* * *Section 1 - IDENTIFICATION* * *

Product Identifier:
Manus Bond 73A Aluminum Gray

Recommended Use
adhesives / sealant
Restrictions on Use
None known.

Manufacturer Information
Manus Products, Inc.
866 Industrial Blvd. West
Waconia, MN 55387

Phone: (952) 442-3323

Emergency # (800) 424-9300

* * *Section 2 - HAZARD(S) IDENTIFICATION* * *

GHS Classification
Not a hazardous substance or mixture.

GHS Label element
Not a hazardous substance or mixture.
Precautionary Statements : **Prevention:**
P271 Use only outdoors or in a well-ventilated area.

Other hazards
None known.

* * *Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS* * *

Substance / Mixture : Mixture

Chemical nature : Silicone elastomer

Hazardous ingredients

Chemical Name	CAS-No.	Concentration (%)
Silicon dioxide	7631-86-9	>= 5 - < 10
Distillates (petroleum), hydrotreated middle	64742-46-7	>= 5 - < 10
Titanium dioxide	13463-67-7	>= 1 - < 5
Aluminium	7429-90-5	>= 1 - < 5
Carbon black	1333-86-4	>= 0.1 - < 1

* * *Section 4 - FIRST-AID MEASURES* * *

If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact : Wash with water and soap as a precaution.
Get medical attention if symptoms occur.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed : None known.

Protection of first-aiders : No special precautions are necessary for first aid responders.

Notes to physician : Treat symptomatically and supportively.

* * *Section 5 - FIRE-FIGHTING MEASURES* * *

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Dry chemical
Carbon dioxide (CO2)

Unsuitable extinguishing media : None known.

Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides
Silicon oxides
Formaldehyde
Metal oxides

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

* * *Section 6 - ACCIDENTAL RELEASE MEASURES* * *

Personal precautions, protective equipment and emergency procedures : Follow safe handling advice and personal protective equipment recommendations.

Environmental precautions : Discharge into the environment must be avoided.
Prevent further leakage or spillage if safe to do so.

Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up : Soak up with inert absorbent material.
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.
Clean up remaining materials from spill with suitable absorbent.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

* * *Section 7 - HANDLING AND STORAGE* * *

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use only with adequate ventilation.

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice.
Take care to prevent spills, waste and minimize release to the environment.

Conditions for safe storage : Keep in properly labeled containers.
Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types
Strong oxidizing agents

* * *Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION* * *

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Silicon dioxide	7631-86-9	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m3 / %SiO2 (Silica)	OSHA Z-3
		TWA	6 mg/m3 (Silica)	NIOSH REL
Distillates (petroleum), hydrotreated middle	64742-46-7	TWA (Mist)	5 mg/m3	OSHA Z-1
		TWA (Mist)	5 mg/m3	OSHA P0
		TWA (Mist)	5 mg/m3	NIOSH REL
		ST (Mist)	10 mg/m3	NIOSH REL

Titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH
Aluminium	7429-90-5	TWA (Respirable)	5 mg/m3	NIOSH REL
		TWA (total)	10 mg/m3	NIOSH REL
		TWA (total dust)	15 mg/m3 (Aluminum	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3 (Aluminum	OSHA Z-1
		TWA (pyro powders)	5 mg/m3 (Aluminum	NIOSH REL
		TWA (Respirable fraction)	1 mg/m3 (Aluminum)	ACGIH
Carbon black	1333-86-4	TWA	3.5 mg/m3	NIOSH REL
		TWA	3.5 mg/m3	OSHA Z-1
		TWA (Inhalable fraction)	3 mg/m3	ACGIH

Engineering measures : Processing may form hazardous compounds (see section 10).
Ensure adequate ventilation, especially in confined areas.
Minimize workplace exposure concentrations.
Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable particles.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Remarks : Wash hands before breaks and at the end of workday.

Eye protection : Wear the following personal protective equipment
Safety glasses

Skin and body protection : Skin should be washed after contact.

Hygiene measures	: Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use. These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.

