

SAFETY DATA SHEET

BIOFLEX
NATURA

(Part 1)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BIOFLEX NATURA (Part 1)
CHEMICAL FAMILY: Plasticized Gypsum Composition
SUPPLIER: **BioFlex Roof Products**
Canada (Head Office)
209 - 3380 South Service Road
Burlington, Ontario
L7N 3J5

EMERGENCY CONTACT: (833) 425 2441

2. HAZARDS IDENTIFICATION

COLOR: Yellow
PHYSICAL STATE: Opaque liquid
ODOR: Oil smell

EMERGENCY OVERVIEW



IMMEDIATE CONCERNS: Eye, Skin, Digestive Irritant.

POTENTIAL HEALTH EFFECTS

EYES: Prolonged and repeated contact may cause irritation to eyes.

SKIN: Prolonged and repeated contact may cause irritation to skin.

INGESTION : Ingestion may cause irritation to the digestive tract.

INHALATION : None known.

CARCINOGENICITY: Not listed by NTP, IARC, ACGIH, or OSHA as a carcinogen.

ROUTES OF ENTRY: Eyes, Skin, Ingestion

TARGET ORGAN STATEMENT: Eyes, Dermal, Mouth

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>%W.t</u>	<u>#CAS</u>	<u>#EINECS</u>
Castor Oil	30 - 60	8001-79-4	232-293-8
Calcium Sulfate dihydrate	30 - 60	13397-24-5	231-900-3
Trade Secret	1 - 5	-	-

4. FIRST AID MEASURES

EYES : Flush eye(s) for 15 minutes or more; if irritation persists, consult a physician (preferably an eye specialist) and show MSDS.

SKIN: Wash area thoroughly with soap and water. Remove contaminated clothing. Seek medical attention if symptoms are present after washing.

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INGESTION: Seek medical attention immediately. Do not induce vomiting.

INHALATION: Remove individual from site of exposure and place in fresh air. Seek medical attention if breathing is difficult.

ADDITIONAL INFO : Any additional symptoms and effects are described in Section 11.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Not Determined

AUTOIGNITION TEMPERATURE: Not Determined

FLAMMABLE CLASS: N/A

EXTINGUISHING MEDIA: Alcohol resistant foam, carbon dioxide, dry powder, or water spray.

EXPLOSION HAZARDS: This product has no known explosion hazards.

FIRE FIGHTING PROCEDURES: There are no special firefighting procedures.

FIRE FIGHTING EQUIPMENT: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

HAZARDOUS COMBUSTION PRODUCTS: Flammable under extreme heat and an ignition source.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Use personal protective equipment and avoid vapors. Do not let enter drains. Soak up with inert absorbent material and dispose according to federal or state regulations.

RELEASE NOTES : In case of accident or road spill notify:

*Emergency number: 833 425 2441

7. HANDLING AND STORAGE

HANDLING: MIX WELL BEFORE USE Provide suitable extraction/ventilation at processing machines and avoid skin/eye contact.

STORAGE: Keep container in cool well-ventilated place. Keep containers tightly closed. Product degradation to an organic tin salt may occur upon exposure to direct sunlight. **IF NOT USED RIGHT AWAY, STORE CONTAINER UPSIDE DOWN TO AVOID SETTLING AT THE BOTTOM OF CONTAINER.**

Storage Period 12 Months

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

	OSHA PEL-TWA	ACGIH TLV
	mg/m ³	mg/m ³
Castor Oil	NE	NE
Calcium Sulfate dihydrate	15	10
Trade Secret part 1	15	10
Trade Secret part 2	15	10

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ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. If local exhaust is not available, general (mechanical) ventilation is acceptable, if exposure is maintained below the TLV.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Safety Goggles recommended for use.

SKIN: PVC gloves are recommended for use.

RESPIRATORY: In case of insufficient ventilation, respiratory protective equipment: Cartridge for organic gases and vapors.

PROTECTIVE CLOTHING: Impermeable protective clothing is recommended.

WORK HYGIENIC PRACTICES: Avoid breathing dust or mist from solutions. Do not eat, drink, or smoke in work area. Wash hands thoroughly after use.

