

CSR[™]
**Bradford
Insulation**

INDUSTRIAL GLASSWOOL

INDUSTRIAL GLASSWOOL

Applications	Product	Benefits
CSR Bradford Glasswool Insulation		
Thermal insulation of tanks, boilers, vessels, precipitators and other industrial processes with operating temperatures below 350°C. Industrial acoustic applications.	Bradford Glasswool FLEXITEL™	A lightweight, flexible material ideal for wrapping irregular surfaces. Good sound absorption.
	Bradford Glasswool SUPERTEL™	A medium density insulation with limited flexibility. It is an excellent general purpose thermal and acoustic insulation product with good compression resistance.
	Bradford Glasswool ULTRATEL™	A premium industrial insulation with excellent compression resistance, thermal insulation and acoustic absorption properties.
Higher temperature boiler insulation, furnace back-up linings and precipitators.	Bradford Glasswool HT THERMATEL™	A premium industrial insulation with superior tolerance to high temperature. May be used continuously at temperatures up to 450°C. Non-combustible in accordance with AS1530.1.
Specialty air conditioning and industrial applications.	Bradford Glasswool DUCTEL™	A very high density rigid board with outstanding thermal, acoustic and compression resistance qualities.
Acoustic and thermal applications where rigid mechanical properties are important, including absorption panels, trafficable tank covers and as an impact isolation material.	Bradford Glasswool QUIETEL™	A high density rigid insulation with superior compression resistance.
General purpose thermal and acoustic insulation for marine vessels.	Bradford Glasswool Marine Thermal Grade	A specialty lightweight, flexible insulation certified for marine use and deemed non-combustible in accordance with AS1530.1.
Steam and process pipe lines in industrial applications.	Bradford Glasswool PIPE INSULATION	A rigid moulded Sectional Pipe insulation (SPI) to suit a wide range of pipe diameters. Available in a wide range of thicknesses and may be used continuously at operating temperatures up to 450°C. Non-combustible in accordance with AS1530.1

NOTES: LD = Light Duty. MD = Medium Duty. HD = Heavy Duty. Perf = Perforated. BMF = Black Matt Glass Tissue. Special density, custom sizes and facings available on request (subject to minimum order quantities).

For further details on product sizes, packaging or stock availability, or for technical information about other CSR Bradford Insulation products, please refer to the CSR Bradford Insulation office in your region.

CSR Bradford Insulation has a policy of continuous product development, therefore new product information will be distributed for inclusion in the CSR Bradford Insulation Technical Manual as and when available.

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Product	Typical Facings	Nominal Density kg/m ³	Typical Thickness mm	Nominal R Value m ² K/W
CSR Bradford Glasswool Insulation				
Bradford Glasswool FLEXITEL™	THERMOFOIL™ HD Plain	24	25	R0.75
	THERMOTUFF™ LD Plain		50	R1.5
	BMF		75	R2.3
Bradford Glasswool SUPERTEL™	THERMOFOIL™ HD Perf	32	13	R0.4
	THERMOTUFF™ LD Plain		25	R0.8
	THERMOFOIL™ HD Plain		30	R0.9
	BMF		50	R1.5
	Acoustic Media		75	R2.3
			100	R3.1
Bradford Glasswool ULTRATEL™	THERMOFOIL™ HD Perf	48	25	R0.8
	THERMOTUFF™ LD Plain		30	R1.0
	BMF		50	R1.6
	Acoustic Media		75	R2.4
Bradford Glasswool HT THERMATEL™	Aluminium Foil	44	25	R0.8
			50	R1.6
			75	R2.4
Bradford Glasswool DUCTEL™	THERMFOIL™ HD Plain	80	13	R0.4
	THERMOFOIL™ HD Perf		25	R0.8
	Acoustic Media		50	R1.6
Bradford Glasswool QUIETEL™	THERMFOIL™ HD Plain	130	13	R0.4
	THERMOFOIL™ HD Perf		25	R0.8
	Acoustic Media		50	R1.6
Bradford Glasswool Marine Thermal Grade	Aluminium Foil	24	25	R0.8
			50	R1.5
			75	R2.3
Bradford Glasswool Pipe Insulation	THERMFOIL™ HD Plain	60	25	R0.8
	Aluminium Foil	Min	38	R1.2
	Calico	Pipe O.D.	50	R1.5
	Paper	Min 12.7	63	R2.0
	Glass Cloth	Max 219.1	75	R2.3

