

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

MORFLEX* 150

Synonyms: 1,2-Benzenedicarboxylic acid, 1,2-dicyclohexyl ester

Chemical Abstracts Registry No: 84-61-7

REACH Registration Number: 01-2119978223-34-0003

1.2. Relevant identified uses of the substance or mixture and uses advised against

Plasticizer

1.3. Details of the supplier of the safety data sheet

Vertellus LLC
201 North Illinois Street, Suite 1800
Indianapolis, Indiana 46204 USA
1-336-292-1781

Only Representative for EU REACH Registration:

Vertellus Specialties UK Ltd.
Seal Sands Road, Seal Sands
Middlesbrough, TS2 1UB
England

e-mail Address: sds@vertellus.com

1.4. Emergency telephone number

Vertellus: 1-336-292-1781

CHEMTREC (USA): +1-800-424-9300 (collect calls accepted)

CHEMTREC (International): +1-703-527-3887 (collect calls accepted)

NRCC (China): +86 25 85477110

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture (According to Regulation (EC) No 1272/2008, 29 CFR 1910.1200 and the Globally Harmonized System)

Skin Sensitization Category 1
Reproductive Toxicity Category 1B
Environmental Chronic Category 3

2.2. Label elements

Hazard Symbols (Pictogram):



Signal Word:

Danger

Hazard Precautions:

H317 - May cause an allergic skin reaction.
H360D - May damage the unborn child.
H412 - Harmful to aquatic life with long lasting effects.

Prevention Precautionary Statements:

P201 - Obtain special instructions before use.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

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First Aid Precautionary Statements: P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P308+P313 - IF exposed or concerned: Get medical advice/attention.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.

Storage Precautionary Statements: P405 - Store locked up.

Disposal Precautionary Statements: P501 - Dispose of contents/container in accordance with local/regional/national/international regulation for hazardous wastes.

2.3. Other hazards

Other Hazards: Not applicable.

SECTION 3: Composition/information on ingredients

3.1. Substances or 3.2. Mixtures

Ingredient	CAS Number	Concentration (weight %)	EC Number	CLP Inventory/ Annex VI	EU CLP Classification (1272/2008)
Dicyclohexyl Phthalate	84-61-7	~ 100	201-545-9	Not applicable	Skin Sens. 1; H317 Repr. 1B; H360D Aquatic Chronic 3; H412

NOTE: See Section 8 for exposure limit data for these ingredients. See Section 15 for trade secret information (where applicable).

SECTION 4: First aid measures

4.1. Description of first aid measures

Skin Contact: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician.

Eye Contact: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.

Inhalation: If exposed to excessive levels remove to fresh air and get medical attention if cough or other symptoms develop.

Ingestion: If swallowed, contact physician or poison control center immediately. Do NOT induce vomiting. Do not give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Prolonged or repeated skin contact may cause skin irritation in some individuals.

Delayed Effects: None known.

4.3. Indication of any immediate medical attention and special treatment needed

Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Appropriate Extinguishing Media: Foam, Water spray, carbon dioxide, dry chemical.

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5.2. Special hazards arising from the substance or mixture

Hazardous Products of Combustion:	As with other organic materials, combustion will produce carbon monoxide and carbon dioxide.
Potential for Dust Explosion:	Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, or equivalent guidance, for safe handling. Morflex* 150 (dicyclohexyl phthalate) was tested for dust explosion characteristics and the following results were obtained: <ul style="list-style-type: none">- minimum ignition energy: 3 - 5 mJ- Minimum ignition temperature of dust cloud: 430 - 440°C- Explosion severity - 20L Sphere<ul style="list-style-type: none">- Maximum explosion pressure (bar): 7.4- Maximum rate of pressure rise (bar/s): 642- Kst value (bar.m/s): 174 <p>The MIE data suggests a high sensitivity to ignition.</p> <p>Follow good engineering practice, such as NFPA 69 and NFPA 77, for the design, construction and operation of solids handling equipment, and for protection against static electricity.</p>
Special Flammability Hazards:	Not applicable.

