SAFETY DATA SHEET

Version: 2.0
Date of Issue: 03 May 2017
Date of First Issue: 06 May 2015

www.vishaypg.com

ACCORDING TO OSHA HCS (29 CFR 1910.1200)

SECTION 1: IDENTIFICATION

Product identifier used on the label M-Bond A-12 Part B

Other means of identification Not applicable.

Recommended use of the chemical and restrictions on use

Recommended use	Adhesives.
Restrictions on use	None known.

Details of the supplier of the safety data sheet

Supplier	VISHAY MEASUREMENTS GROUP, INC.
Address of Supplier	Post Office Box 27777 Raleigh, NC 27611 USA
Telephone	+1 919-365-3800
Fax	+1 919-365-3945
E-Mail (competent person)	mm.us@vishaypg.com

Emergency telephone number 1-800-424-9300 CHEMTREC (24 hours)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200

Physical hazards	Not classified.
Health hazards	Skin Irritation, Category 2 Skin Sensitisation, Category 1A Eye Damage, Category 1
Environmental hazards	Hazardous to the aquatic environment, Chronic, Category 2

Hazard Symbol

Signal Word(s) Danger

Hazard Statement(s)

Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye damage.
Toxic to aquatic life with long lasting effects.

Precautionary Statement(s)

Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash hands and exposed skin thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER/doctor.
IF ON SKIN: Wash with plenty of water.
If skin irritation or rash occurs: Get medical advice/attention.
Avoid release to the environment.

Other hazards None.

Percent of the mixture consists of ingredient(s) of unknown acute toxicity: 0%

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances Not applicable

Mixtures Substances in preparations / mixtures

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (Polyamide Resin)	60-80	68410-23-1	614-452-7	Skin Irritation, Category 2 Skin Sensitisation, Category 1A Eye Damage, Category 1 Hazardous to the aquatic environment, Chronic, Category 2
Alumina/Aluminum Oxide	30-40	1344-28-1	215-691-6	Not classified
Titanium Dioxide	1-5	13463-67-7	236-675-5	Not classified

SECTION 4: FIRST AID MEASURES

Description of first aid measures

Self-protection of the first aider: Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Avoid breathing vapours.

Inhalation: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Obtain medical attention if ill effects occur.

Skin Contact: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Contaminated clothing should be thoroughly cleaned. If skin irritation or rash occurs: Get medical advice/attention.

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. Obtain prompt consultation, preferably from an ophthalmologist.

Ingestion: IF SWALLOWED: Rinse mouth with water (only if the person is conscious). Drink two glasses of water. Do not induce vomiting. Obtain medical attention if ill effects occur.

Most important symptoms and effects, both acute and delayed: Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage.

Indication of any immediate medical attention and special treatment needed: Treat symptomatically.

Notes to a physician: IF IN EYES: Chemical eye burns may require extended irrigation.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media

Suitable Extinguishing Media: As appropriate for surrounding fire. Extinguish with carbon dioxide, dry chemical, foam or waterspray.

Unsuitable extinguishing Media: Do not use water jet. Direct water jet may spread the fire.

Special hazards arising from the substance or mixture: Combustion or thermal decomposition will evolve toxic and irritant vapours. Carbon monoxide, Carbon dioxide and Nitrogen oxides.

Special protective equipment and precautions for fire fighters: Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying

with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation. Stop leak if safe to do so. Avoid breathing vapours. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8.

Methods and material for containment and cleaning up
Adsorb spillages onto sand, earth or any suitable adsorbent material. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. Wash with plenty of water/ 5% acetic acid. Dispose of this material and its container as hazardous waste.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Ensure adequate ventilation. Avoid breathing vapours. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed, in a cool, well ventilated place. Keep away from direct sunlight.

