: None known. Not a known or anticipated carcinogen by NTP and IARC.

Other: NA

4. FIRST AID MEASURES

MOVE THE EXPOSED PERSON TO AN AREA WHERE FURTHER EXPOSURE WILL NOT OCCUR. IN CASES WHERE THE EXPOSURE ROUTE IS INHALATION MOVE THE PERSON TO FRESH AIR AT ONCE.

EYE CONTACT	**Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. Get immediate medical attention.**
SKIN CONTACT	**Remove contaminated clothing. Wash affected area with soap and water. Neutralise exposed skin with a dilute solution of sodium carbonate. Seek medical attention if irritation persists. Wash contaminated clothing before reusing.**
INHALATION	**Remove individual from source of exposure to area of fresh air. If breathing is difficult, give oxygen. Loosen tight clothing such as collar, tie, belt or waistband. If victim is not breathing, perform mouth-to-mouth resuscitation. Get immediate medical attention.**
INGESTION	**DO NOT induce vomiting. Have conscious victim drink several glasses of water or milk. Never give anything by mouth to an unconscious person. If vomiting occurs, give more fluids, preferably milk. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth to mouth resuscitation. Warning: It may be hazardous to the person providing aid to give mouth-to mouth resuscitation when the ingested material is toxic or corrosive. Get immediate medical attention.**
IN ALL CASES WHERE SYMPTOMS ARE SEVERE, SEEK MEDICAL ATTENTION IMMEDIATELY	

5 FIRE FIGHTING MEASURES

Flammable Properties

Flash point:	**Not flammable**
Auto-Ignition Temperature:	**NA**
Flammable Limits:	**NA**
Sensitivity to Mechanical Impact:	**No**
Sensitivity to Static Discharge:	**No**

Hazardous Decomposition Products

Carbon dioxide, carbon monoxide, phosphorous oxides and nitrogen oxides may form when heated to decomposition. May also release toxic and irritating vapours.

Fire Hazards in the Presence of Various Substances: NA

Extinguishing Media:

Water, dry chemical, foam or carbon dioxide extinguishing media as appropriate for the quantity and type of combustion present. Use water spray to keep exposed containers cool.

Fire Fighting Procedures:

Fire fighters should wear full fire-fighting turnout gear (full bunker gear) and self – contained breathing apparatus (SCBA). Proper eye and skin protection should also be used. Use water spray to keep fire-exposed containers cool and to flush any spillage away from fire or contact with metals. Move containers from fire area if without risk.

Unusual Fire Hazards:

Contact with metals may produce hydrogen gas.

Product is non-flammable, references to flash point, ignition, temperature and flammable limits in air are NOT applicable

6. ACCIDENTAL RELEASE MEASURES

Small spill: Dilute with water and mop up or absorb with inert dry material and place in appropriate waste container for disposal. If necessary, neutralize the residue with a dilute solution of sodium carbonate. Wear proper protective equipment as specified in the Special Protection Information Section. Insure proper ventilation is available.

Large spill: determine whether to evacuate or isolate the area according to your local emergency plan. Stop leak if without risk. Observe all personal protection equipment recommendations described in Section 5 and 8. Ventilate area of leak or spill. Recover liquid in an appropriate container when possible or absorb with dry earth, sand, vermiculite or other inert dry material. Prevent entry into sewars or confined areas; dike if needed. Neutralize with sodium bicarbonate. Dispose of saturated absorbent or cleaning materials appropriately.

7. HANDLING & STORAGE

Handling and Storage	**Store at room temperature. Store upright in original container. Keep container closed tightly when not in use. Keep away from sources of ignition. Keep away from incompatibles such as reducing agents, combustible materials, organic materials, metals, alkalis Do Not freeze May corrode metallic surfaces. Corrosive materials should be stored in a separate storage cabinet or room. Avoid breathing vapours. Avoid contact with skin and eyes. Do not ingest. If ingested seek medical advice immediately and show container or the label. Wear suitable protective clothing, may cause severe burns.**
DOT Shipping Name	**Corrosive Liquids n.o.s. (Contains Acetic Acid)**
Dot Hazard Class	**8**
Dot Label(s)	**Corrosive**
UN/NA Numbers(s)	**UN1760**
Packing Group (UN)	**II**

