TUFCOAT

PRODUCT INFORMATION

DATA SHEETS & SPECIFICATIONS

WEATHER PROTECTION & ENVIRONMENTAL CONTAINMENT SYSTEM

3 Garden Close, Langage Business Park, Plymouth, PL7 5EU, United Kingdom
Tel. +44 (0)1752 227 333, Fax. +44 (0)1752 261 642, info@tufcoat.co.uk, www.tufcoat.co.uk

MATERIAL SAFETY DATA SHEET FOR POLYETHYLENE WHITE SHRINK FILM

Notice: This product is unsuitable for use in applications such as direct or indirect food contact, toys, medical devices, pharmaceutical applications, or for potable water application.

1. Product Identification **BC01,BC02,BC03,BC04,BC06,BC07,BC12,BC13**

2. Company Identification

Contract Manufacture for: Tufcoat Ltd. 3 Garden Close, Langage Business Park, Plymouth, PL7 5EU, United Kingdom

3. Composition

Composition	CAS Number
Low density PE (LDPE)	9002-88-4
Linear LDPE	25087-34-7
E/VAC	24937-78-8
Other	Mixture

4. Physical Properties

Danger Identification

This material is not classified as hazardous according to the obligatory rules.

Colour	White
Boiling point	Not applicable
Vapour Pressure	Not applicable
Solubility in water	None
Density	0.91 - 0.93 g/cm³
Form	Thin solid film or sheet
Odour	Neutral

5. According to obligatory rules product is classified as non-hazardous.

Information about danger for human

- In increased temperature and during combustion process toxicological gases can be given off.
- Melted product can adhere to skin and cause burns.
- Product in dust form can create explosive mixture.
- Product can cumulate electrostatic charges which can be a source of ignition when discharging.

6. Fire and Explosion Hazard Data

Ignition temperature	360 Degrees Celsius
Melting temperature	100-150 Degrees Celsius
Fire Fighting	Suitable extinguish media: water mist, dry powder, foam, carbon dioxide.
Decomposition Products	H2O, CO2, and under shortage of oxygen conditions CO.

7. Stability and Reactivity

Stability	Stable and not reactive in ambient temperature
Conditions to avoid	Temperatures over 360 degrees C, can cause degradation
Reactive Polymerization	Does not occur
Incompatibility	Avoid strong oxidizing agents

8. Health

Emergency Overview	This product has been evaluated and does not require any hazard warning on the label under obligatory criteria.
Eye	Negligible Hazard
Skin contact	Negligible Hazard
Inhalation	Negligible Hazard at ambient temperatures
Ingestion	Minimal Toxicity
Exposure Limits	No Limit
First Aid	No Known Health Effects

9. First Aid Measures

Basic information	Product does not cause any irritation in ambient temperature. It does not emit vapours causing danger. The below described first aid measures relate to critical situations (fire, improper application conditions).
Inhalation	In case of hazardous influence of vapours and / or aerosols composed in heighten temperatures during the combustion process sufferers should be immediately taken away from the imminent area. In case lack of breath artificial respiration should be applied. Call medical service.
Skin contact	If in contact with hot moulten resin, do not peel off the hot moulten resin from skin, but flush with plenty of water to cool down the thermal burned skin quickly and then seek medical attention immediately.
Ingestion	Basically first aid is not necessary. If illness or adverse symptoms develop, seek medical attention immediately.
Eye	If irritation develops, seek medical attention.

10. Employee Protection

This product as it is shipped to customers is non-hazardous

11. Handling & Storage

- This product is normally shipped in stretch film packaging.
- Store and stack as per manufacturers recommendations.
- The stretch film will burn in the presence of open flame.

12. Toxicological information

Inhalation	Vapours produced are unlikely at room temperature (with reference to the physical properties). Dust may produce irritation to the mucous membrane of the nose, throat and upper respiratory tract. In increased temperatures during combustion process toxicological substances can be produced.
Skin contact	Product is non-irritating in ambient temperature.
Eye irritation	Harmless
Ingestion	Does not cause danger of toxicological irritation.

