

D3O® SET FOAMS



D3O uses a combination of patented, patent-pending and proprietary technologies to make rate sensitive, soft, flexible materials with high shock absorbing properties.

Our extensive material portfolio is compatible with many different production processes, with each material grade formulated and tuned to deliver specific performance properties.

Our current materials portfolio falls into five groups: Set Foams (Sf), Recycled Foams (Rf), Set Elastomers (Se), Formable Elastomers (Fe) and Impact Additives (iA).

The **D3O® Set Foam** portfolio offers the ultimate in soft, flexible and lightweight impact protection and includes a number of D3O's established material grades including ST, XTi, Decell, US Decell TRUST, Aero and AeroMax.

D3O® Set Foam solutions are developed for markets where high impact energies are experienced.

D3O® Set Foams

Code Name	Material	Density	Hardness	Tensile Young's Modulus	EAB	Tensile Strength	Compressive Stress at 25% Strain	Compressive Stress at 50% Strain	Flexural Modulus	Split Tear Strength	Water Absorbency	Deceleration (4.2J)	Energy Return (4.2J)	Compression Set	Impact Protection (10J)	Impact Protection (20J)	Impact Protection (30J)	Impact Protection (50J)	Accelerated Heat Ageing Percentage Increase in PTF (30J)	Accelerated Humidity Ageing Percentage Increase in PTF (30J)
SF001	ST	454.7	73.6	1.19	194	1.5	0.289	0.699	1.4	1.5	6	21	11	0.7	4.5	6.7	9.1	15	9.6	-1.7
SF005	XTi	503.1	76.8	1.17	201	1.8	0.352	0.847	1.6	1.8	11	19	13	6.2	3.9	6.2	9.1	16	-1.5	12.2
SF007	Decell	309.1	67.0	0.92	180	1.2	0.141	0.260	1.4	0.9	110	17	22	2.2	5.1	10.8	19.4	-	3.6	55.1
SF019	Decell Trust (China)	351.8	69.0	0.86	211	1.3	0.182	0.342	1.3	1.0	99	17	19	8.0	3.2	8.0	14.6	29	11.0	74.4
SF010	Aero	244.7	45.8	0.56	164	0.6	0.080	0.180	0.4	0.3	41	26	14	0.7	3.4	9.2	20.6	#DIV/0!	11.3	-17.3
SF028	AeroMax	220.9	35.9	0.50	136	0.5	0.060	0.109	0.3	0.4	9	9	17	0.2	5.1	16.9	27.9	-	6.7	-10.4
Method Reference*		ISO 845:2009	ASTM D2240 -05 (2010)	DTS023	ISO 1798:2008	ISO 1798:2008	DTS006	DTS006		SATRA TM65	DTS028	DTS001	ASTM F614-99 (2006)	DTS005	EN 1621:1 Anvil/ EN1621-1 2.5kg	EN 1621:1 Anvil/ EN1621-1 2.5kg	EN 1621:1 Anvil/ EN1621-1 5kg	EN 1621:1 Anvil/ EN1621-1 15kg	BS EN ISO 2440:2000 EN 1621:1 Anvil/ EN1621-1 5kg	BS EN ISO 2440:2000 EN 1621:1 Anvil/ EN1621-1 5kg
Units		kg/m ³	Shore OO	MPa	%	MPa	MPa	MPa	MPa	N/mm	%	g	%	%	kN	kN	kN	kN	%	%

©2022 Design Blue Limited. All rights reserved.

For full details including material properties and product tolerances, please request SOQ document from D3O representative. The information provided is not intended to and does not create any warranties, expressed or implied, including any warranty of merchantability of fitness for a particular purpose. In accordance with the Company's policy of continuous improvement, D3O reserves the right to apply such improvements to its products and materials without notice. This data sheet shall not be reproduced or amended without the written consent of Design Blue Limited.

*Values shown represent typical product characteristics.

D3O® FORMABLE FOAMS



D3O uses a combination of patented, patent-pending and proprietary technologies to make rate sensitive, soft, flexible materials with high shock absorbing properties.

Our extensive material portfolio is compatible with many different production processes, with each material grade formulated and tuned to deliver specific performance properties.

Our current materials portfolio falls into six groups: Set Foams (Sf), Formable Foams (Ff), Recycled Foams (Rf), Set Elastomers (Se), Formable Elastomers (Fe) and Impact Additives (iA).

The **D3O® Formable Foam** portfolio includes **D3O® LITE** and offers lightweight, comfortable and temperature stable cushioning and protection.

The added benefit of **D3O® Formable Foam** is that the shape of the material can be re-shaped to offer a versatile solution for a wide range of applications. Ideal for lower impact energies.