5.3. Advice for firefighters

Basic Fire Fighting Guidance:	Wear self-contained breathing apparatus and protective clothing. Normal firefighting procedures may be used.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuation Procedures:	Isolate the hazard area and deny entry to unnecessary and unprotected personnel.
Special Instructions:	See Section 8 for personal protective equipment recommendations. Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded.

6.2. Environmental precautions

Prevent releases to soils, drains, sewers and waterways.

6.3. Methods and material for containment and cleaning up

Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Remove all ignition sources. Ventilate the area of spill or leak. Wear protective equipment during clean-up. Material can then be collected for later disposal. After collection of material, flush area with water. Dispose of the material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws.

6.4. Reference to other sections

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean up material disposal instructions.

SECTION 7: Handling and storage

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7.1. Precautions for safe handling

Precautions for Unique Hazards: Not applicable.

Practices to Minimize Risk: Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material. Do not eat, drink or smoke in work areas. Prevent contact with incompatible materials. Avoid spills and keep away from drains. Handle in a manner to prevent generation of aerosols, vapors or dust clouds. To reduce the risk of dust explosion, the recommendations for facility and process design, control of ignition sources and fugitive dust, fire protection, training and maintenance outlined in "NFPA 654: Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids", or equivalent guidance, should be followed. Implementing a housekeeping program to control the accumulation of dust on work surfaces is critical to reducing the risk of catastrophic secondary dust explosions.

Special Handling Equipment: Not applicable.

7.2. Conditions for safe storage, including any incompatibilities

Storage Precautions & Recommendations: This product should be stored at ambient temperature in a dry, well-ventilated location. Keep container closed when not in use. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

Dangerous Incompatibility Reactions: Incompatible with oxidizing materials, Alkali Metals, Strong acids, and Strong reducing agents.

Incompatibilities with Materials of Construction: None known

7.3. Specific end use(s)

If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to this annex for the specific exposure scenario control parameters for uses identified in subsection 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Country	Occupational Exposure Limit
Austria, Ireland, New Zealand, United Kingdom	5 mg/m ³ as an 8-hour time-weighted average
Denmark	3 mg/m ³ as an 8-hour time-weighted average; 6 mg/m ³ as a 15-minute short-term limit

Air Monitoring Method: Collection Media: Tenax®; Analysis Method: GC/FID

Derived No Effect Levels (DNELs) – Workers:

Route	DNEL
Long-term - systemic effects (inhalation)	35.2 mg/m ³
Acute - systemic effects (inhalation)	35.2 mg/m ³
Acute and long-term - local effects (dermal, inhalation)	No hazard identified
Long-term - systemic effects (dermal)	0.5 mg/kg bw/day

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Acute - systemic effects (dermal)	No hazard identified.
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Derived No Effect Levels (DNELs) – General Population:

Route	DNEL
Long-term - systemic effects (inhalation)	0.87 mg/m ³
Acute - systemic effects (inhalation)	No hazard identified.
Acute and long-term - local effects (dermal, inhalation)	No hazard identified
Long-term - systemic effects (dermal)	0.25 mg/kg bw/day
Acute - systemic effects (dermal)	no hazard identified
Long-term - systemic effects (oral)	0.25 mg/kg bw/day
Acute - systemic effects (oral)	0.25 mg/kg bw/day

Predicted No Effect Concentrations (PNECs):

Route	PNEC
PNEC aqua (freshwater)	0.004 mg/L
PNEC aqua (marine water)	0 mg/L
PNEC aqua (STP)	10 mg/L
PNEC sediment (freshwater)	1.06 mg/kg sediment dw
PNEC sediment (marine water)	0.106 mg/kg sediment dw
PNEC soil	0.21 mg/kg soil dw

8.2. Exposure controls

Also see the annex to this SDS (if applicable) for specific exposure scenario controls.