13. Ecological Information

Biodegradability	no known applicable information
Aquatic toxicity	no known applicable information
Mobility	no known applicable information
Bioaccumulative potential	no known applicable information

14. Waste treatment

Act in accordance with waste removal regulations.

Product is recyclable.

15. Transportation Information

Hazard Class	non-regulated, not applicable according to the rules of road, rail, sea and air transportation.

16. UV and Tensile Information

100% virgin resin material with extremely consistent thickness and opacity.

It contains maximum UV inhibitors for excellent performance during long term storage and transportation outside; EVA to retain elasticity, guarding against brittling, particularly at low temperatures and increasing puncture resistance; with an anti-static additive for electrical safety and ease of use.

When heated it shrinks up to 30% of its surface dimension in a balanced uniform shrinkage, biaxial orientation, with shrinkage in one principal direction not more than 1.5 the shrinkage in the other direction. This makes it ideal for shrinking over irregularly shaped objects.

Test Description	**Method**	**Units**	**Quantity**
Weatherability	**ASTM G63**	**Hours**	**>1000**
Thickness	**ASTM D374**	**Micron**	**190**
Shrink Temperature	**ASTM D2732**	**Deg C**	**135**

Tensile Properties			
Yield (md/cd)	ASTM D882	bar	96.5/82.7
Break (md/cd)	ASTM D852	bar	172.4/165.5
Elongation (md/cd)	ASTM D822	%	600/700
Elmendorf Tear	(md/cd) ASTM D1922	gm	600/1100
Dart Impact	ASTM D1709	gm	750
Blow-up Ratio (md/cd)		%	45-60/30-40

17. Additional Information

The presented information is based on accessible data according to requirements for environmental protection, health, safety relating to the product.

Preparation date: September 2011

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MATERIAL SAFETY DATA SHEET
THERMO POLYETHYLENE FILM

1. Product Identification	BC08, BC11, BC09
Product	CSG Film
Synonyms	Flame Retardant Polyethylene
Chemical Family	Polyolefins
Formula	Proprietary blend of resins

2. Ingredients (Hazardous Components)

Hazardous Components	Flame Retardant master batch may contain some OSHA hazardous materials encapsulated in a polymer matrix. A separate MSDS is attached for this component.

3. Typical Physical/Chemical Data:

Appearance	Clear or tinted plastic film
Odour	None
Thickness	300µm and 190µm
Solubility in water	None
Specific Gravity	.915 to .930
Melting Point	225 F - 265 F
Characteristic	**Properties**
Abrasion resistance/toughness	Excellent
Blow-up Ratio (md/cd)	45 to 60 / 30 to 40 %
Dart impact	850 grams
Puncture resistance	Excellent
Elmendorf Tear (md/cd)	600 / 1100 grams
Tear resistance	Excellent
Elongation	600 / 700 %
Melt index	0.25
Melt temperature	120 to 135 °C
Opacity	Good (white/yellow)
Shrinkability / sealability	Excellent / excellent
Shrink temperature	70 to 105 °C
Tensile strength (md/cd)	245 / 245 Kg/m2
Thickness	300 (± 10%) µm
Weather resistance	Good to excellent
Flame retardant	EN 13501-1:2002 Euroclass B

4. Fire and Explosion Hazard Data:

Flash Point	Over 500 F
Extinguishing Media	Water spray, dry chemical, foam, carbon dioxide, water fog

Special Fire Fighting Procedures	For fires in enclosed areas, fire-fighters must wear positive pressure, self-contained breathing apparatus.
Unusual Fire/ Explosion Hazards	None

5. Health Hazard Data

Inhalation	Stable
Ingestion	None
Skin	None
Health Hazards (Acute and Chronic)	None
Effects of overexposure	None
Carcinogenicity	None
NTP	None
IARC	None
OSHA Regulated	None
Emergency First Aid Procedures	
Inhalation	remove to fresh air
Dermal/eye	Flush with large amounts of water

6. Reactivity Data

Stability	Stable
Conditions to avoid	Temperatures greater than 500 F
Incompatibility	Strong oxidizing agents
Hazardous combustion/ decomposition products:	
Thermal decomposition may produce carbon monoxide, alde	hydes and other organic vapours.
Hazardous polymerization	Will not occur

7. Precautions For Safe Handling And Use:

Spills	Sweep up and discard
Waste disposal method	Recycled material should be packaged, labelled, transported and disposed of in accordance with local regulations.

