Material Information Data Sheet

Polyurethane - flexible foam

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Material: Polyurethane flexible foam or PUR
Manufacturer: Dunlop Foams
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Polyurethane foams are not hazardous products nor mixtures of dangerous substances. They are identified as industrial polymers. According to EU Regulation 1907/2006/EC (REACH) Polyurethane foams are defined as “articles” and in that respect they are not bound to obligation for a Safety Data Sheet.

Nevertheless, in order to provide Customers with useful information on products’ main characteristics, Dunlop Foams prepared this Material Information Data Sheet, which - only for the sake of convenience and simplicity - shows a structure similar to Safety Data Sheets for dangerous Substances and Mixtures.

A. Product Identification

Product names	Polyether Polyurethane Foam Polyester Polyurethane Foam
Trade names	Various, depending on the manufacturer
Composition	Polyurethane polymer
Material Information	Poly-addition product of diisocyanates, polyether/ polyester polyols and water,

	controlled by catalysts, stabilizers and other additives, resulting in a cellular polyurethane foam.
Regulatory Information	No labeling is required for this material by existing EU Regulation on Classification, Packaging and Labeling of substances and mixtures (EC) 1272/2008, except in cases it is bound to conform to the Biocidal Products Regulation (BPR) (EU) 528/2012.

B. Physical properties

Physical form/appearance	Cellular material with elastic properties
Colour	Varies according to manufacturer's choice
Specific gravity	10-300 kg/m³
Solubility in water	Insoluble
Odour	None or mild odour
Flash ignition point	Between 315°C to 370°C
Decomposition temperature	Above 180°C
Thermal energy	28.000 KJ/kg
Stability and reactivity	The product is stable at temperatures between - 40°C and + 100°C

C. Fire Hazards

Auto-ignition point (ASTM D 1929)	Between 370°C to 427°C
Fire hazard	The product is a combustible material and causes, when burning, intense heat and dense smoke. In a fire, decomposition products such as carbon black, carbon monoxide, carbon dioxide, gaseous hydrocarbons and nitrogen containing products can be generated in various

	concentrations depending on the combustion conditions.
Melting point	The product has no melting point but will decompose into gaseous components
Suitable fire extinguishers	Water, carbon dioxide, dry powder, liquid foam
Human protection in large fires	Fire fighters should use self-contained breathing apparatus. Should the burning foam come in contact with skin, cool the burned area with water without removing the foam. In case of serious burns call a doctor immediately. In the event of persons inhaling combustion gases, they must be removed from the area and given swift medical attention.
Further fire information	Terms like “is flame retarded” or “contains flame retardants” are sometimes used to describe improved ignition resistance in small- scale tests and do not reflect hazards in large scale fire conditions
Storage & Processing	In processing flexible PU Foams all prescriptions, directives and technical rules regarding the layout of workstations, machinery safety and workplace human protection must be observed. Because of the fire risks associated with certain processing operations on block foam (e.g. hot-wire cutting, crumbing, flame lamination, etc) it is advisable to seek expert guidance on fire precautions that need to be in place. Attention should be paid to the possibility to produce electrostatic charges during foam processing operations that may be dangerous.

D. Toxicological data

Oral	There is no evidence that PU foam is toxic in case of ingestion. LD50(oral-rats) < 5.000 mg/kg
Inhalation	No adverse effect known by inhalation following contact with PU foam. In case of a conversion step in which foam material is grinded and foam dust particles can be generated a proper exhaustion of dust must be in place and/or PSP (personal safety protection) must be worn. Concentration in air equal to or greater than 10 mg/m³ 8-h TWA of inhalable dust not allowed.
Skin contact	No adverse effects known following contact with PU foam.
Eye contact	Dust particles can cause mechanical irritation. Rinse with water to remove dust.
Microbiological: contamination	PU foam is sterile when manufactured.

E. Protective measures in handling, storage and processing

Handling foam	Special protective equipment and clothing is not necessary when handling foam, since it does not irritate the skin, eyes or respiratory system, except in those processes where dust is produced
Ventilation	Provided there is adequate general ventilation, no special precautions are necessary for most handling and cutting operations
Ventilation during some operations	Local exhaust ventilation is necessary for some operations i.e. where dust is produced from sawing, buffing or crumbing operations or where fumes are produced in flame laminating, thermo-forming or hot wire cutting
Storage	Store away from heat sources (match, cigarette, open fire, electrical heater, …). UV rays may cause surface discoloration. This does not affect the physical properties of the

	foam. Store in compliance with safety standards established by local Authorities and by specific requirements of the Insurance Companies.
Eye protection	Protective goggles should be worn for processes which generate dust
Protective clothing	Not required. In case of dust generating operations skin protective clothes and appropriate respiratory masks are recommended.
Other measures	No specific measures are needed for fully cured PUR foam. Gloves should be used when handling fresh foams.

F. Ecological information

Biodegradability	Dependent on the type of PU foam, the product is not degradable or degrades slowly
Additional ecological data	PU Flexible Foams do not contain Ozone depleting substances and are not produced using products regulated by pertinent legislation.

G. Transport information

Labelling	PU foam is not classified for conveyance or supply under the International Agreements on Carriage of Dangerous Goods. The product is not classified as hazardous for any mode of transportation under current EU/UN regulations
Measures	No special steps need to be taken for the transportation of PU foam

H. Disposal considerations

Production trim	Trim polyurethane foam and off-cuts can usually be recycled by several methods provided the residues are clean and sorted
Post-Consumer Waste	A major recycling option exists via rebonding if a series of technical and economic conditions are met. If recycling is not possible, scrap or post-consumer PU foam waste can be used for energy recovery or be disposed of at licensed landfill sites or by incineration under controlled conditions in agreement with EU and National regulatory provisions and following advice from the Local Waste Regulation Authority.
Legislation	Under EU environmental legislation, there are no special requirements for the disposal of conventional PU foam

I. 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 to the specific material designated herein.

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

Input for external Material Data Systems or PU foam convertors.

Flexible polyurethanes are polymers and defined in Data Systems, i.e. IMDS, as a product, not as a chemical compound. In terms of REACH polyurethane foam is defined as article.

For the manufacture of PU foam, a series of raw materials are used. These include diisocyanates, polyols (major proportion) and water (small proportion). These ingredients are fully reacted during foam manufacture and chemically converted into the PU polymer matrix. In addition, other essential additives of different characteristics are used in small concentrations, some of which could be also chemically bonded to the matrix.

Depending on the final application, legal requirements or customer's request PU foam may contain any of the following substances:

Aliphatic and/or cycloaliphatic amine catalysts
Flame-retardants
Silicone and/or organic surfactants Inorganic
Tin catalysts
Organic and/or inorganic pigments.

No detailed breakdown of the finished foam in any of these raw materials or additives can be expressed as final percentages, as most are reactive and chemically bonded to the PU foam matrix or disappear gradually during the curing phase (24h) of the manufacture.

Additives, which prohibit the rebonding recycling route, are not present.

Substances like Hg, Cd, Pb and Cr6+ are not intentionally added to the formulation. When reporting to customers in the automotive sector the use of IMDS is required. Besides the material PU Foam, additives are to be reported according to the requirements of GADSL (Global Automotive Declarable Substance List).