

SAFETY DATA SHEET OF POLYURETHANE FLEXIBLE FOAMS

1. Product identification

Name of the product:	Polyether and Polyester polyurethane foam
Commercial names:	Various
Composition:	Polyurethane polymer
Chemical description:	Polymer obtained from the reaction of isocyanates, polyester/polyether polyols and water in the presence of catalysts, flame retardants and other substances, resulting in a polyurethane foam with a cellular structure. The isocyanates and polyols are completely reacted during the process of obtaining the foam and the product as it is supplied, does not contain free form isocyanates.
Appearance:	Flexible cellular foam.
Regulatory information:	At the moment, according to the EU Directives regarding the classification, packaging and labeling of dangerous substances, there are not any special requirements for this product.

2. Physical properties

Physical form/appearance:	Solid, more or less elastic
Color:	Various colors
Solubility in water:	Insoluble
Smell:	None or mild odour
Ignition point:	Between 315°C and 370°C
Decomposition temperature:	Above 180°C
Caloric power:	28.000 kJ/kg
Stability and reactivity:	The product is stable in -40...+100°C

3. Fire hazards

Auto-ignition point: (ASTM D 1929)	Between 370°C and 427°C
Fire hazard:	The product is a combustible material. When it burns, it discharges intense heat and dense smoke.
Melting point:	It does not melt by heat, it decomposes, a process out of which can result flammable decomposition products. A fire can generate, in different concentrations according to the combustion conditions, decomposition products such as carbon black, carbon monoxide, carbon dioxide, nitrogen oxides, hydrocyanic acid and other pyrolysis products, similar to wood burning. In addition, if the foam contains flame retardants, it could generate corrosive gases.
Appropriate extinction substances:	Water, CO ₂ , dry powder, liquid foam.
Protection during fires:	It is recommended the use of an autonomous insulating suit.
Additional information	The expression „flame retarded” refers to the fact that the product presents an improved resistance to fire, tested at a small scale, in special labs. This does not reflect the hazards in case of large-scale fires.
Storage and processing:	Due to fire hazards associated with some processing operations of the foam (e.g.: hot wire cutting, grinding, rolling etc.) it is advisable to seek expert assistance and to observe the fire prevention measures.

4. Toxicity

Inhaling:	During the processing operation, dust can be generated, which inhaled could cause chronically pulmonary infections, the obstruction of the respiratory tract and fibrosis. That is why it is necessary to provide proper ventilation and/or to provide the proper personal protection equipment.
Orally:	There is no proof that PU foam is orally toxic.
Skin contact:	There are no any known adverse effects caused by skin contact with PU foam.
Eye contact:	Dust can be irritating. Rinse with water.
Microbiological contamination:	PU foam is sterile when it is produced.

5. Safety measures during handling, storage and processing

At normal temperature, PU foam does not present a health hazard. There are not necessary any special protective and clothing equipments for handling the foam because it does not irritate the skin, the eyes or the respiratory system, except for the processes that generate dust.

Ventilation during some operations:	Local exhaust ventilation is necessary for some operations i.e. where dust is produced from buffing and flocking operations or where fumes are produced in flame laminating, heat forming and hot wire cutting.
Storage:	Store away from heat sources (lit match, cigarette, open fire, electric heater). UV rays determine surface alterations of the colors of the products (yellowing).

Eye protection:	During the operations that generate dust it is recommended that you wear safety goggles.
Protective clothing:	Not required. In case of dust generating operations skin protective clothes and appropriate respiratory masks are recommended.
Other safety measures:	There are not necessary any special measures in the case of completely matured PU foam. While handling fresh PU foam, immediately after production, the use of protective gloves is recommended. During product processing there is a risk of electrostatic charging.

6. Ecological information

Biodegradability:	Dependent on the type of PU foam, the product is not biodegradable or it degrades slowly.
Additional ecological data:	In case of fire involving standard foam, the particles that can reach water are not harmful. They will separate from water and/or they are destroyed in the water treatment plants. The living organisms from the water are not threatened.

7. Information regarding transport

Characteristics:	According to the current EU regulations, the product is not classified as dangerous for any means of transportation.
Special measures:	No special steps need to be taken for the transportation of PU foam..

8. Waste treatment

The polyurethane foam, in case it has not been contaminated with a foreign substance and it cannot stand as raw material for other type of products, can be recycled by various methods. One of the methods, called "rebonding", means reusing the ground foam and it can be applied if a number of technical and economic conditions are met. Where recycling is not possible, the PU foam wastes are sent to authorized waste storage facilities or they can be destroyed by burning under controlled conditions.

The optimal method will also be chosen according to specific laws, in this respect, the assistance of the Local Authorities can be requested.

According to the EU regulations and environmental Directives, there are not any special requests for the disposal of standard polyurethane foam.

Uncontaminated flexible polyurethane foam can be disposed of, according to code *07 02 99 wastes not otherwise specified*.

9. Chemical composition and characterization

Flexible polyurethanes are part of the polymer class and they are defined as products, and not as chemical compounds (e.g. in *International Material Data System - IMDS*).

A range of raw materials are used for manufacturing foam, that include isocyanates, polyols (in major proportion), water (in minor proportion). These ingredients react completely, being chemically bound in the polyurethane polymer matrix.

There are also used, in low concentration, other additives with different characteristics, some of which are also chemically bound in the polymer matrix.

Depending on the type of PU foam, this can contain any of the following substances in very low concentration:

- amino-aliphatic and/or cyclo-aliphatic catalysts
- flame retardants
- plasticizers
- silicones and/or organic surfactants

- tin octoate, tin oxide
- organic and/or anorganic pigments

A particularization of the content of the final product of these raw materials or of the additives cannot be made, because most of them are reactive, being chemically bound in the matrix of the PU foam or because they gradually disappear during the maturation phase of the manufacturing process.

The product does not contain additives that do not permit recycling.

10. Disclaimer of liability

The local legislation is to be followed.

This information is furnished without warranty, expressed or implied, except that it is accurate according to the best available knowledge of the PU foam manufacturer.

The data on this sheet relate only the specific material design herein.

The manufacturer assume no legal responsibility for use of, or reliance upon these data. For information regarding specific application of the product, the foam manufacturer should be contacted.