8. Special Protection Information And Control Measures:

Respiratory Protection	Use NIOSH approved respirator if unable to control air-borne fumes or vapours.
Ventilation	Local exhaust should be used over heating operations
Special Exhaust	None required under ordinary conditions of use, and with adequate ventilation
Skin	Wear gloves (film may be tacky)
Eye	Wear safety glasses that meet applicable ANSI

9. Other Special Precautions

DO NOT STORE NEAR HEAT, OPEN FLAME, NOR STRONG OXIDIZING MATERIALS

10. Regulatory Information

Not applicable

11. Other Information

In accordance with TSCA this product contains the following registered chemicals

CAS #	CHEMICAL NAME
9002-88-4	Polyethylene Homo polymer
09019-29-8	Ethylene/Sutene Copolymer
	Flame Retardant Master batch/PE
	UV Master batch/PE

In accordance with SARA Title III, Section 313, this product contains the following chemicals subject to reporting: None

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Preparation date: June 2012

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MATERIAL SAFETY DATA SHEET
PATCH TAPE

1 - Product Identification BC16

2 - General Description

A thick polythene film, coated with a clear, aggressive, pressure sensitive adhesive.

- High Tack
- High adhesion to low surface energy substrates like polythene
- Flexible at low temperature
- Can be torn by hand
- Water & weathering resistant
- Good abrasion resistance
- Non-Corrosive adhesive

3 - Preparation

Ensure surfaces to be treated are free from grease, dust and loose material.

4 - Technical Properties

Thickness	0.20mm
Breaking Load	27 N/cm
Elongation	400%
Adhesion - Steel	3.5 N/cm
Adhesion - Self	3.0 N/cm
RoHS compliant	Yes
Service Temperature	-5°C to +50°C
Application Temperature	0°C to +40°C
Storage Temperature	+12°C to +25°C

5 - Note

Except where indicated otherwise, the figures stated are average values and should not be regarded as MAXIMUM or MINIMUM values for specification purposes. Tufcoat reserves the right to improve products and any change in specification will result in a re-issue of the relevant ‘Technical Data Sheet’. Customers should satisfy themselves that the tape is suitable for their requirements whether after such modifications or otherwise. Please check that you have the latest issue of the ‘Technical Data Sheet’.

All slitting and length tolerances are to British Standards. Before use the customer is advised to consult the Health & Safety Data Sheet produced by the company for this product, which is available on request.

6 - Storage

Tapes stored below the minimum recommended temperature will require warming up to that level before use. Up to 24 hours may be required for this to take place.

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VCI MATERIAL SAFETY DATA SHEET

1. Product Identification

Chemical Name: VCI Film

2. Company Identification

Contract Manufacture for: Tufcoat Ltd. 3 Garden Close, Langage Business Park, Plymouth, PL7 5EU, United Kingdom

3. Physical Data

Appearance and Odor	Odorless polyethylene film
Boiling Point	n/a
Specific Gravity	n/a
Vapor Pressure (mm Hg)	n/a
Vapor Density (air=1)	n/a
Water Solubility:	n/a
Reactivity in Water	n/a
Melting Point	n/a

4. Fire And Explosion Data

Extinguisher Media:	Water, dry chemical, chemical foam, carbon dioxide
Fire Fighting	Treat as polyethylene film
Fire and Explosion Hazards	none

5. Reactivity data

Material is	Stable
Hazardous Polymerization	Stable
Conditions to avoid	Flames, oxidizers, strong reducing agents, acids
Incompatibility	Solvents that swell polyethylene
Hazardous Decomposition Product	Oxides of carbon and nitrogen

6. Health hazards

Acute	n/a
Chronic	n/a
Signs and Symptoms of Exposure	n/a
Medical Conditions Generally	n/a
Aggravated by Exposure	n/a
Carcinogenic Status	SHA: n/a I.A.R.C: n/a N.T.P: n/a