- Other Engineering Controls:** All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).
- Personal Protective Equipment:** Safety glasses or chemical goggles. PPE: Impervious clothing, gloves, and boots. Where overexposures are a concern, use NIOSH-approved chemical cartridge respirator or supplied-air breathing equipment as necessary. Butyl rubber, nitrile rubber, neoprene, polyvinyl alcohol (PVA) gloves conforming to at least EN374; long sleeved shirts and trousers without cuffs or impervious clothing (EN 14605); Half mask (EN136) or full face (EN140) respirators with organic vapor/acid gas cartridges and particle filters and chemical goggles (EN166) or face shield.
- Respirator Caution:** Observe OSHA regulations for respirator use (29 CFR 1910.134) or equivalent guidance. Air-purifying respirators must not be used in oxygen-deficient atmospheres.
- Thermal Hazards:** Not applicable.
- Environmental Exposure Controls:** The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

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Appearance, State & Odor (ambient temperature):	White powder with slight aromatic odor.		
Vapor Pressure:	0.000116 PA @ 25°C	Evaporation Rate:	< 1 (Butyl Acetate = 1)
Specific Gravity or Density:	0.787 g/ml	Vapor Density (air = 1):	11.6
Boiling Point:	322 C @ 101.3 KPA	Freezing / Melting Point:	66 °C
Solubility in Water:	1.015 mg/l	Octanol / Water Coefficient:	Log Kow = 4.82 (25°C)
pH:	No data available.	Odor Threshold:	No data available.
Viscosity:	No data available.	Autoignition Temperature:	No data available.
Flash Point and Method:	356°F (180°C) COC	Flammable Limits:	No data available.
Flammability (solid, gas):	No data available.	Decomposition Temperature:	No data available.
Explosive Properties:	Not explosive.	Oxidizing Properties:	Not an oxidizer.

9.2. Other information

Not applicable.

SECTION 10: Stability and reactivity

<u>10.1. Reactivity</u>	Not classified as dangerously reactive.
<u>10.2. Chemical stability</u>	Stable
<u>10.3. Possibility of hazardous reactions</u>	Polymerization is not expected to occur
<u>10.4. Conditions to avoid</u>	Avoid contact with incompatible materials, dust generation, and sources of heat
<u>10.5. Incompatible materials</u>	Incompatible with oxidizing materials ; Alkali Metals; Strong acids.; Strong reducing agents
<u>10.6. Hazardous decomposition products</u>	carbon monoxide; Carbon dioxide; A thermal decomposition occurs at the boiling point which releases cyclohexanol and phthalic anhydride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Oral LD₅₀:	> 2000 mg/kg (rat)	OECD 423, 2012; Dicyclohexyl Phthalate
Acute Dermal LD₅₀:	> 2000 mg/ kg (rat)	OECD 402, 2012; Dicyclohexyl Phthalate
Acute Inhalation LC₅₀:	No data available.	
Skin Irritation:	Non-irritating to skin. (OECD 439, 2012) DCHP	
Eye Irritation:	Non-irritating to eyes. (OECD 437, 2012) DCHP	
Skin Sensitization:	Positive for skin sensitization potential in Local Lymph Node Assay (OECD 442B).	

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Mutagenicity:	This product has been shown not to be mutagenic based on a battery of assays.
Reproductive / Developmental Toxicity:	Effects on fertility and development toxicity (oral route): NOAEL 18 mg/kg bw/day (OECD 416). Two-generation reproductive/developmental studies in laboratory animals show clear evidence of adverse effects on the development of the offspring following parental exposure, at doses which did not result in marked maternal toxicity.
Carcinogenicity:	This material is not listed by IARC, NTP or OSHA as a carcinogen. No test data is available that indicates this material is a carcinogen.
Target Organs:	None known
Aspiration Hazard:	Based on physical properties, not likely to be an aspiration hazard.
Primary Route(s) of Exposure:	Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.
Most important symptoms and effects, both acute and delayed	Prolonged or repeated skin contact may cause skin irritation in some individuals. Delayed Effects: None known.
Additive or Synergistic effects:	None known.