OTHER USE PRECAUTIONS: None

9. PHYSICAL AND CHEMICAL PROPERTIES

FLASH POINT, METHOD :	235°C (COC) After dehydration
PHYSICAL STATE :	Opaque liquid
ODOR :	Oil odor
COLOR :	Varied
pH :	Not Determined
PERCENT VOLATILE :	Not Determined
VAPOR DENSITY :	Heavier than air
BOILING POINT :	Not Determined
MELTING POINT :	Not Determined
SOLUBILITY IN WATER :	Insoluble
ENTHALPY OF VAPORIZATION :	Not Determined
SPECIFIC GRAVITY :	1.4
VISCOSITY :	Not Determined

10. STABILITY AND REACTIVITY

STABLE : Chemically stable under normal and anticipated storage and handling conditions.

HAZARDOUS POLYMERIZATION: No.

HAZARDOUS COMBUSTION PRODUCTS: Black smoke, oxides of carbon, oxides of sulfur >1450 °C

CONDITIONS TO AVOID: None

INCOMPATIBLE MATERIALS: Contact with oxidizers may result in a low energy release.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL: None known

EYE EFFECTS: The toxic effects of this material are not known.

SKIN EFFECTS: The toxic effects of this material are not known.

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INHALATION EFFECTS: The toxic effects of this material are not known.

12. ECOLOGICAL INFORMATION

GENERAL COMMENTS: Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

ENVIRONMENTAL DATA:

Component 13397-24-5

Fish LC50 : Fathead Minnow (*Pimephales promelas*) >1970 mg/L (96hours)

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations.

PRODUCT DISPOSAL: In accordance with local authority regulations, take to special waste incineration plant.

EMPTY CONTAINER DISPOSAL: If empty contaminated containers are recycled or disposed of, the receiver must be informed about possible hazards.

14. TRANSPORT INFORMATION

NON-BULK (I.E. 55 GAL DRUM, 1 GAL JUG) – DOT (DEPARTMENT OF TRANSPORTATION)

NOT REGULATED

PROPER SHIPPING NAME: N/A

PRIMARY HAZARD CLASS/DIVISION: N/A

UN/NA NUMBER: N/A

PACKING GROUP: N/A

BULK (I.E. TANKER, ISO TANK) – DOT (DEPARTMENT OF TRANSPORTATION)

NOT REGULATED

IMDG

NOT REGULATED

ICAO/IATA

NOT REGULATED

ADDITIONAL INFORMATION

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

UNITED STATES:

OSHA HAZARD COMMUNICATION STANDARD

This product is Not Hazardous as defined by the OSHA Hazard Communication Standard.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

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311/312 HAZARD CATEGORIES:

FIRE: NO

REACTIVITY: NO

ACUTE: YES

313 REPORTABLE INGREDIENTS: This product contains no SARA Title III, Section 313 listed chemicals.

PENNSYLVANIA RIGHT TO KNOW COMPONENTS

Castor Oil 8001-79-4

Calcium Sulfate dihydrate 13397-24-5

NEW JERSEY RIGHT TO KNOW COMPONENTS

Castor Oil 8001-79-4

Calcium Sulfate dihydrate 13397-24-5

MASSACHUSETTS RIGHT TO KNOW COMPONENTS

Calcium Sulfate dihydrate 13397-24-5

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All intentional ingredients are listed in the TSCA Inventory.

16. OTHER INFORMATION

PREPARED BY: Bioroof Systems Inc.

DATE: 9 September 2020

MANUFACTURER DISCLAIMER: The information contained herein is based on data believed to be reliable by BIOROOOF SYSTEMS INC.. It is true and accurate to the best of our knowledge, but is not intended to be all inclusive. Users should consider this information as a supplement to other information gathered by them and must make their own determination of suitability and completeness to assure proper safe use and disposal of these materials.