Emergency and First Aid Procedures	
Inhalation	n/a
Eyes	n/a
Skin	n/a
Ingestion	n/a

7. Special Precautions And Spill/Leak Procedures

Handling and Storage	Practice good housekeeping and store in a clean area
Other Precautions	Keep inventory wrapped until used to prevent contamination in a dirty environment.
Spill or Release	Place in bin for disposal
Disposal Methods	Recycle, incinerate, or dispose of in a landfill
Emergency Phone	01752 227 333

8. Exposure Controls

Respiratory Protection	n/a
Ventilation	n/a
Local Exhaust:	n/a
Mechanical	n/a
Special	n/a
Protective Gloves	n/a
Eye Protection	n/a
Other Protective Equipment	n/a
Work/Hygienic Practices	n/a

Preparation date: April 2012

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MATERIAL SAFETY DATA SHEET FOR POLYETHYLENE CLEAR SHRINK FILM

1 - Identification

Tufcoat urges each customer or recipient of this Material Safety Data Sheet to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology or fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

Product	SHRINK FILM NATURAL
Company	TUFCOAT 3 GARDEN CLOSE, LANGAGE BUSINESS PARK, PLYMOUTH, DEVON, PL7 5EU, UK.

NOTICE:
This product is not FDA, CPSC or NSF compliant. It is unsuitable for use in applications such as direct or indirect food contact, toys, medical device or pharmaceutical applications or for potable water application.

2 - Hazards Identification

Hazard Overview
This product is an inert, non-hazardous solid article, and is not respirable as marketed. Primary routes of entry are skin contact and inhalation of dust if product is in a regrind area. Inhalation is a low health risk because any potentially hazardous components are encapsulated. If adequate ventilation is not available in grinding areas respiratory protection is recommended for hazardous and/or nuisance dust.

Potential Health Effects

Eye Contact	Dust concentrations from grinding material may cause mechanical irritation to eyes
Skin Contact	Dust concentrations from grinding material may cause skin irritation and dryness
Inhalation	Exposure to vapors and fumes from heating the polymer to decomposition may cause eye, mucous membrane and respiratory irritation. Dust concentrations from grinding material may cause respiratory irritation
Ingestion	This material is not toxic by ingestion, but can create a suffocation hazard if placed over the nose and mouth
Chronic Effects	None are known.

3 - Composition/Information on Ingredients

	CAS No.	% by wt.
Polyethylene	9002-88-4	75-95
Polyethylene Copolymer	26221-73-8	0-20
Proprietary Additives		<1-2

4 - First Aid Measures

Eye Contact	No first aid is normally needed. If irritation occurs flush with water.
Skin Contact	If heated molten material comes in contact with skin, quickly flush the area with large amounts of cold water. Do not attempt to remove material from skin. Obtain medical treatment for thermal burn.
Inhalation	No harmful effects expected from normal use. If exposure to decomposition products and irritation occurs, remove to fresh air. If irritation persists, seek medical attention. If excess dust is present in a regrind area, use proper respiratory protection
Ingestion	This material is not toxic by ingestion. Seek medical attention for ingestion of large quantities of material.

5 - Fire Fighting Measures NFPA: Health 0; Fire1: Reactivity 0; Others:

The flash point of this material is over 600º F. If a fire should occur, Carbon Monoxide (C0) and irritating smoke may be produced. Wear NIOSH approved self-contained breathing apparatus when fighting fires in enclosed areas.
Fight fire with water, C0s, or dry chemicals. Use flooding quantities of water until well after the fire is out.

6 - Accidental Release Measures

Clean up material promptly to avoid a slipping hazard. As a matter of good practice; prevent material from entering storm drains, surface waters. Collect for use or disposal.

7 - Handling and Storage

This product is normally shipped on pallets. These pallets should not be stored more than (3) high. The plastic film will burn in the presence of open flame. Do not weld or use open flame where product is stored without proper fire fighting prevention procedures.