* * *Section 9 - PHYSICAL AND CHEMICAL PROPERTIES* * *

Appearance	: paste
Color	: in accordance with the product description
Odor	: Acetic acid
Odor Threshold	: No data available
pH	: Not applicable
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: Not applicable
Flash point	: > 100 °C Method closed cup
Evaporation rate	: Not applicable
Flammability (solid, gas)	: Not classified as a flammability hazard
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapor pressure	: Not applicable
Relative vapor density	: No data available
Relative density	: 1.007
Solubility(ies)	
Water solubility	: No data available
Partition coefficient n-octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available

Viscosity
Viscosity, dynamic : Not applicable

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Molecular weight : No data available

* * *Section 10 - STABILITY AND REACTIVITY* * *

Reactivity : Not classified as a reactivity hazard.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Use at elevated temperatures may form highly hazardous compounds.
Can react with strong oxidizing agents.
Acetic acid is formed upon contact with water or humid air.
When heated to temperatures above 150 °C (300 °F) in the presence of air, trace quantities of formaldehyde may be released.
Adequate ventilation is required.
See OSHA formaldehyde standard, 29 CFR 1910.1048
Hazardous decomposition products will be formed at elevated temperatures.

Conditions to avoid : None known.

Incompatible materials : Oxidizing agents

Hazardous decomposition products
Thermal decomposition : Formaldehyde

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Information on likely routes of exposure
Skin contact
Ingestion
Eye contact

Acute toxicity

Not classified based on available information.

Product:

Acute inhalation toxicity : Acute toxicity estimate > 10 mg/l
Exposure time 4 h
Test atmosphere dust/mist
Method Calculation method

Ingredients:

Silicon dioxide:

Acute oral toxicity : LD50 (Rat) > 3,300 mg/kg
Assessment The substance or mixture has no acute oral toxicity

Remarks Information taken from reference works and the literature.

Acute inhalation toxicity : LC50 (Rat) > 2.08 mg/l
Exposure time 4 h
Test atmosphere dust/mist
Assessment The substance or mixture has no acute inhalation toxicity
Remarks Information taken from reference works and the literature.

Acute dermal toxicity : LD50 (Rabbit) > 5,000 mg/kg
Assessment The substance or mixture has no acute dermal toxicity
Remarks Information taken from reference works and the literature.

Distillates (petroleum), hydrotreated middle:
Acute oral toxicity : LD50 (Rat) > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat) 1.78 mg/l
Exposure time 4 h
Test atmosphere dust/mist

Acute dermal toxicity : LD50 (Rat) > 2,000 mg/kg

Titanium dioxide:
Acute oral toxicity : LD50 (Rat) > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat) > 6.82 mg/l
Exposure time 4 h
Test atmosphere dust/mist
Assessment The substance or mixture has no acute inhalation toxicity

Aluminium:
Acute oral toxicity : LD50 (Rat) > 5,000 mg/kg Method
OECD Test Guideline 401
Remarks Based on data from similar materials

Acute inhalation toxicity : LC50 (Rat) > 0.888 mg/l
Exposure time 4 h
Test atmosphere dust/mist
Method OECD Test Guideline 403
Assessment The substance or mixture has no acute inhalation toxicity

Carbon black:
Acute oral toxicity : LD50 (Rat) > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat) > 0.0046 mg/l
Exposure time 4 h
Test atmosphere dust/mist
Assessment The substance or mixture has no acute inhalation toxicity

Skin corrosion/irritation

Not classified based on available information.

Ingredients:

Silicon dioxide:
Result No skin irritation
Remarks Information taken from reference works and the literature.

Titanium dioxide:
Species Rabbit
Result No skin irritation

Aluminium:
Species Rabbit
Method OECD Test Guideline 404
Result No skin irritation
Remarks Based on data from similar materials

Carbon black:
Species Rabbit
Result No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Ingredients:

Silicon dioxide:
Result No eye irritation
Remarks Information taken from reference works and the literature.

Titanium dioxide:
Species Rabbit
Result No eye irritation

Aluminium:
Species Rabbit
Result No eye irritation
Remarks Based on data from similar materials

Carbon black:
Species Rabbit
Result No eye irritation

Respiratory or skin sensitization

Skin sensitization Not classified based on available information.
Respiratory sensitization Not classified based on available information.