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Product	Thermal Conductivity						Facing	Flexibility	
	W/mK							Thickness mm	Bending Diameter 13mm
	20°C	60°C	100°C	200°C	300°C	400°C			
(AS2465 Part 5/6; BS874; ASTM C518, C177, C335) (NB: 1W/mK = 6.9335 Btu.in/ft ² h°F)								(ASTM C1101)	
CSR Bradford Glasswool Insulation									
Bradford Glasswool FLEXITEL™	0.033	0.042	0.052				THERMOFOIL™	25	Pass
							HD Plain	50	Pass
Bradford Glasswool SUPERTEL™	0.032	0.039	0.049	0.080			THERMOFOIL™	25	Pass
							HD Plain	50	Pass
Bradford Glasswool ULTRATEL™	0.031	0.037	0.045	0.068	0.089				
Bradford Glasswool HT THERMATEL™	0.032	0.038	0.046	0.067	0.09	0.129	Nil	25	Pass
								50	Pass
Bradford Glasswool DUCTEL™	0.031	0.037	0.042	0.063	0.086				
Bradford Glasswool QUIETEL™	0.031	0.036	0.041	0.059					
Bradford Glasswool Marine Thermal Grade	0.033	0.042	0.052						
Bradford Glasswool Pipe Insulation	0.032	0.037	0.041	0.057	0.082	0.114			

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Product	Sound Absorption										
	Facing	Thickness mm	Frequency Hz								NRC
			125	250	500	1000	2000	4000	5000		
(AS1045 - 1988 Reverberation Room Method)											
CSR Bradford Glasswool Insulation											
Bradford Glasswool FLEXITEL™	THERMOFOIL™ HD Perf	25	0.10	0.33	0.66	0.90	1.03	0.79	0.76	0.75	
		50	0.39	0.84	1.08	1.20	1.06	1.01	0.95	1.05	
	BMF	25	0.09	0.33	0.57	0.73	0.90	0.99	1.01	0.65	
		50	0.27	0.69	1.08	1.06	1.11	1.10	1.09	1.00	
Bradford Glasswool SUPERTEL™	Nil	25	0.12	0.41	0.63	0.90	1.01	0.99	0.94	0.74	
		50	0.27	0.75	1.12	1.12	1.07	1.04	1.03	1.01	
		75	0.52	0.94	1.24	1.13	1.06	1.09	1.02	1.09	
	THERMOFOIL™ HD Plain	25	0.12	0.56	1.18	0.53	0.17	0.10	0.12	0.60	
		50	0.46	1.10	0.92	0.46	0.19	0.09	0.06	0.65	
	THERMOFOIL™ HD Perf	25	0.12	0.28	0.68	0.94	1.09	0.85	0.75	0.75	
		50	0.39	0.72	1.14	1.19	1.05	0.98	0.9	1.02	
		75	0.52	1.02	1.15	1.07	1.02	0.9	0.83	1.06	
	BMF	13	0.09	0.14	0.29	0.56	0.72	0.87	0.90	0.40	
		25	0.07	0.26	0.65	0.93	1.04	1.03	1.00	0.72	
		50	0.24	0.62	1.00	1.07	1.12	1.15	1.17	0.95	
	Perforated Metal	25	0.13	0.32	0.59	0.83	0.99	0.97	0.04	0.68	
		50	0.31	0.74	1.00	1.09	1.06	1.03	0.98	0.97	
	Bradford Glasswool ULTRATEL™	Nil	25	0.03	0.24	0.65	0.98	1.07	1.03	1.01	0.73
50			0.34	0.65	1.23	1.11	1.08	1.02	0.98	1.02	
THERMOFOIL™ HD Perf		25	0.12	0.31	0.81	1.09	1.09	0.91	0.89	0.77	
		75	0.69	1.19	1.15	1.09	1.03	0.92	0.90	1.11	
BMF	25	0.08	0.30	0.71	0.99	1.07	1.08	1.16	0.80		
	50	0.25	0.70	1.13	1.13	1.12	1.12	1.12	1.00		
Bradford Glasswool HT THERMATEL™	Nil	50	0.42	0.74	1.10	1.12	1.08	1.00	0.97	1.01	
		75	0.51	1.10	1.18	1.08	1.02	1.03	1.07	1.09	
Bradford Glasswool DUCTEL™	THERMOFOIL™ HD Perf	25	0.06	0.38	0.93	1.10	1.10	1.00	0.87	0.88	
		50	0.35	0.91	1.15	1.12	1.08	0.93	0.85	1.06	
Bradford Glasswool QUIETEL™	Nil	13	0.06	0.08	0.28	0.62	0.86	1.06	1.04	0.45	
		25	0.07	0.28	0.74	1.04	1.13	1.09	1.11	0.80	
		50	0.36	0.81	1.12	1.18	1.11	1.12	1.22	1.05	
Bradford Glasswool Marine Thermal Grade											
Bradford Glasswool Pipe Insulation											

