

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Brand Name..... MANUS-BOND FLEX WELD PART A
Product Use Epoxy Adhesive
Product Identification Number N/A

MANUFACTURER

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

EMERGENCY TELEPHONE NUMBER

CHEMTREC: 800-424-9300

Plant Telephone: (952) 442-3323

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %
Proprietary Polymers	Proprietary	<55
Calcium Carbonate	1317-65-3	<25
2,4,6-Tris[(dimethylamino)methyl]phenol*	90-72-2	<7
Organosilicon compounds	Mixture	<5
Thixotropic agent	Proprietary	<5
Titanium Dioxide	13463-67-7	<1

*2,4,6-Tris[(dimethylamino)methyl]phenol, CAS# 90-72-2 is a corrosive liquid.

See Section 15 of this MSDS for OSHA Regulatory Status

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Off white solid with a slight ammonia like odor. Warning! Causes eye, skin, and respiratory tract irritation. May cause eye or skin burns.

In case of fire, use extinguishing media suitable for the material that is burning

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTE(S) OF ENTRY

Inhalation (breathing); eye and skin contact.

SYMPTOMS OF EXPOSURE

Inhalation: Vapors are irritating. Vapor may cause delayed lung injury and chemical pneumonia.

Eye Contact: Causes severe irritation. May cause chemical burns and possible permanent injury.

Skin Contact: Causes severe irritation. May cause chemical burns.

Ingestion: Can cause gastrointestinal tract irritation, nausea, vomiting, diarrhea and possible burns to

mucous membranes.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Not known.

REPORTED AS CARCINOGEN OR POTENTIAL CARCINOGEN

Not listed

OSHA

National Toxicology Program (NTP)

International Agency for Research on Cancer (IARC)

4. FIRST AID MEASURES

Inhalation: Remove from area to fresh air. If not breathing, clear airway and start mouth-to-mouth artificial respiration or use a bag-mask respirator. Get immediate medical attention. If victim is having trouble breathing, transport to medical care and, if available, give supplemental oxygen.

Eye contact: Immediately rinse eyes with water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eyes and lids with water. Remove any contact lenses after the first 5 minutes and then continue flushing eyes. Get immediate medical attention. Continue flushing eyes with running water for at least 15 minutes.

Skin Contact: Wash affected areas with large amounts of running water, and soap if available, for 15 minutes. Remove contaminated clothing and shoes. Wash clothing and decontaminate shoes before reuse. Get medical attention.

Ingestion: Give 3-4 glasses of water, but **DO NOT** induce vomiting. If vomiting occurs, give fluids again. Have physician determine if patient's condition allows induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.

NOTE TO PHYSICIAN –

The primary hazard is due to the corrosive affects of tris[(dimethylamino)methyl]phenol.

5. FIRE FIGHTING MEASURES

Flash Point and Method..... >N/A

EXTINGUISHING MEDIA

Use media suitable for the material that is burning.

SPECIAL FIREFIGHTING INSTRUCTIONS

Move containers from area if it can be done without risk.

FIREFIGHTING EQUIPMENT

As in any fire, wear NIOSH approved, positive-pressure self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate protective equipment (See Section 8). Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Collect and place in a container for disposal.

7. HANDLING AND STORAGE

HANDLING

Wear appropriate protective equipment (See Section 8). Avoid contact with eyes, skin and clothes. Wash thoroughly after handling.

STORAGE

Keep container tightly closed. Keep from contact with Part B.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use local exhaust.

PERSONAL PROTECTION

Respirator: Use NIOSH approved equipment only. For exposure above the exposure limit, use a respirator that has been selected by an industrial hygienist or other technically qualified person for the specific work conditions. If respirators are used, OSHA requires compliance with its respiratory program (29 CFR1910.134).

Eye Protection: Wear vented safety goggles or safety glasses.

Gloves: Rubber.

Clothing: Wear clothing that will protect the skin from exposure to this chemical.

Other: Eye wash.

EXPOSURE CONTROLS

COMPONENT	OSHA PEL		ACGIH TLV	
	TWA	STEL	TWA	STEL
Titanium Dioxide*	15 mg/m ³	N/E	10 mg/m ³	N/E
Calcium Carbonate*	15 mg/m ³	N/E	10 mg/m ³	N/E

*Exposure limits are provided for information only. This chemical is not in a respirable form in this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

StateSolid
ColorOff-white
OdorSlight Ammonia like
pHN/A
Vapor PressureN/D
Specific Gravity ~1.19-1.22
VOC Content.....~1% by weight
Water Solubility Insoluble

10. STABILITY AND REACTIVITY

REACTIVITY

MANUS-BOND FLEX-WELD Part A

Stable.

