

SAFETY DATA SHEET

**BT10**

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

1.1 Product identifier

Product name : BT10
Internal code : WW38052
Chemical product name : Polyethylene (ultra-high molecular weight)
Synonyms : UHMWPE
Chemical formula : (C₂-H₄)_n
EC number : Not available.
REACH Registration number : Not available.

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

Recommended use : Ballistic protection applications; protective equipment

1.3 Details of the supplier of the safety data sheet

Supplier : DSM Dyneema BV
 PO Box 1163, 6160 BD Geleen
 Mauritslaan 49, 6129 EL Urmond
 The Netherlands
 telephone + 31-(0)46-476 79 99
 E-mail: info.dyneema@dsm.com
 website http://www.dyneema.com

e-mail address of person responsible for this SDS : Info.Worldwide@dsm.com

1.4 Emergency telephone number

Emergency telephone number : Netherlands: +31 46 476 55 55
 Fax: +31 46 476 64 40

Remarks : ☒ Dyneema® BT hard ballistic protection materials are woven and laminated sheets made from Dyneema® UHMWPE tape without the use of any binder or additional adhesive. The tapes, which are arranged in a woven structure of 0 to 90 degrees are clearly visible to the naked eye and give the product a typical checkerboard appearance.
 For product specification data we refer to the product specification sheet of: BT10 (LP document no. LP57)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Substance

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

Classification according to Directive 67/548/EEC [DSD]

Not classified.

Remarks : Hazard during processing: to minimise a possible safety risk of HB-type panels being squeezed out of the press during compression moulding, precautionary measurements are advised, as described in Technical Bulletin LP205, which is available from your local Dyneema Sales Manager.

2.2 Label elements

Hazard pictograms : Not applicable.

Signal word : No signal word.

Hazard statements :

Precautionary statements

Prevention : ☒ Not applicable.

Response : ☒ Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII : Not available.

Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII : Not available.

Other hazards which do not result in classification : Not available.

SECTION 3: Composition/information on ingredients

Substance/mixture : Substance

Product/ingredient name	Identifiers	%	<u>Classification</u>	
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]
Polyethylene (ultra-high molecular weight)	CAS: 9002-88-4	100	Not classified. See Section 16 for the full text of the R-phrases declared above.	Not classified. See Section 16 for the full text of the H-statements declared above.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs or vPvBs or have been assigned a workplace exposure limit and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Not applicable
Inhalation : Not applicable.
Skin contact : There is no known acute effect after over-exposure to this product.
Ingestion : There is no known acute effect after over-exposure to this product.
Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Small fire

Suitable : Use dry chemical powder.or CO₂ powder
Not suitable : None known.

Large fire

Suitable : Use dry chemical powder. Alcohol-resistant foam.
Not suitable : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : No specific fire or explosion hazard.
Hazardous combustion products : In case of fire, may produce hazardous decomposition products such as carbon monoxide, carbon dioxide, (dense) black smoke, aldehydes, organic acids.

5.3 Advice for firefighters

Special protective actions for fire-fighters : No special measures required.
Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.
For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.
Large spill : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections : See Section 1 for emergency contact information.
 See Section 8 for information on appropriate personal protective equipment.
 See Section 13 for additional waste treatment information.

Remarks : Polyethylene sheet spills and leaks are in the form of sheets and cutting rests.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).
Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
 Store in a fireproof location. Keep away from incompatible materials and avoid specific conditions (See section 10).

7.3 Specific end use(s)

Recommendations : Not available.
Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

No exposure limit value known.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

No DELs available.

Predicted effect concentrations

No PECs available.

8.2 Exposure controls

Appropriate engineering controls : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : No special protection is required. See remarks

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Skin and body : No special protection is required. See remarks

Respiratory protection : No special protection is required. See remarks

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Remarks : The protection of skin, body, eyes and hands is only applicable when needed according to the local rules.

Advice on personal protection is applicable for high exposure levels. Select proper personal protection based on a risk assessment of the actual exposure situation.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: Solid. [Woven and laminated, consolidated sheets]
Colour	: translucent - white.
Odour	: Not available.
Odour threshold	: Not available.
pH	: Not available.
Melting point	: 151 °C
Initial boiling point and boiling range	: Not available.
Softening range	: Not available.
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Burning time	: Not available.
Burning rate	: Not available.
Upper/lower flammability or explosive limits	: Not available.
Vapour pressure	: Not available.

