Safe Use Instruction Sheet

MONIFLEX© - Insulation material

0. General Information

MONIFLEX© meets the definition of an article under the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the European Union (EU) Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Standard, United States (US) Occupational Health and Safety Administration (OSHA) Hazard Communication Standard, Canadian Workplace Hazardous Materials Information System (WHMIS) Regulation and Australian Work Health and Safety (WHS) Regulation.

Therefore, under normal usage of our products, a Material Safety Data Sheet (MSDS) is not required and will not be issued by Isoflex.

To support our customers with additional data on safe handling and use instructions for our manufactured articles this Safe Use Instruction Sheet was created.

ISOFLEX AB
Soldatvägen 1
SE-781 60 Gustafs
Sweden

Phone: +46 (0)243 841 50
Fax: +46 (0)243 22 92 00
E-mail: info@isoflex.se
Website: isoflex.se

1. Identification of the substance and company.

1.1 Product name	MONIFLEX© - Insulation material
1.2 Chemical name	Cellulose Diacetate
1.3 Manufacturer's name and address	Isoflex AB Soldatvägen 1 SE-781 60 Gustafs Sweden
Company phone number	+46 (0)243 841 50
Emergency Telephone	+46 (0)243 841 50
Company website	www.isoflex.se

2. Composition/information on ingredients.

MONIFLEX© consists of pleated layers of cellulose diacetate film, with every other layer glued crosswise to form a sheet of suitable thickness. The film is derived largely from natural resources. Materials of this type have been widely used for many years, with no adverse reactions reported.

3. Hazards identification.

3.1 Potential hazards	Clear, pleated sheets. (similar safety hazards to paper). Xn – Harmful

MONIFLEX© is comprised of cellulose diacetate and small amount of flame retardant plasticiser. The flame retardant plasticiser has the risk phrase R22 associated with it meaning harmful if swallowed

Specific toxicological and migration tests on the flame retardant film have not been conducted, however due to the chemical interaction between the plasticiser and polymer chains and the relatively low levels contained within the film, the risk of potential health hazards are minimal.

3.2. Fire and Explosion Hazard	Flame Retardant formulation. It will burn if exposed to an external flame and self-extinguish on removal.
3.3. Decomposition Products	Carbon monoxide, carbon dioxide, acetic acid, water. **TOXIC and CORROSIVE** combustion products may also include HCl and halogenated C2 C3 compounds.

4. First-aid measures.

4.1 Inhalation	Not applicable
4.2 Skin contact	No adverse effects anticipated
4.3 Eye contact	No adverse effects anticipated
4.4 Ingestion	No adverse effects anticipated

No adverse effects expected on prolonged exposure.

5. Fire-fighting measures.

5.1 Extinguishing Media	Water, carbon dioxide, foam, dry powder, sand.
5.2 Special Fire Fighting Procedure	Self-contained breathing apparatus and a chemical protection suit must be worn if fumes have evolved.

6. Accidental release measures.

6.1 Loose waste and scrap material should be swept up for safe disposal. The product should be prevented from entering drains, ditches and rivers.

7. Handling and storage.

- MONIFLEX© shall be stored under dry conditions in original cardboard boxes on pallets of the same length as the cardboard boxes. These instructions are important to follow to protect the MONIFLEX© from dust and mechanical destruction.
- Extremes of temperature and humidity should be avoided.

8. Exposure controls/personal protection.

8.1 Special Requirements	None
8.2 Personal protection	Handling of MONIFLEX© during normal conditions need no special protection and no adverse effects are expected on prolonged exposure. The edges of Moniflex may be sharp and to avoid cuttings gloves are recommended to be used.

9. Physical and chemical properties.

9.1 Appearance	Pleated sheets in various thicknesses
9.2 Odour	Practically Odourless
9.3 Specific Gravity	1.35 ± 0.01
9.4 Flow Temperature	Not applicable
9.5 Viscosity	Not applicable
9.6 Solubility in Water	Insoluble
9.7 Equilibrium Water Content	Circa 2% (in air @ temp. 23°C, RH 50%)
9.8 Specific density	0,013 g/cm3 0,01 ASTM 792 at 23°C, DIN 53420
9.9 Color	Clear/Transparent

10. Stability and reactivity.

10.1 Thermal Stability	Decomposes circa 250°C
10.2 Solvent	Resistance Low resistance to ketones and esters. Attacked by moderate to concentrated strong acids and bases. Resistant to non-polar solvents.

11. Toxicological information.

Material of this type has been in use for many years. There have been no chronic, short- or long-term effects reported. Specific toxicological tests on the flame retardant film have not been conducted. However, practical experience and literature surveys for the key components reveal the following information;

11.1 Inhalation	Not applicable
11.2 Ingestion/Oral Toxicity (LD50)	8600 mg/kg (rat) for Cellulose diacetate 2000 mg/kg (rat) for the flame retardant.
11.3 Skin sensitivity	No adverse effects anticipated
11.4 Eye contact	Normal discomfort resulting from foreign bodies in the eye.

12. Ecological information

12.1 Raw materials and the manufacturing process

Over 80% of MONIFLEX© is cellulose diacetate. This is derived from natural cellulose sources, wood-pulp, from managed forestry (predominately in North America). The suppliers have active replanting programs and report a net increase in tree numbers. There is no use of hardwoods from endangered rain forests.

MONIFLEX© is made from pleated layers of cellulose diacetate film with every other layer glued with acetone solvent crosswise to form a sheet of suitable thickness. The residual solvent is recycled or oxidized in a high efficiency solvent cleaner. The production process is low temperature which results in no detectable loss in properties making the product potentially suitable for recycling. Solvents from the Moniflex production are cleaned by oxidation on site and off cuts are being recycled and reused as raw material.

12.2 Mobility and degradability

Cellulose, the primary constituent of MONIFLEX©, has long been recognized as biodegradable. Biodegradation studies of the fire retarder have shown that it is inherently biodegradable. The potential for the flame retarder to enter the water system should be considered as for any chemicals used even though the flame retarder is not considered as having a negative impact on aquatic systems.

12.3 Recycling

MONIFLEX© may be recycled at low temperature, however, the tendency of the flame retardant to breakdown and/or polymerise upon heating should be taken into account if the MONIFLEX© is incorporated into products requiring more extreme recycling conditions.

13. Disposal considerations

MONIFLEX© can be either recycled, disposed of by incineration or by controlled land fill, following member state and local legislation.

14. Transport information

The material is not regulated for transport and shipping purposes. Materials packed on pallets should not be broken down during shipment.

15. Regulatory information

Hazard symbols:	Xn - Harmful
Risk phrases (flame retardant):	R22: Harmful if swallowed
Safety phrases (flame retardant):	S20/21: When using, do not eat, drink or smoke.

16. Other information

16.1 Heavy metals	No heavy metals are used in the manufacture of MONIFLEX©. The cellulose diacetate film used complies with Europeans Standard EN71-3, and US - CONEG Legislation.

Disclaimer

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

This information relates only to the above-mentioned materials as delivered in their original packaging. It does not relate to any product made of these materials with or without the inclusion of further additives, such as processing aids or colorants. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. This information should not be construed as a promise or guarantee of specific properties of the products described or their suitability for a particular application. Any existing intellectual property rights must be observed.

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