INCOMPATIBILITIES

Acids, strong oxidizing agents

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon dioxide, carbon monoxide, oxides of nitrogen and silicon.

CONDITIONS TO AVOID

Not known

11. TOXICOLOGICAL INFORMATION

For Product: Not established.

For 2,4,6 tris[(dimethylamino)methyl]phenol

Oral LD₅₀ (rat).....1,653 mg/kg
Dermal LD₅₀ (rabbit).....1,350 mg/kg
Inhalation LC₅₀ (rat).....> 5 mg/l
Primary Dermal Irritation (rabbit).....8 (Scale 0-8)
Primary Eye Irritation (rabbit).....110 (Scale 0 – 110)
DOT Corrosivity (rabbit).....Negative

For Titanium Dioxide

Trochimowicz, *et al.*, *J. Appl. Tox.*, **8**, 383-385 (1988).

Oral LD ₅₀ (rat)	>25 g/kg
Dermal LD ₅₀ (rabbit)	>10 g/kg
Inhalation LC ₅₀ (rat)	>6.82 mg/l (4 hr)

E.I. DuPont's Haskell Toxicology Laboratory conducted lifetime inhalation studies of respirable titanium dioxide at levels up to 250 mg/m³; no compound related clinical signs of toxicity were seen in the exposed animals. Slight pulmonary fibrosis was seen at 50 to 250 mg/m³ respirable titanium dioxide but not at 10 mg/m³. There was no evidence of cancer in animals exposed to 10 or 50 mg/m³ respirable titanium dioxide. Microscopic lung tumors were seen in 17 percent of the rats exposed to 250 mg/m³ respirable titanium dioxide. The lung tumors observed in the rats were different from common human lung cancers, relative to anatomic type and location, and occurred only at dust levels which overwhelmed the animals lung clearance mechanism and therefore, are of questionable biological relevance for man.

Results of a DuPont epidemiology study showed that employees who had been exposed to titanium dioxide pigments were at no greater risk of developing lung cancer than were employees who had not been exposed to titanium dioxide pigments. No pulmonary fibrosis was found in any of the employees and no associations were observed between titanium dioxide pigment exposure and chronic respiratory disease or lung abnormalities. Based on the results of this study, DuPont concluded that titanium dioxide pigment will not cause lung cancer or chronic respiratory disease in humans at concentrations experienced in the workplace.

The National Cancer Institute (NCI) conducted a feed study in rats and mice in which either 25,000 or 50,000 parts per million titanium dioxide was given in their diet for two years. Under the condition of the NCI test, titanium dioxide did not cause cancer by the oral route.

Titanium dioxide has been classified by the American Congress of Governmental Industrial Hygienists (ACGIH) as an A4 Carcinogen - *Not Classifiable as a Human Carcinogen*. ("1999 TLVs and BEIs," p. 67). It has been classified by the International Agency for Research on Cancer (IARC) as Group 3 - *Not Classifiable as to Its Carcinogenicity to Humans*. (IARC Monograph 47, 1989).

12. ECOLOGICAL INFORMATION

None Available

13. DISPOSAL CONSIDERATIONS

RCRA Waste Code:.....Not Regulated. Observe all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT Hazard Class.....Not regulated.

TDG Hazard Class.....Not Regulated

15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

Hazardous Non-Hazardous

CERCLA/SUPERFUND (40 CFR 117, 302)

Chemical Name	RQ (lbs)/(kg)
N/A	N/A

SARA EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355)

Chemical Name	TPQ (lbs)	RQ (lbs)
N/A	N/A	N/A

SARA HAZARD CATEGORIES (40 CFR 370)

Acute Chronic Fire Pressure Reactive None

SARA TOXIC CHEMICALS (40 CFR 372)

Chemical Name	CAS Number	%
N/A	N/A	N/A

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (CPR Section (33))

This product has been classified according to the hazard criteria of the Controlled Products Regulations, and the MSDS contains all required information.

Controlled Product; Classification: D2B Not a Controlled Product

INVENTORY STATUS

The ingredients of this chemical are listed on the US TSCA Chemical Substance Inventory and the Canadian Domestic Substances List.

TOXIC SUBSTANCES CONTROL ACT

No specific regulations apply.

STATE REGULATIONS

California Proposition 65.....Warning. This product contains traces of crystalline silica and formaldehyde, chemicals known to the State of California to cause cancer.
Massachusetts Right to Know ListTitanium Dioxide
Minnesota Hazardous Substance List.....Titanium Dioxide
New Jersey Right to Know List.....Titanium Dioxide (SN 1861)
Pennsylvania Right to Know List.....Titanium Dioxide
Rhode Island Hazardous Substance ListTitanium Dioxide

16. OTHER INFORMATION

ABBREVIATIONS

C - Ceiling limit

LC_{Lo} - The lowest concentration of a substance in air that will kill a test animal within a certain exposure period.