Vapour density	: Not available.
Relative density	: Not available.
Density (g/cm ³)	: 0.97 g/cm ³ (23°C)
Bulk density	: Not available.
Solubility	: Not available.
Solubility in water	: Not available.
Solubility at room temperature	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: >300°C
Viscosity	: Not available.
Explosive properties	: Not available.
Oxidising properties	: Not available.

9.2 Other information

Remarks	: Not available.
---------	------------------

SECTION 10: Stability and reactivity

10.1 Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: The product is stable.
10.3 Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: No specific data. Keep away from heat, sparks and flame.
10.5 Incompatible materials	: No specific data.
10.6 Hazardous decomposition products	: No specific data.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Conclusion/Summary	: Not available.
--------------------	------------------

Irritation/Corrosion

Conclusion/Summary

Eyes	: Not available.
Skin	: Not available.
Respiratory	: Not available.

Sensitisation

Conclusion/Summary

Skin	: Not available.
Respiratory	: Not available.

Mutagenicity

Conclusion/Summary	: Not available.
--------------------	------------------

Carcinogenicity

Conclusion/Summary	: Not available.
--------------------	------------------

Reproductive toxicity

Conclusion/Summary	: Not available.
--------------------	------------------

Teratogenicity

Conclusion/Summary	: Not available.
--------------------	------------------

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Potential acute health effects**Eye contact** : No known significant effects or critical hazards.**Inhalation** : No known significant effects or critical hazards.**Skin contact** : No known significant effects or critical hazards.**Ingestion** : No known significant effects or critical hazards.**Symptoms related to the physical, chemical and toxicological characteristics****Eye contact** : No specific data.**Inhalation** : No specific data.**Skin contact** : No specific data.**Ingestion** : No specific data.**General** : No known significant effects or critical hazards.**Carcinogenicity** : No known significant effects or critical hazards.**Mutagenicity** : No known significant effects or critical hazards.**Teratogenicity** : No known significant effects or critical hazards.**Developmental effects** : No known significant effects or critical hazards.**Fertility effects** : No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity**Conclusion/Summary** : Not available.**12.2 Persistence and degradability****Conclusion/Summary** : Not available.**12.3 Bioaccumulative potential**

Not available.

12.4 Mobility in soil**Soil/water partition coefficient (K_{oc})** : Not available.**Mobility** : Not available.**12.5 Results of PBT and vPvB assessment****PBT** : Not available.
P: Not available. B: Not available. T: Not available.**vPvB** : Not available.
vP: Not available. vB: Not available.**12.6 Other adverse effects** : No known significant effects or critical hazards.**Remarks** : is not biodegradable and not toxic to aquatic organisms.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods**Product****Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.**Hazardous waste** : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

Packaging

- Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
- Special precautions** : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
14.2 UN proper shipping name	-	-	-	-
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packing group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
14.6 Special precautions for user	Not available.	Not available.	Not available.	Not available.
Additional information	-	-	-	-

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Not applicable.

15.2 Chemical Safety Assessment : Not applicable.

SECTION 16: Other information

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Full text of abbreviated H statements : Not applicable.

Full text of classifications [CLP/GHS] : Not applicable.

Full text of abbreviated R phrases	: Not applicable.
Full text of classifications [DSD/DPD]	: Not applicable.
Alterations compared to the previous version	: Alterations compared to the previous version are marked with a little (blue) triangle.
Abbreviations and acronyms	: ATE = Acute Toxicity Estimate CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] DNEL = Derived No Effect Level EUH statement = CLP-specific Hazard statement PNEC = Predicted No Effect Concentration RRN = REACH Registration Number
Sources of key data	: Literature data and/or investigation reports are available through the manufacturer.
Internal code	: WW38052
Training advice	: Before handling this substance/preparation, the personnel involved should be instructed by means of this safety data sheet.

Notice to reader

The information contained in the Safety Data Sheet is based on our data available on the date of publication. The information is intended to aid the user in controlling the handling risks; it is not to be construed as a warranty or specification of the product quality. The information may not be or may not altogether be applicable to combinations of the product with other substances or to particular applications.

The user is responsible for ensuring that appropriate precautions are taken and for satisfying themselves that the data are suitable and sufficient for the product's intended purpose. In case of any unclarity we advise consulting the supplier or an expert.

History

Date of printing	: 26 May 2011.
Date of issue	: 26 May 2011
Version	: 3.02