Storage temperature
Keep at a temperature not exceeding (°C): 40°C

Incompatible materials
Stable under normal conditions.
Keep away from: Acids, strong bases and Strong oxidising agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m³)	STEL (ppm)	STEL (mg/m³)	Note
Alumina/Aluminum Oxide	1344-28-1	-	15 (1) 5 (2)	-	-	NIOSH
		-	15† (1) 5† (2)	-	-	OSHA
		-	-	-	-	ACGIH
Titanium Dioxide	13463-67-7	-	-	-	-	NIOSH
		-	15†	-	-	OSHA
		-	10^	-	-	ACGIH, A4

Note: OSHA PELs 1910.1000 TABLE Z-1 / NIOSH RELs / ACGIH TLVs

^The 8-hour TWA listed in the Table is for the total dust. The substance also has an 8-hour TWA of 3 mg/m^3 for the respirable fraction.
†OSHA PELs were vacated on June 30, 1993 to return to the original 1971 limits.
(1) Total dust
(2) Inhalable dust
A4: Not Classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of the lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.

The other components listed in Section 3 do not have occupational exposure limits.

Biological Exposure Indices
Not established

Appropriate engineering controls
Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled using the principles of good occupational hygiene practice. Guarantee that the eye flushing systems and safety showers are located close to the working place.

Individual protection measures, such as personal
General hygiene measures for the handling of chemicals are applicable. Avoid

protective equipment (PPE)	breathing vapours. Avoid contact with skin, eyes or clothing. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.
Eye/face protection 	Wear eye protection with side protection. Do not wear contact lenses when working with this material.
Skin protection 	**Hand protection:** Wear impervious gloves. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer. **Body protection:** Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Respiratory protection 	Normally no personal respiratory protection is necessary. Wear suitable respiratory protective equipment if exposure to high levels of material are likely.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Mixture is a paste. Light Coloured.
Odor	Ammoniacal.
Odor Threshold	Not available.
pH	Not available.
Melting Point/Freezing Point	Not available.
Initial boiling point and boiling range	Not available.
Flash Point	260 °C [Open cup]
Evaporation rate (Butyl acetate = 1)	< 0.001 (BuAc = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not applicable.
Vapour pressure	Not available.
Vapour density	Not available.
Relative density	>0.97 (H20 = 1)
Solubility(ies)	Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (Polyamide Resin): Slightly soluble in: Water (40 mg/l)
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.

Other information: None.

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerisation will not occur.
Conditions to avoid	Keep away from direct sunlight. Keep at a temperature not exceeding (°C): 40°C
Incompatible materials	Keep away from: Acids, strong bases and Strong oxidising agents.
Hazardous decomposition product(s)	May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide and Nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 >20.0 mg/l.
Acute toxicity - Skin Contact	Based upon the available data, the classification criteria are not met. Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.
Skin corrosion/irritation	Skin Irrit. 2: Causes skin irritation.
Serious eye damage/irritation	Eye Dam. 1: Causes serious eye damage.
Respiratory or skin sensitization	Skin Sens. 1A: May cause an allergic skin reaction.
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met.
Carcinogenicity	Based upon the available data, the classification criteria are not met.
Reproductive toxicity	Based upon the available data, the classification criteria are not met.
STOT - single exposure	Based upon the available data, the classification criteria are not met.
STOT - repeated exposure	Based upon the available data, the classification criteria are not met.
Aspiration hazard	Based upon the available data, the classification criteria are not met.

Information on likely routes of exposure

Inhalation	Unlikely – accidental exposure.
Ingestion	Unlikely – accidental exposure.
Skin Contact	Possible – accidental exposure.
Eye Contact	Possible – accidental exposure.

Early onset symptoms related to exposure Causes serious eye damage. Causes skin irritation.

Delayed health effects from exposure May cause an allergic skin reaction.