D3O® Formable Foams

Code name	Synonym	Density	Hardness	Hardness	Tensile strength	Split tear strength	Elongation at break	Compressive strength	Flexural modulus	Tensile modulus	Deceleration 4.5 J	Energy return 4.5 J	Compression set	Water	Impact protection (10 J)	Impact protection (20 J)	Impact protection (30 J)	Accelerated ageing (heat)
FF006	LITE Low	114.0	30.9	32.0	1.4	0.6	189.1	780.0	1.4	0.83	N/A	N/A	31.5	14.0	32.0	N/A	N/A	N/A
FF007	LITE Mid	252.0	55.0	55.0	1.9	1.6	212.0	1540.0	3.1	2.29	49.2	52	12.8	4.0	12.0	30.0	N/A	N/A
FF008	LITE High	324.0	65.9	65.0	2.2	N/A	195.2	2450.0	5.7	4.52	33.1	46	12.8	3.0	5.0	22.0	34	N/A
FF009	LITE Orange	127.0	34.4	34.0	1.4	1.8	159.4	1060.0	1.6	0.98	N/A	N/A	25.4	13.0	29.0	N/A	N/A	N/A
Method reference*	ISO 845:009	ASTM D2240 - 05 (2010)	ASTM D2240 - 05 (2010)	ISO 1798:2008	SATRA TM65	ISO 1798:2008	ASTM D3575-14D	DTS052	DTS061	DTS002-2	ASTM F614-99 (2006)	EN ISO 1856	DTS028	EN 1621:1 (2.5 Kg, 10J)	EN 1621:1 (2.5 Kg, 20J)	EN 1621:1 (5Kg, 30J)	BS EN ISO 2440:2000 (ageing)	
Units	kg/m ³	Shore OO	Asker C	N/mm ²	N/mm	%	kPa	MPa	MPa	g	%	%	%	kN	kN	kN	kN	

©2022 Design Blue Limited. All rights reserved.

For full details including material properties and product tolerances, please request SOQ document from D3O representative. The information provided is not intended to and does not create any warranties, expressed or implied, including any warranty of merchantability of fitness for a particular purpose. In accordance with the Company's policy of continuous improvement, D3O reserves the right to apply such improvements to its products and materials without notice. This data sheet shall not be reproduced or amended without the written consent of Design Blue Limited.

*Values shown represent typical product characteristics.

D3O® SET ELASTOMERS



D3O uses a combination of patented, patent-pending and proprietary technologies to make rate sensitive, soft, flexible materials with high shock absorbing properties.

Our extensive material portfolio is compatible with many different production processes, with each material grade formulated and tuned to deliver specific performance properties.

Our current materials portfolio falls into six groups: Set Foams (Sf), Recycled Foams (Rf), Set Elastomers (Se), Formable Elastomers (Fe) and Impact Additives (iA).

D3O® Set Elastomer grades can be engineered into structures and designs that offer unrivalled shock absorption and achieve a thinner, more detailed impact protection layer.

D3O® Set Elastomers are strong and versatile. They can be used in various products and applications, particularly those where low profile or flexibility in the cold are important.

D3O® Set Elastomers

Code name	Synonym	Density	Hardness	Resiliency	Tensile Strength	Trouser tear strength	Elongation at Break	Flexural modulus	Tensile modulus	Water absorbency	5 J Impact	10 J Impact	Accelerated ageing (heat) (10J)	Accelerated ageing (humidity) (10J)
SE004	BOHM	1196.0	56.3	11.0	7.9	6.9	499.5	0.9	2.9	5.0	2.5	4.3	N/A	34.1
SE005	Impact Print™ (Gloves)	1130.0	51.2	-	5.9	7.7	830.0	3.6	1.5	3.7	2.7	4.5	1.34*	68.1
SE006	Impact Print™ (Limb)	1042.0	60.6	-	10.0	6.6	378.7	5.9	5.6	8.0	3.3	5.0	2.7	-2.2
Method reference*		ISO 845:2009	ASTM D2240 - 05 (2010)	ISO 8307	EN ISO 37-2	ASTM D624	EN ISO 37-2	DTS052	DTS061	DTS028	DTS059	DTS059	BS ISO 2440:2000 (ageing)**	BS EN ISO 2440:2000 (ageing)**
Units		kg/m ³	Shore A	mm	MPa	N/mm	%	MPa	MPa	%	kN	kN	%	%

©2022 Design Blue Limited. All rights reserved.

For full details including material properties and product tolerances, please request SOQ document from D3O representative. The information provided is not intended to and does not create any warranties, expressed or implied, including any warranty of merchantability of fitness for a particular purpose. In accordance with the Company's policy of continuous improvement, D3O reserves the right to apply such improvements to its products and materials without notice. This data sheet shall not be reproduced or amended without the written consent of Design Blue Limited.

*Values shown represent typical product characteristics.

**SE005 & SE006 slabs tested were aged at ageing conditions for accelerated heat ageing. They were tested to 100 C and 80 C respectively.

D3O® FORMABLE ELASTOMERS



D3O uses a combination of patented, patent-pending and proprietary technologies to make rate sensitive, soft, flexible materials with high shock absorbing properties.