SAFETY DATA SHEET



(Part 2)

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BIOFLEX NATURA (Part 2)
CHEMICAL FAMILY: Plasticized Gypsum Composition
SUPPLIER: **BioFlex Roof Products**
Canada (Head Office)
209 - 3380 South Service Road
Burlington, Ontario
L7N 3J5
EMERGENCY CONTACT: (833) 425 2441

2. HAZARDS IDENTIFICATION

COLOR: Dark Brown
PHYSICAL STATE: Opaque liquid
ODOR: Musty, almost odorless
EMERGENCY OVERVIEW



IMMEDIATE CONCERNS: Health concern; Toxic gases/fumes may be given off during burning or thermal decomposition. Combustible liquid under extreme heat or when contaminated with water. May aggravate asthma, respiratory disorders, skin allergies, and eczema.

POTENTIAL HEALTH EFFECTS

EYES: Causes irritation to eyes.
SKIN: Causes irritation to skin. Skin sensitizer
INGESTION : Harmful.
INHALATION : May cause lung damage.
CARCINOGENICITY: Not listed by NTP, IARC, ACGIH, or OSHA as a carcinogen.
ROUTES OF ENTRY: Eyes, Skin, Mucous Membranes, Ingestion
TARGET ORGAN STATEMENT: Eyes, Dermal, Inhalation

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	%W.t	#CAS	#EINECS
Diphenylmethane Diisocyanate, isomers and homologues	99 - 100	9016-87-9	N/A
4,4' -Methylenediphenyl diisocyanate	40 - 50%	101-68-8	N/A

*CAS 101-68-8 is a isomer of CAS 9016-87-9

4. FIRST AID MEASURES

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EYES : Flush eye(s) for 15 minutes or more; if irritation persists, consult a physician (preferably an eye specialist) and show MSDS.

SKIN: Wash area thoroughly with soap and water. Remove contaminated clothing. Seek medical attention if symptoms are present after washing.

INGESTION: Seek medical attention immediately. Do not induce vomiting.

INHALATION: Remove individual from site of exposure and place in fresh air. Seek medical attention if breathing is difficult.

ADDITIONAL INFO : May cause asthma like symptoms. Inhaled beta2 agonist and oral or parenteral corticosteroids are recommended. Consult a physician. Any additional symptoms and effects are described in Section 11.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: > 204°C Closed Cup Method

AUTOIGNITION TEMPERATURE: Not Determined

FLAMMABLE CLASS: N/A

EXTINGUISHING MEDIA: Foam, carbon dioxide, dry powder. Avoid Water.

EXPLOSION HAZARDS: No data available.

FIRE FIGHTING PROCEDURES: **Reacts with water.** If water is used as extinguishing agent, use large amounts of water and wear protection against isocyanate and nitrogen oxide fumes. Wear positive pressure self-contained breather apparatus and full protective clothing.

FIRE FIGHTING EQUIPMENT: As in any fire, wear self-contained breathing apparatus pressure-demand, (MSHA/NIOSH approved or equivalent) and full protective gear.

HAZARDOUS COMBUSTION PRODUCTS: Isocyanate vapors, oxides of carbon and nitrogen, traces of hydrogen cyanide.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Keep upwind of spill. Absorb onto mineral absorbent and place into dry open top containers. Neutralize with 5% soda ash solution, 10 parts solution to 1 part waste. Let stand 48 hours prior to disposal. Flush spill area with large volumes of water and contain.

LARGE SPILL: Keep upwind of spill. Prevent from entering into soil, ditches, sewers, waterways, and/or groundwater. Absorb with material such as sand, dirt, vermiculite, or clay. Not cement powder. Collect in suitable and properly labeled open containers, not sealed and neutralize as in small spills.

RELEASE NOTES : In case of accident or road spill notify:

*Emergency number: 833 425 2441

7. HANDLING AND STORAGE

HANDLING: MIX WELL BEFORE USE Read label and SDS prior to handling. Provide suitable extraction/ventilation at processing machines. Keep away from all sources of ignition – No Smoking. Cool endangered containers by water spray.

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STORAGE: Keep container in cool well-ventilated place, maximum 41°C. Keep containers tightly closed. Do not store product contaminated with water to prevent potential hazardous reaction. Product degradation to an organic tin salt may occur upon exposure to direct sunlight.