Other information

NTP Report on Carcinogens	Not listed.
IARC Monographs	Titanium Dioxide – Group 2B: Possibly carcinogenic to humans.
OSHA Designated Carcinogen	Not listed.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic Chronic 2: Toxic to aquatic life with long lasting effects. Estimated Mixture LC50 >1 $\leq$ 10 mg/l (Fish)
Persistence and degradability	Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (Polyamide Resin): Not readily biodegradable.
Bioaccumulative potential	The product has low potential for bioaccumulation.
Mobility in soil	The product is predicted to have low mobility in soil.
Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Containers of this material may be hazardous when empty since they retain product residue. This material and its container must be disposed of as hazardous waste. Send after pre-treatment to an appropriate hazardous waste incinerator facility according to legislation.
Additional Information	Dispose of contents in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	IATA
UN number	UN 3082	UN 3082	UN 3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es)	9	9	9
Packing group	III	III	III
Environmental hazards	Classified as a Marine Pollutant.	Classified as a Marine Pollutant.	Classified as a Marine Pollutant.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.		
Special precautions for user	See Section: 2		

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

US Federal Regulations

TSCA (Toxic Substance Control Act)	Alumina/Aluminum Oxide - Subject to 25,000 lb reporting threshold. Titanium Dioxide - Subject to 25,000 lb reporting threshold.
EPCRA/SARA Section 302 Extremely Hazardous Substances	Not Listed.
EPCRA Section 313 Toxics Release Inventory (TRI) Program	Alumina/Aluminum Oxide – De Minimis limit: 1%.
NIOSH Occupational Carcinogen List	Titanium Dioxide.
OSHA List of highly hazardous chemicals, toxics and reactives	Not Listed.
NTP Report on Carcinogens (RoC) List	Not Listed.
Poison Prevention Packaging Act	Not Listed.

US State Regulations

California State, Proposition 65 List	Titanium Dioxide – Airborne, unbound particles of respirable size.
California State, Safer Consumer Products Regulations	Titanium Dioxide – Candidate Chemicals List.
Maine State, Toxic Chemicals in Children's Products Act	Not Listed.
New Jersey State Worker and Community RTK Act	Alumina/Aluminum Oxide – RTKHSL. Titanium Dioxide – RTKHSL.
Pennsylvania State, Worker and Community RTK Act	Alumina/Aluminum Oxide - Hazardous Substances List and the Environmental Hazard List. Titanium Dioxide – Hazardous Substances List.
Rhode Island State, Hazardous Substances RTK Act	Alumina/Aluminum Oxide – Hazardous Substances List. Titanium Dioxide – Hazardous Substances List.

Non-Regional

IARC Monographs, List of Classifications	Titanium Dioxide – Group 2B.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: New SDS Regulation compliant with HazCom 2012 format, all sections have been updated to include new information. Please review SDS with care.

Version	2.0
Revision Date	03-May-2017
Date of First Issue	06-May-2015

References:

Existing Safety Data Sheet (SDS) EU Data: Existing Safety Data Sheet (SDS) and Existing ECHA registration(s) for Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines (Polyamide Resin) (CAS# 68410-23-1), Alumina/Aluminum Oxide (CAS# 1344-28-1), and Titanium Dioxide (CAS# 13463-67-7).

GHS Classification of the substance or mixture	Classification Procedure
Skin Irritation, Category 2	Threshold Calculation
Skin Sensitisation, Category 1A	Threshold Calculation
Eye Damage, Category 1	Threshold Calculation
Hazardous to the aquatic environment, Chronic, Category 2	Summation Calculation

LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists
BEI: Biological Exposure Indices (ACGIH)
IARC: International Agency for Research on Cancer
Irr: Irritation
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: The Occupational Safety & Health Administration
PBT: Persistent, Bioaccumulative and Toxic
PEL: Permissible exposure limit
REL: Recommended exposure limit
SCL: Specific Concentration Limit
Skin": Risk of overexposure via dermal contact
STEL: Short Term Exposure Limit
TLV: Threshold Limit value
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
URT: Upper respiratory tract
vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

Disclaimers

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.