LC₅₀ - The concentration of a substance in air that will kill 50% of test animals within a certain exposure period.

LD₅₀ - The dose that causes death in 50% of test animals.

N/A - Not applicable

N/D - Not determined

N/E - Not established

N/K - Not known

NAERG - North American Emergency Response Guidebook

RQ - Reportable Quantity

TPQ - Threshold Planning Quantity

PREPARATION INFORMATION

Prepared by: Manus Chemical Safety and Health Department

MSDS No.: MANUS-BOND Flex Weld Part A

Date Prepared:.....August 2012

Supersedes: October, 2011

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Brand Name..... MANUS-BOND FLEX WELD PART B
Product Use Epoxy Adhesive
Product Identification Number N/A

MANUFACTURER

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

EMERGENCY TELEPHONE NUMBER

CHEMTREC: 800-424-9300

Plant Telephone: (952) 442-3323

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEIGHT %
Calcium Carbonate	1317-65-3	<50
Epoxy Resins	Proprietary	<45
Crystalline Silica	14808-60-7	<1
Carbon Black	1333-86-4	<1

See Section 15 of this MSDS for OSHA Regulatory Status

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Gray odorless solid. Causes eye irritation. May cause allergic skin reaction.

In case of fire, use extinguishing media suitable for the material that is burning

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTE(S) OF ENTRY

Eye and skin contact.

SYMPTOMS OF EXPOSURE

Inhalation: None expected under normal use conditions. Heating to elevated temperatures may liberate irritating vapors.

Eye Contact: Causes eye irritation, experienced as pain, tearing and redness.

Skin Contact: May be slightly irritating to the skin. May cause allergic skin reactions.

Ingestion: May be toxic if swallowed.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Preexisting eye and skin disorders.

REPORTED AS CARCINOGEN OR POTENTIAL CARCINOGEN

Not listed

National Toxicology Program (NTP)

OSHA

International Agency for Research on Cancer (IARC)

4. FIRST AID MEASURES

Inhalation: Remove from area to fresh air. Seek medical attention if respiratory irritation develops or if breathing becomes difficult.

Eye contact: Immediately rinse eyes with water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eyes and lids with water. Remove any contact lenses after the first 5 minutes and then continue flushing eyes. Get immediate medical attention. Continue flushing eyes with running water for at least 15 minutes.

Skin Contact: Wash affected areas with large amounts of running water, and soap if available, for 15 minutes. Remove contaminated clothing and shoes. Wash clothing and decontaminate shoes before reuse. Get medical attention if irritation develops and persists.

Ingestion: Give 3-4 glasses of water, but **DO NOT** induce vomiting. If vomiting occurs, give fluids again. Have physician determine if patient's condition allows induction of vomiting or evacuation of stomach. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.

NOTE TO PHYSICIAN –

None

5. FIRE FIGHTING MEASURES

Flash Point and Method..... >N/A

EXTINGUISHING MEDIA

Use media suitable for the material that is burning.

SPECIAL FIREFIGHTING INSTRUCTIONS

Move containers from area if it can be done without risk.

FIREFIGHTING EQUIPMENT

As in any fire, wear NIOSH approved, positive-pressure self-contained breathing apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate protective equipment (See Section 8). Do not get in eyes, on skin or on clothing. Wash thoroughly after handling. Collect and place in a container for disposal.

7. HANDLING AND STORAGE

HANDLING

Wear appropriate protective equipment (See Section 8). Avoid contact with eyes, skin and clothes. Wash thoroughly after handling.

STORAGE

Keep container tightly closed. Store in a cool dry area away from acids or bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

General dilution ventilation system.

PERSONAL PROTECTION

Respirator: Use NIOSH approved equipment only. For exposure above the exposure limit, use a respirator that has been selected by an industrial hygienist or other technically qualified person for the specific work conditions. If respirators are used, OSHA requires compliance with its respiratory program (29 CFR1910.134).

Eye Protection: Wear vented safety goggles or safety glasses.

Gloves: Butyl or EVAL-Laminate.

Clothing: Wear clothing that will protect the skin from exposure to this chemical.

Other: Eye wash.