SECTION 12: Ecological information

<u>12.1. Toxicity</u>	LC50 (96h) <i>Oryzias latipes</i> (Medaka) > 2 mg/L (OECD 203) EC50 (48h) <i>Daphnia magna</i> > 2 mg/L (OECD 202) EC50 (72h) <i>Pseudokirchneriella subcapitata</i> > 2 mg/L (OECD 201) NOEC <i>Daphnia magna</i> = 0.181 mg/L (21d OECD 211)	Dicyclohexyl Phthalate
<u>12.2. Persistence and degradability</u>	Material is readily biodegradable under aerobic conditions.	
<u>12.3. Bioaccumulative potential</u>	Bioconcentration is not expected to occur.	
<u>12.4. Mobility in soil</u>	This material is expected to have moderate mobility in soil. It absorbs to most soil types.	
<u>12.5. Results of PBT and vPvB assessment</u>	This substance is not a PBT or vPvB.	
<u>12.6. Other adverse effects</u>	No data available.	

SECTION 13: Disposal considerations

<u>13.1. Waste treatment methods</u>	
US EPA Waste Number:	Non-Hazardous
Waste Classification: (per US regulations)	The waste may be classified as "special" or hazardous per State regulations.
Waste Disposal:	NOTE: Generator is responsible for proper waste characterization. State hazardous waste regulations may differ substantially from federal regulations. Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used. Note that disposal regulations may also apply to empty containers and equipment rinsates.

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SECTION 14: Transport information

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN), unless otherwise indicated:

14.1. UN number	Not applicable	14.2. UN proper shipping name	Chemicals, n.o.s. (Dicyclohexyl Phthalate)
14.3. Transport hazard class(es)	Not applicable	14.4. Packing group	Not applicable
14.5. Environmental hazards	Not applicable		
14.6. Special precautions for user	Not applicable.		
NA Emergency Guidebook Numbers:	Not applicable	IMDG EMS:	Not applicable;
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code			Not applicable.

SECTION 15: Regulatory information

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

Chemical Inventory Lists:	Status:		
USA TSCA:	Listed	EINECS:	Listed 201-545-9
Canada(DSL/NDSL):	Listed (DSL)	Japan:	Listed (3-1311)
Korea:	Listed (KE-02215)	Australia:	Listed
China:	Listed	Philippines:	Listed
Taiwan:	Listed	New Zealand:	Listed
German Water Hazard Classification:	ID Number 2668, hazard class 1 - low hazard to waters (<i>dicyclohexyl phthalate</i>)		
SARA 313:	Not listed.		
Reportable Quantities:	Not applicable.		
State Regulations:	This product contains chemicals listed on the Minnesota Hazardous Substances List.		
Other Regulatory Listings:	Dicyclohexyl Phthalate is approved for use in the United States as a food contact substance - for details, see 21 CFR 176.170, 21 CFR 175.105, 21 CFR 177.1200 and 21 CFR 178.3740. The substance has been included in the REACH candidate list of substances of very high concern for authorisation as per Regulation (EC) No 1907/2006 Article 59(1).		

HMIS IV:

HEALTH	3*
FLAMMABILITY	1
PHYSICAL HAZARD	0

NFPA:



15.2. Chemical safety assessment

Not applicable.

SECTION 16: Other information

Classification Method: On basis of test data

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Expert judgment

Legend of Abbreviations:

ACGIH = American Conference on Governmental Industrial Hygienists.

CAS = Chemical Abstracts Service.

CFR = Code of Federal Regulations.

DSL/NDSL = Domestic Substances List/Non-Domestic Substances List.

EC = European Community.

EINECS = European Inventory of Existing Commercial Chemical Substances.

ELINCS = European List of Notified Chemical Substances.

EU = European Union.

GHS = Globally Harmonized System.

LC = Lethal Concentration.

LD = Lethal Dose.

NFPA = National Fire Protection Association.

NIOSH = National Institute of Occupational Safety and Health.

NTP = National Toxicology Program.

OSHA = Occupational Safety and Health Administration

PEL = Permissible Exposure Limit.

RQ = Reportable Quantity.

SARA = Superfund Amendments and Reauthorization Act of 1986.

TLV = Threshold Limit Value.

WHMIS = Workplace Hazardous Materials Information System.

Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. **THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.**

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