Storage Period 12 Months

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

4,4-Methylene diphenyl diisocyanate	<u>TWA</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>OEL FOURNISSEUR</u>
	ppm	mg/m ³	ppm	ppm
	0.005	0.2	0.005	0.003

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. If local exhaust is not available, general (mechanical) ventilation is acceptable, if exposure is maintained below the TLV.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Safety Goggles recommended for use.

SKIN: PVC gloves and impervious footwear are recommended for use.

RESPIRATORY: In case of insufficient ventilation, respiratory protective equipment: Cartridge for organic gases and vapors.

PROTECTIVE CLOTHING: Impermeable protective clothing is recommended.

WORK HYGIENIC PRACTICES: Avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands thoroughly after use.

OTHER USE PRECAUTIONS: None

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE :	Liquid
ODOR :	Musty, almost odorless
COLOR :	Dark brown
pH :	Not Applicable
PERCENT VOLATILE :	Not Determined
VAPOR DENSITY :	~8.5 (air=1)

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(Part 2)

BOILING POINT :	Decompresses prior to boiling
EVAPORATION RATE:	Slow
FREEZING POINT :	Forms crystals below 10°C
SOLUBILITY IN WATER:	Insoluble – reacts slowly with water
PARTITION COEFFICIENT, n-octanol/water :	Reacts with water
VAPOR PRESSURE:	<0.0001 mmHg @ 25°C
SPECIFIC GRAVITY :	1.24 @ 25°C
DYNAMIC VISCOSITY :	150-220 cPs @ 25°C
WEIGHT PER VOLUME :	1234 kg/m ³

10. STABILITY AND REACTIVITY

STABLE : Chemically stable under normal and anticipated storage and handling conditions.

HAZARDOUS POLYMERIZATION: May be initiated by metal salts, strong bases or temperatures in excess of 175°C. May be catalyzed by strong bases or water.

CONDITIONS TO AVOID: 21°C > 41°C. Avoid moisture. Avoid elevated temperatures. Pressure may build rapidly.

INCOMPATIBLE MATERIALS: Water, acids, ammonia, alcohols, alkalies, surfactants, bases, metal compounds, moist air, strong oxidizers. Reactions may be violent. Reacts with water to form heat, carbon dioxide, and insoluble urea. Water may cause pressure build-up in sealed containers. Increased temperature will speed up reactions. Avoid moist organic absorbant materials.

11. TOXICOLOGICAL INFORMATION

ACUTE ORAL: LD50: >2,000mg/kg [Rat]

EYE EFFECTS: The toxic effects of this material are not known.

SKIN EFFECTS: LD50: >9,400mg/kg [Rabbit]

INHALATION EFFECTS: LD50: 490mg/m³, 4h [Rat]

INHALATION EFFECTS (Repeated dose toxicity):

90 days; NOAEL: 1mg/m³ [Rat, 6hrs/day 5 days/week]

2 years; NOAEL: 0.2 mg/m³ [Rat, 6hrs/day 5 days/week]

Irritation to lungs and nasal cavity.

INGESTION EFFECTS: LD50: >10,000mg/kg [Rat]

MUTAGENICITY: Negative [Salmonella typhimurium, Metabolic activation:with/without]

DEVELOPMENTAL TOXICITY: No effect, Fetotoxicity seen only with maternal toxicity. [Rat, inhalation, gestation days 6-15, 6hrs/day: 12mg/m³ (Maternal 4mg/m³)]

GENETIC TOXICOLOGY: Inconclusive. Weakly positive in some i-vitro studies; others were negative. Animal mutagenicity studies were predominately negative.

CARCINOGENICITY: Lung tumors [Rat, inhalation, 2 years, 6hrs/day, 5 days/week] Tumors occurred concurrently with respiratory irritation and lung injury. Current exposure guidelines are expected to protect against these effects.