EXPOSURE CONTROLS

COMPONENT	OSHA PEL		ACGIH TLV	
	TWA	STEL	TWA	STEL
Calcium Carbonate*	15 mg/m ³	N/E	10 mg/m ³	N/E
Crystalline silica	(see below)		.1 mg/m ³	N/E
Carbon Black*	3.5 mg/m ³	N/E	3.5 mg/m ³	N/E

COMPONENT	OSHA PEL	
	TWA	STEL
Silica, Crystalline Quartz (respirable)	<u>250 mppcfa</u>	<u>10 mg/m³</u>
	%SiO ₂ + 5	%SiO ₂ + 2
Silica, Quartz (Total Dust)		<u>30 mg/m³</u>
		%SiO ₂ + 2

*Exposure limits are provided for information only. This chemical is not in a respirable form in this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

State	Solid	Vapor Pressure	N/D
Color	Gray/Black	Specific Gravity	~1.43-1.45
Odor	None	VOC Content.....	~>1% by weight
pH	N/A	Water Solubility	Insoluble

10. STABILITY AND REACTIVITY

REACTIVITY

Stable.

INCOMPATIBILITIES

Acids, strong oxidizing agents, strong Lewis or mineral acids and strong mineral and organic bases, especially primary and secondary amines. Reaction with some curing agents can generate considerable heat.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon dioxide, carbon monoxide, aldehydes, acids.

CONDITIONS TO AVOID

High Temperatures

11. TOXICOLOGICAL INFORMATION

For Carbon Black: IARC – Group 2B (Possibly carcinogenic to humans)

For Product: Not established.

For diglycidyl ether of bis-phenol A

Diglycidyl ether of bis-phenol A is a component of the epoxy resins in this product. Recent 2 year bioassays in rats and mice exposed by the dermal route to this chemical showed no evidence of carcinogenicity to the skin or any other organs. These studies clarify prior equivocal results from a 2 year mouse skin painting study, which were suggestive, but not conclusive, for weak carcinogenic activity. The International Agency for Research on Cancer (IARC) concluded that diglycidyl ether of bis-phenol A is not classifiable as a carcinogen (IARC Group 3)

For crystalline silica

This product contains small amounts of crystalline silica. The National Toxicology Program (NTP) has determined that respirable crystalline silica may reasonably be anticipated to be a carcinogen, based upon animal studies. The international Agency for Research on cancer (IARC) classified crystalline silica inhaled in the form of quartz cristobalite from occupational sources as group 1 – carcinogenic to humans. This assignment was based on a relatively large number of epidemiological studies that provided sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica.

12. ECOLOGICAL INFORMATION

None Available

13. DISPOSAL CONSIDERATIONS

RCRA Waste Code:.....Not Regulated.
Observe all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

DOT Hazard Class.....Not regulated.
TDG Hazard Class.....Not Regulated

15. REGULATORY INFORMATION

OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

Hazardous Non-Hazardous

CERCLA/SUPERFUND (40 CFR 117, 302)

Chemical Name	RQ (lbs)/(kg)
N/A	N/A

SARA EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355)

Chemical Name	TPQ (lbs)	RQ (lbs)
N/A	N/A	N/A

SARA HAZARD CATEGORIES (40 CFR 370)

Acute Chronic Fire Pressure Reactive None

SARA TOXIC CHEMICALS (40 CFR 372)

Chemical Name	CAS Number	%
N/A	N/A	N/A

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (CPR Section (33))

This product has been classified according to the hazard criteria of the Controlled Products Regulations, and the MSDS contains all required information.

Controlled Product; Classification: D2B Not a Controlled Product

INVENTORY STATUS

The ingredients of this chemical are listed on the US TSCA Chemical Substance Inventory and the Canadian Domestic Substances List.

TOXIC SUBSTANCES CONTROL ACT

No specific regulations apply.

STATE REGULATIONS

California Proposition 65.....Warning. This product contains traces of crystalline silica and
Traces of phenyl glycidyl ether and epichlorohydrin, chemicals
known to the State of California to cause cancer.

Florida Hazardous Substance List.....Crystalline silica

Massachusetts Right to Know List.....Carbon Black, Crystalline silica

Minnesota Hazardous Substance List.....Carbon Black, Crystalline silica

New Jersey Right to Know List.....Carbon Black (SN 0342), Crystalline silica

Pennsylvania Right to Know List.....Carbon Black, Crystalline silica

Rhode Island Hazardous Substance ListCarbon Black, Crystalline silica

16. OTHER INFORMATION

ABBREVIATIONS

C - Ceiling limit

LC_{Lo} - The lowest concentration of a substance in air that will kill a test animal within a certain exposure period.

LC₅₀ - The concentration of a substance in air that will kill 50% of test animals within a certain exposure period.

LD₅₀ - The dose that causes death in 50% of test animals.

N/A - Not applicable

N/D - Not determined

N/E - Not established

N/K - Not known

NAERG - North American Emergency Response Guidebook

RQ - Reportable Quantity

TPQ - Threshold Planning Quantity

PREPARATION INFORMATION

Prepared by: Manus Chemical Safety and Health Department

MSDS No.: MANUS-BOND Flex Weld Part B

Date Prepared: August 2012

Supersedes: October, 2011