Ingredients:

Silicon dioxide:
Assessment Does not cause skin sensitization.

Test Type Skin test type not specified
Species Guinea pig
Remarks No known sensitising effect.
Information taken from reference works and the literature.

Titanium dioxide:
Test Type Local lymph node assay (LLNA)
Routes of exposure Skin contact

Species Mouse
Result negative

Aluminium:
Routes of exposure Skin contact
Species Guinea pig
Result negative
Remarks Based on data from similar materials

Carbon black:
Test Type Buehler Test
Routes of exposure Skin contact
Species Guinea pig
Method OECD Test Guideline 406
Result negative

Germ cell mutagenicity

Not classified based on available information.

Ingredients:

Silicon dioxide:

Genotoxicity in vitro : Result negative
Remarks Information taken from reference works and the literature.

Genotoxicity in vivo : Application Route Ingestion
Result negative
Remarks Information taken from reference works and the literature.

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

Titanium dioxide:

Genotoxicity in vitro : Test Type Bacterial reverse mutation assay (AMES)
Result negative

Genotoxicity in vivo : Test Type In vivo micronucleus test
Species Mouse
Result negative

Aluminium:

Genotoxicity in vitro : Test Type In vitro mammalian cell gene mutation test
Method OECD Test Guideline 476
Result negative

Genotoxicity in vivo : Test Type In vivo micronucleus test
Species Rat
Application Route Ingestion
Method OECD Test Guideline 474
Result negative
Remarks Based on data from similar materials

Carbon black:

Genotoxicity in vitro : Test Type Bacterial reverse mutation assay (AMES)

Result negative

Carcinogenicity

Not classified based on available information.

Ingredients:

Titanium dioxide:
Species Rat
Application Route inhalation (dust/mist/fume)
Exposure time 24 Months
Method OECD Test Guideline 453
Result positive
Remarks The mechanism or mode of action may not be relevant in humans.
The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in inhalation studies with animals.

Aluminium:
Species Rat
Application Route inhalation (dust/mist/fume)
Exposure time 86 weeks
Result negative

Carbon black:
Species Rat
Application Route Inhalation
Exposure time 2 Years
Result positive
Target Organs Lungs
Remarks The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carcinogenicity - Assessment : Sufficient evidence of carcinogenicity in inhalation studies with animals

IARC	Group 2B Possibly carcinogenic to humans	
	Titanium dioxide	13463-67-7
	Carbon black	1333-86-4
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.	
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.	

Reproductive toxicity

Not classified based on available information.

Ingredients:

Aluminium:
Effects on fertility : Test Type Combined repeated dose toxicity study with the

reproduction/developmental toxicity screening test
Species Rat
Application Route Ingestion
Method OECD Test Guideline 422
Result negative
Remarks Based on data from similar materials

Effects on fetal development : Test Type Embryo-fetal development
Species Mouse
Application Route Ingestion
Result negative

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Ingredients:

Carbon black:
Routes of exposure inhalation (dust/mist/fume)
Assessment No significant health effects observed in animals at concentrations of 0.2 mg/l/6h/d or less.

Repeated dose toxicity

Ingredients:

Titanium dioxide:
Species Rat
NOAEL 24,000 mg/kg
Application Route Ingestion
Exposure time 28 d

Species Rat
NOAEL 10 mg/m3
Application Route inhalation (dust/mist/fume)
Exposure time 2 y
Remarks The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Carbon black:
Species Rat
NOAEL 1 mg/m3
LOAEL 7 mg/m3
Application Route Inhalation
Test atmosphere dust/mist
Exposure time 90 d
Remarks The substance is inextricably bound in the product and therefore does not contribute to a dust inhalation hazard.

Aspiration toxicity

Not classified based on available information.