8 - Exposure Controls and Personal Protection

Ventilation:	General ventilation should be adequate for normal use
Hand Protection:	None needed under normal use conditions.
Eye Protection:	None needed under normal use conditions.
Respiratory Protection:	None needed under normal use conditions. If regrinding material, dust may be present, wear appropriate respiratory protection when exposure limits may be exceeded. The PEL for nuisance dust is 15 mg/m3.

9 - Physical and Chemical Properties

This products is film sheeting with A VOC content of less than 5 parts per million. Density will vary depending on color and components from 0.85 to 1.5. Therefore, the product can sink or float in water depending on the properties. The product is not soluble in water and is odorless at ambient temperature. During heating a characteristic plastic odor will be present.

10 - Stability and Reactivity

This product is stable and non-reactive. Hazardous decomposition of products can occur if overheated or ignited

11- Toxicological Information

The following chemicals are listed as known or suspected carcinogens per the National Toxicology Program (NTP), International Agency for Cancer Research (IARC)

Antimony Trioxide	Arsenic (Inorganic)	Cadmium Compounds
Chromium Compounds	Di (ethylhexyl) Phthalate	Lead Compounds
Nickel Compounds	Crystalline silica	

If any of these chemicals are present in reportable weights within this product, they will be listed on Page 1 Section III.

12 - Ecological Information

No data is available at this time. This material is an inert plastic product. No adverse environmental effects are expected from normal use or disposal.

13 - Disposal Measures

This product is non-hazardous as shipped. If grinding occurs in recycling some of the encapsulated components may present an environmental disposal problem. Refer to applicable federal, state and local regulations.

14- Transportation

This product is not a regulated substance under the Department of Transportation (DOT) regulations. All hazardous components, if any, are encapsulated.

15 - Regulatory Information

Notice: The information herein is presented in good faith and believed to be accurate as of the effective date shown. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyers' responsibility to ensure that its activities comply with federal, state, and local laws. The following specific information is made for purpose of complying with numerous federal, state and local law regulations. See other sections for health and safety information.

Sara 313 Information: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA Hazard Category: This product has been reviewed according to the EPA "Hazard Categories" (SARA Title III) and is considered, under applicable conditions to meet the following categories: Not to have met any hazard category.

Toxic Substances Control Act (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

State Right-to-Know: This product is not known to contain any substances subject to disclosure requirements of New Jersey, Pennsylvania and California.

OSHA Hazard Communication Standard: This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

16 - Other Information

National Fire Protection Association (NFPA) ratings:
Health: 0 Flammability: 1 Reactivity: 0

The opinions expressed are those of qualified experts within Poly-America LP. We believe that the information contained is current as of the date of this Materials Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Poly-America LP, it is the user's obligation to determine the conditions of safe use of this product.

Prepared by: Safety/Environmental Coordinator
Revised Date: November 10, 2011

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MATERIAL SAFETY DATA SHEET FOR LPS POLYETHYLENE WHITE SHRINK FILM

Product	Film 7000 mm 320 µ, white
Print	B1 320/LPS logo
Product quantity	30 rolls per pallet
Type	AH80
Structure	Mono-extruded
Shrinkage	Bi-oriented
Presentation	rolls of 15 linear meter

Properties	Specifications	Unit	Norm
Closed width	1775 -0 +60	mm	ISO 4592
Gusset	862.5 ± 40	mm	ISO 4592
1/2 perimeter	3500 -0 +120	mm	ISO 4592
Average thickness	320 ± 5 %	my	ISO 4592
Spot thickness	320 ± 15 %	my	ISO 4592
Coefficient of friction	0.30<=Kd<=0.40		ISO 8259
Tensile stress at break SL (MD)	≥ 23	Mpa	ISO 527-3
ST (TD)	≥ 22	Mpa	ISO 527-3
Elongation at break SL (MD)	≥ 490	%	ISO 527-3
ST (TD)	≥ 480	%	ISO 527-3
Dart DropTest	≥ 770	gr	ISO 7765 - 1/2
Corona treatment - 1 side tube	≥ 38	mN/m	NF T 54 - 124
Opacity	≥ 70		
Grade	0.30 ± 0.15	g/10 min	ISO 1133
Density	1.003 ± 0.008	g/cm³	ISO 1183

Date: 11 March 2008