8. EXPOSURE CONTROL & PERSONAL PROTECTION

COMPONENT	CAS	% BY WT.	EXPOSURE LIMITS
Proprietary inorganic phosphate	**NA**	**13-17**	**OSHA PEL & ACGIH TLV: TGW 1 mg/m³, STEL 3 mg/m³. (Mist if formed).**
Phosphoric acid	**7664-38-2**	**7-10**	**OSHA PEL & ACGIH TLV: TWA 1 mg/m³, STEL 3 mg/m³. (Mist if formed)**
Acetic Acid	**64-19-7**	**15-18**	**OSHA PEL: TWA 10 ppm, ACGIH TLV: TWA 10ppm, STEL 15 ppm**
Ammonium nitrate	**7784-27-2**	**2-5**	**OSHA PEL: NE, ACGIH TLV: TWA 2 mg (Al)/m³**
Boron nitride powder	**10043-11-5**	**14-18**	**OSHA PEL: NE, ACGIH TLV: TWA 10 mg/m³ (total), as a nuisance dust 5 mg/m³ (resp.); 10 mg/m3 (total)**
Silicic acid amorphous	**7631-86-9**	**3-7**	**Non irritant. LD50 oral, rat >15000mg/kg**
Water	**7732-18-5**	**34-39**	**NA**

Engineering Controls

Use local exhaust ventilation to control emissions near the source and keep airborne concentrations of vapours below their respective threshold limit values. Provide mechanical ventilation of confined spaces. Have showers and eye wash stations accessible.

Personal Protection

Eye Protection	**Use suitable safety glasses or goggles to EN122 standard**
Skin Protection	**Wear protective clothing such as a lab coat or full protective suit to prevent contamination of clothing and skin. Wear chemical protective gloves of neoprene or nitrile. Wash after use. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse.**
Respiratory Protection	**If concentrations of vapours may exceed threshold limit values, use NIOSH approved respiratory protection equipped with filters for acid vapours. If mist is generated, NIOSH approved respiratory protection is strongly recommended.**

Personal Protection in Case of a Large Spill

Eye Protection	**Use full face respirator.**
Skin Protection	**Wear protective clothing such as a full protective suit to prevent contamination of clothing and skin. Wear chemical protective gloves of neoprene or nitrile. Wear boots. Wash when finished. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse.**
Respiratory Protection	**Use NIOSH approved respiratory protection equipped with filters for acid vapours, self-contained breathing apparatus (SCAB) or other supplied air respirator.**

Exposure Limits:

Proprietary inorganic phosphate	OSHA PEL & ACGIH TLV: TWA 1 mg/m^3, STEL 3 mg/m^3 (Mist if formed)
Phosphoric acid	**OSHA PEL & ACGIH TLV: TWA 1 mg/m3, STEL 3 mg/m^3 (Mist if formed)**

Acetic acid	**OSHA PEL: TWA 10 ppm, ACGIH TLV: TWA 10 ppm. STEL 15 ppm.**
Aluminium nitrate	**OSHA PEL: NE, ACGIH TLV: TWA 2 mg (Al)/m^3**
Boron nitride powder	**OSHA PEL: NE, ACGIH TLV: TWA 10 mg/m^3 (total), as a nuisance dust 5 mg/m^3 (resp.); 10 mg/m3 (total)**

9. PHYSICAL & CHEMICAL PROPERTIES

Physical Form	**Liquid**	**Colour**	**Grey/white suspension**
Odour	**Acetic Acid**	**Density (g/cc)**	**1.38**
Boiling Point (°F)	**~100°C**	**Freezing Point (°F)**	**<0°C**
Vapour Pressure @ 77°F	**-16 mm Hg**	**Vapour Density**	**ND**
Solubility in Water	**Aqueous solution**	**Solubility in Organic Solvent**	**ND**
Reaction with Water	**None**	**PH**	**0 – 1.0**
% Volatile by Volume	**74-78%**	**Other Comments**	**Reacts with strong acids or bases**
Volatile Organic Content (VOC)	**~640g/litre Less Water (~25% by weight)**		

10. STABILITY & REACTIVITY

The product is stable under normal conditions. Hazardous polymerisation will not occur.	
Conditions to Avoid:	**Corrosive in the presence of magnesium, steel, aluminium, zinc and copper. Slightly corrosive in the presence of stainless steel. May produce hydrogen gas in reaction with metals. Non corrosive in the presence of glass.**
Materials to Avoid:	**Avoid contact with metals and any materials sensitive to acidic solutions. Reactive or incompatible with organic materials, alkalis, metals, reducing agents and combustible materials.**
Hazardous Decomposition Products	**Carbon dioxide, carbon monoxide, phosphorous oxides and nitrogen oxides may form when heated to decomposition. May also release toxic and irritating vapours.**