Ingredients:

Distillates (petroleum), hydrotreated middle:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

* * *Section 12 - ECOLOGICAL INFORMATION* * *

Ecotoxicity

Ingredients:

Titanium dioxide:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)) > 100 mg/l Exposure time 96 h Method OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)) > 100 mg/l Exposure time 48 h
Toxicity to algae	: EC50 (Skeletonema costatum (marine diatom)) > 10,000 mg/l Exposure time 72 h
Toxicity to bacteria	: EC50 > 1,000 mg/l Exposure time 3 h Method OECD Test Guideline 209

Aluminium:

Toxicity to fish	: LC50 (Oncorhynchus mykiss (rainbow trout)) 14.6 mg/l Exposure time 96 h
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)) > 0.135 mg/l Exposure time 48 h Method OECD Test Guideline 202 Remarks No toxicity at the limit of solubility.
Toxicity to algae	: EC50 (Pseudokirchneriella subcapitata (green algae)) > 0.004 mg/l Exposure time 72 h Method OECD Test Guideline 201 Remarks No toxicity at the limit of solubility.
Toxicity to fish (Chronic toxicity)	: NOEC (Pimephales promelas (fathead minnow)) 7.1 mg/l Exposure time 28 d

Carbon black:

Toxicity to fish	: LC0 (Danio rerio (zebra fish)) 1,000 mg/l Exposure time 96 h Method OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)) > 5,600 mg/l Exposure time 24 h Method OECD Test Guideline 202
Toxicity to algae	: NOEC (Desmodesmus subspicatus (green algae)) 10,000 mg/l Exposure time 72 h Method OECD Test Guideline 201

Persistence and degradability

No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Other adverse effects
No data available

* * *Section 13 - DISPOSAL CONSIDERATIONS* * *

Disposal methods

Resource Conservation and Recovery Act (RCRA) : This product has been evaluated for RCRA characteristics and does not meet the criteria of hazardous waste if discarded in its purchased form.

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

* * *Section 14 - TRANSPORT INFORMATION* * *

International Regulation

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
Not regulated as a dangerous good

* * *Section 15 - REGULATORY INFORMATION* * *

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Acetic anhydride	108-24-7	5000	*
Acetic acid	64-19-7	5000	*

* Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313

Aluminium	7429-90-5	1.6 %

US State Regulations

Pennsylvania Right To Know

Dimethyl siloxane, hydroxy-terminated	70131-67-8	70 - 90 %
Silicon dioxide	7631-86-9	5 - 10 %
Distillates (petroleum), hydrotreated middle	64742-46-7	5 - 10 %
Iron oxide	1332-37-2	1 - 5 %
Titanium dioxide	13463-67-7	1 - 5 %
Aluminium	7429-90-5	1 - 5 %
Acetic acid	64-19-7	0 - 0.1 %
Acetic anhydride	108-24-7	0 - 0.1 %

New Jersey Right To Know

Dimethyl siloxane, hydroxy-terminated	70131-67-8	70 - 90 %
Silicon dioxide	7631-86-9	5 - 10 %
Distillates (petroleum), hydrotreated middle	64742-46-7	5 - 10 %
Iron oxide	1332-37-2	1 - 5 %
Titanium dioxide	13463-67-7	1 - 5 %
Aluminium	7429-90-5	1 - 5 %
Carbon black	1333-86-4	0.1 - 1 %

California Prop 65 This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

The ingredients of this product are reported in the following inventories:

REACH : All ingredients (pre-)registered or exempt.

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

AICS : All ingredients listed or exempt.

IECSC : All ingredients listed or exempt.

PICCS : All ingredients listed or exempt.

DSL : All chemical substances in this product comply with the CEPA 1999 and NSNR and are on or exempt from listing on the Canadian Domestic Substances List (DSL).

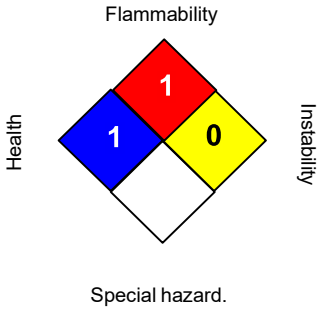
Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

* * *Section 16 - OTHER INFORMATION* * *

Further information

NFPA:



HMIS III:

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA P0	: USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3	: USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA	: 8-hour, time-weighted average
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	: STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / TWA	: 8-hour time weighted average
OSHA Z-1 / TWA	: 8-hour time weighted average
OSHA Z-3 / TWA	: 8-hour time weighted average

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http//echa.europa.eu/

Revision Date 02/25/2015

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations

in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8