Our extensive material portfolio is compatible with many different production processes, with each material grade formulated and tuned to deliver specific performance properties.

Our current materials portfolio falls into six groups: Set Foams (Sf), Recycled Foams (Rf), Set Elastomers (Se), Formable Elastomers (Fe) and Impact Additives (iA).

With similar impact protection and shock absorption capabilities to **D3O® Set Elastomer** offering, **D3O® Formable Elastomers** have been developed to be compatible with injection moulding or similar processes.

D3O® Formable Elastomers

Material Name	*Density (kg/m ³)	*Hardness (Shore A)	*Tensile Strength at Break (MPa)*	*Tensile Elongation at Break (%)	*Tear Strength (N/mm)	Shrinkage (at 150°C)	*Abrasion Resistance (mg/100 cycles)*	*Transparency (%)	*Plant-based content (%)	Suitable for opaque coloured products	Suitable for solid colours	Suitable for clear colours
Method reference*	ISO 845:2009	*ASTM D2240 - 05 (2010) *	ISO 37:2017 Type 1	ISO 37:2017 Type 1	ASTM D624 Type T		ISO 5470-1	DTS086				
Test Condition		3s	500mm/min	500mm/min	50mm/min		H18, 9.8N					
D3O® Bio	1160	93.3	20.7	499.3	8.4	0.8%	4.5	81	45	✓	✓	✓

©2022 Design Blue Limited. All rights reserved.

The shelf life of the TPE granules is 12 months from delivery if storage instructions are observed and the product is stored in the unopened original D3O TPE packaging. Store in dry conditions at room temperature (15–30 °C) away from heat sources and direct sunlight.

For full details including material properties and product tolerances, please request SOQ document from D3O representative. The information provided is not intended to and does not create any warranties, expressed or implied, including any warranty of merchantability of fitness for a particular purpose. In accordance with the Company's policy of continuous improvement, D3O reserves the right to apply such improvements to its products and materials without notice. This data sheet shall not be reproduced or amended without the written consent of Design Blue Limited.

*Values shown represent typical product characteristics.
**Estimated

D3O® RECYCLED FOAMS

RF

D3O uses a combination of patented, patent-pending and proprietary technologies to make rate sensitive, soft, flexible materials with high shock absorbing properties.

Our extensive material portfolio is compatible with many different production processes, with each material grade formulated and tuned to deliver specific performance properties.

Our current materials portfolio falls into five groups: Set Foams (Sf), Recycled Foams (Rf), Recycled Foams (Rf), Set Elastomers (Se), Formable Elastomers (Fe) and Impact Additives (iA).

D3O® Recycled Foams have been designed to protect people and their things while innovating the manufacturing process to reduce waste. The portfolio includes two densities of **D3O® Zero™**, suiting a wide range of applications.

To create **D3O® Zero™**, D3O regrinds waste D3O® materials mixed with other PU foams. The result is a recycled material, committed to providing impact protection in an environmentally friendly way.

D3O® Recycled Foams

Code name	Synonym	Density	Hardness	Tensile strength	Split tear strength	Elongation at break	Compressive strength	Flexural modulus	Tensile modulus	Deceleration 4.5 J	Energy return 4.5 J	Compression set	Water absorbency	Impact protection (10 J)	Impact protection (20 J)	Accelerated ageing (heat) (10J)	Accelerated ageing (humidity) (10J)	Recycled
RF001	D3O® Zero™ Low	231.0	49.5	0.26	0.64	79.5	320.0	0.43	0.48	90.2	23	3.9	301.5	16.8	39.2	9.9	-32.3	68.0
RF002	D3O® Zero™ Mid	278.0	58.6	0.37	0.72	76.6	490.0	0.79	0.84	57.1	22	4.0	248.3	8.9	27.8	14.8	-13.5	69.0
Method reference*	ISO 845:2009	ASTM D2240 - 05 (2010)	ISO 1798:2008	SATRA TM65	ISO 1798:2008	ASTM D3575-14D	DTS052	DTS061	DTS002-2	ASTM F614-99 (2006)	EN ISO 1856	DTS028	EN 1621:1 (2.5 Kg, 10J)	EN 1621:1 (2.5 Kg, 20J)	BS EN ISO 2440:2000 (ageing)	BS EN ISO 2440:2000 (ageing)	n/a	
Units	kg/m ³	Shore OO	N/mm ²	N/mm	%	kPa	MPa	MPa	g	%	%	%	kN	kN	%	%	%	

©2022 Design Blue Limited. All rights reserved.

For full details including material properties and product tolerances, please request SOQ document from D3O representative. The information provided is not intended to and does not create any warranties, expressed or implied, including any warranty of merchantability of fitness for a particular purpose. In accordance with the Company's policy of continuous improvement, D3O reserves the right to apply such improvements to its products and materials without notice. This data sheet shall not be reproduced or amended without the written consent of Design Blue Limited.

*Values shown represent typical product characteristics.