12. ECOLOGICAL INFORMATION

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(Part 2)

GENERAL COMMENTS: Almost non-toxic to aquatic organisms on an acute basis. Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

ENVIRONMENTAL DATA:

Fish Acute and Prolonged Toxicity: LC50: >1,000mg/l [Danio rerio (zebra fish), static test 96h]

Aquatic Invertebrate Acute Toxicity: EC50: >1,000mg/l [Daphnia magna (water flea), static test 24h]

Aquatic Plant Toxicity: NOEC: 1,640mg/l [Desmodesmus subspicatus (green algae), static test-growth rate inhibition 72h]

Micro-organism Toxicity: EC50: >100mg/l [OECD 209 Test, activated sludge, Respiration inhibition 3h]

Soil Dwelling Organisms Toxicity: EC50: >1,000mg/l [Eisenia fetida (earthworms), 14d]

BIOACCUMULATIVE POTENTIAL:

Bioaccumulation: Low Potential; BCF<100. In the aquatic and terrestrial environment, movement is expected to be limited by its reaction with water forming predominantly insoluble polyureas.

Bioconcentration Factor (BCF): 92 [Cyprinus carpio (Carp)]

Mobility in Soil: Movement is limited.

Biodegradation: OECD 302 C Test, 28d = 0%. Material reacts with water to form insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and related diisocyanates.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations.

PRODUCT DISPOSAL: Do not dump into any sewers, on the ground, or into any body of water. In accordance with local authority regulations, take to special waste incineration plant.

EMPTY CONTAINER DISPOSAL: If empty contaminated containers are recycled or disposed of, the receiver must be informed about possible hazards.

14. TRANSPORT INFORMATION

NON-BULK (I.E. 55 GAL DRUM, 1 GAL JUG) – DOT (DEPARTMENT OF TRANSPORTATION)

NOT REGULATED

BULK (I.E. TANKER, ISO TANK) – DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

TECHNICAL NAME: MDI

PRIMARY HAZARD CLASS/DIVISION: 9

UN/NA NUMBER: 3082

PACKING GROUP: III

REPORTABLE QUANTITY: 5000lb

IMDG

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Product Name: Polymethylene polyphenyl isocyanate

Ship Type: 2

Pollution Category: Y

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(Part 2)

ICAO/IATA

NOT REGULATED

ADDITIONAL INFORMATION

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

UNITED STATES:

OSHA HAZARD COMMUNICATION STANDARD

This product is Hazardous as defined by the OSHA Hazard Communication Standard.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES:

FIRE: NO

REACTIVITY: YES

ACUTE HEALTH HAZARD: YES

313 REPORTABLE INGREDIENTS:

<u>Component</u>	<u>%W.t</u>	<u>#CAS</u>
Diphenylmethane Diisocyanate, isomers and homologues	99 - 100	9016-87-9
4,4' -Methylenediphenyl diisocyanate	40 - 50	101-68-8

PENNSYLVANIA RIGHT TO KNOW COMPONENTS

<u>Component</u>	<u>%W.t</u>	<u>#CAS</u>
Diphenylmethane Diisocyanate, isomers and homologues	99 - 100	9016-87-9
4,4' -Methylenediphenyl diisocyanate	40 - 50	101-68-8

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, & LIABILITY ACT OF 1980 SECTION 103 (CERCLA)

<u>Component</u>	<u>%W.t</u>	<u>#CAS</u>
Diphenylmethane Diisocyanate, isomers and homologues	99 - 100	9016-87-9
4,4' -Methylenediphenyl diisocyanate	40 - 50	101-68-8

CALIFORNIA PROPOSITION 65

This product contains no listed substances known to the State of California to cause cancer, birth defects, or other reproductive harm, at levels which would require a warning under the statute.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All intentional ingredients are listed in the TSCA Inventory.

16. OTHER INFORMATION

SAFETY DATA SHEET



(Part 2)

PREPARED BY: BioFlex Roof Products.

DATE: 9 September 2020

MANUFACTURER DISCLAIMER: The information contained herein is based on data believed to be reliable by BIOFLEX ROOF PRODUCTS. It is true and accurate to the best of our knowledge, but is not intended to be all inclusive. Users should consider this information as a supplement to other information gathered by them and must make their own determination of suitability and completeness to assure proper safe use and disposal of these materials.