11. TOXICOLOGICAL INFORMATION

Routes of entry **Dermal contact, eye contact, inhalation and ingestion.**

Toxicity to Animals

Phosphoric acid	**Acute oral toxicity (LD_{50}): 1,530 mg/kg (Rat)** **Acute dermal toxicity (LD_{50}): 2,740 mg/kg (Rabbit)**
Acetic acid:	**Acute oral toxicity (LD_{50}): 3,310 mg/kg (Rat)** **Acute dermal toxicity (LD_{50}): 1.06 g/kg (Rabbit)** **Acute toxicity of the vapour (LC_{50}): 5,620 ppm 1 hour (Mouse)**
Boron Nitride	**Acute oral toxicity (LD50) >15,000mg/kg (Rat)**

Chronic Effects on Humans

Toxic to lungs and mucous membranes

Other Toxic Effects on Humans

Poison. Maybe fatal if swallowed. Very hazardous in case of eye contact (irritant). Hazardous in case of skin contact (irritant, permeator) or inhalation (irritant).

Carcinogens:

None known. Not a known or anticipated carcinogen by NTP and IARC.

12. ECOLOGICAL INFORMATION

Ecotoxicity

This material is expected to be toxic to aquatic life. Acetic acid is expected to be slightly toxic to aquatic life. The LC_{50}/96-hour values for fish are between 10 and 100 mg/l.

Environmental Fate

When released into the air, acetic acid may be moderately degraded by reaction with photochemically produced hyroxyl radicals and is expected to have a half-life between 10 and 30 days. When released into water, acetic acid is expected to readily biodegrade and is expected to have a half-life between 1 and 10 days. When released into the soil, acetic acid is expected to readily biodegrade and is not expected to significantly bioaccumulate. The proprietary inorganic phosphate and phosphoric acid may leach into groundwater. Its acidity may be readily reduced by natural water hardness minerals. The phosphate however, may persist indefinitely.

13. DISPOSAL CONSIDERATIONS

Unused material for disposal should be handled as hazardous waste. Disposal should be made in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT Shipping Name	**Corrosive Liquids n.o.s. (Contains Acetic Acid)**	**DOT hazard Class**	**8**
DOT Label(s)	**Corrosive**	**UN Number**	**UN1760**
Packing Group	**II**	**Placards**	**Corrosive**
IATA	**Corrosive Liquids n.o.s. (Contains Acetic Acid) 8, UN1760, II**		

15. REGULATORY INFORMATION

Federal & State Regulations

TSCA Status All chemical substances in this material are included on or exempted from list on the TSCA Inventory of Chemical Substances.

EPA SARTA Title III Chemical Listings:

Section 302 Extremely Hazardous Substances: None

Section 304 CERCLA Hazardous Substances:

Component	CAS#	Wt.%
Acetic Acid	64-19-7	20-25
Phosphoric Acid	7664-38-2	10-15

Section 312 Hazard Class

Acute	Yes
Chronic:	Yes
Fire:	No
Pressure:	No
Reactive	No

Section 313 Toxic Chemical Notification and Release Reporting: None

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200)

Supplemental State Compliance Information

California
Safe Drinking Water and Toxic enforcement Act of 1986 (Proposition 65) warnings: None

16. OTHER INFORMATION

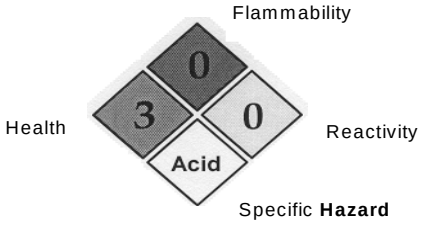
These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is thereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists
CAS = Chemical Abstracts Service
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act
EPA = Environmental Protection Agency
HMIS = Hazardous Material Information System
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
NA = not applicable
NO = not determined
NE = none established
NFPA = National Fire Protection Association
NIOSH = National Institute for Occupational Safety and Health
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = permissible exposure limit
ppm = parts per million
SARA = Superfund Amendments and Reauthorization Act
STEL = short term exposure limit
TL V = threshold limit value
TSCA = Toxic Substances Control Act
TWA = time weighted average

Health Hazard	3
Fire Hazard	0
Reactivity	1
Personal Protection	C

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



Protective Equipment:

Safety Glasses (EN122)

Coat

Gloves