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Product	Fire Performance Indices				
	Facing	Ignitability Index (0 - 20)	Spread Flame (0 - 10)	Heat Evolved (0 - 10)	Smoke Developed (0 - 10)
CSR Bradford Glasswool Insulation					
Bradford Glasswool FLEXITEL™	Nil	0	0	0	0
	THERMOFOIL™ HD Plain	0	0	0	0
	THERMOFOIL™ HD Perf	0	0	0	2
	BMF	0	0	0	1
Bradford Glasswool SUPERTEL™	Nil	0	0	0	0
	THERMOFOIL™ HD Perf	0	0	0	3
	BMF	0	0	0	1
Bradford Glasswool ULTRATEL™	Nil	0	0	0	0
	THERMOFOIL™ HD Perf	0	0	0	1
Bradford Glasswool HT THERMATEL™	Nil	0	0	0	0
Bradford Glasswool DUCTEL™	Nil	0	0	0	0
Bradford Glasswool QUIETEL™	Nil	0	0	0	1
Bradford Glasswool Marine Thermal Grade	Nil	0	0	0	0
Bradford Glasswool Pipe Insulation	Nil	0	0	0	1
	THERMOFOIL™ HD Plain	0	0	0	1

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Static Insertion Loss

Product	Facing	Thickness mm	Insertion Loss (dB loss 600x600x4000 test duct) Octave Band Centre frequency (Hz)						
			63	125	250	500	1000	2000	4000
(AS1277:1983 Acoustic Procedure for Ducted Silencers)									
Bradford Glasswool SUPERTEL™	BMF	50	1.4	4.6	16.8	53.2	51.6	32.4	24.4
	THERMOFOIL™	50	1.6	5.3	18.9	53.4	48.3	31.8	24.6
	HD Perf								
	23µm Microfilm + THERMOFOIL™ HD Perf	50	1.9	5.7	21.1	26.6	16.7	12.9	12.8

Air Erosion

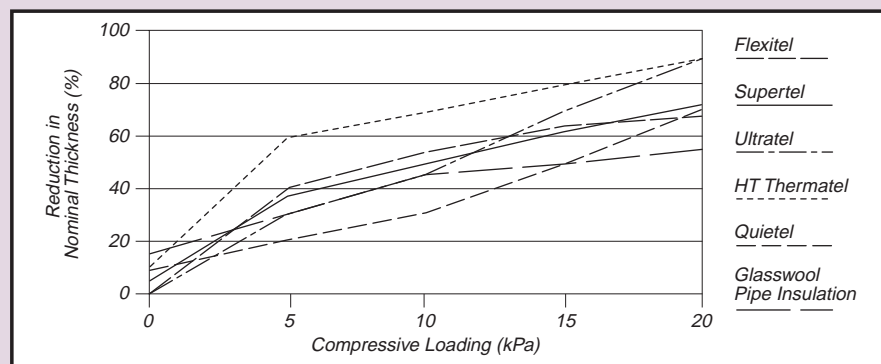
	Facing	Max Design Velocity (m/sec) (UL181-17)
Bradford Glasswool SUPERTEL™	THERMOFOIL™	16
	HD Per	
	BMF	16

Maximum Service Temperatures

Product	Maximum Service Temperature
Faced products	70°C (Faced surface)
Bradford Glasswool	350°C
Bradford Glasswool HT THERMATEL™	450°C
Bradford Glasswool Pipe Insulation	450°C

Compression Resistance

CSR Bradford Glasswool is a resilient insulation material which readily recovers to its nominal thickness after the removal of a normal compressive load. When tested in accordance with ASTM 165: 1992 Procedure B, CSR Bradford products compress under the load as shown in the accompanying graph.



Moisture Resistance

Exposure of CSR Bradford Glasswool to an atmosphere of 50°C and 95% relative humidity for four days results in moisture absorption of less than 0.2% by volume. Should glasswool insulation become wet, full thermal efficiency will be restored on drying out.

Corrosion Resistance

CSR Bradford Glasswool products have a pH which is slightly alkaline and will not corrode steel. To maintain this condition protection must be provided against contamination from external sources. CSR Bradford products are pH tested in accordance with ASTM C871:1989 and BS3958 Part 5:1986



Bradford Insulation

CSR Building Solutions Website.

www.csr.com.au/bradford

Manufacturing Facilities.

CSR Bradford Insulation is a leading insulation manufacturer in Australia and Asia with manufacturing facilities located throughout the region.

AUSTRALIA.

- Glasswool factory, Ingleburn NSW.
- Rockwool factory, Clayton VIC.
- Thermofoil factory, Dandenong VIC.

ASIA.

- Glasswool factory, Zhuhai, China.
- Rockwool factory, Dongguan, China.
- Rockwool factory, Rayong, Thailand.
- Rockwool factory, Kuala Lumpur, Malaysia.
- Flexible Duct factory, Singapore.

Sales Offices.

AUSTRALIA.

State	Phone	Fax
Head Office	61 2 9765 7100	61 2 9765 7029
NSW	(02) 9765 7100	(02) 9765 7052
ACT	(02) 6239 2611	(02) 6239 3305
VIC	(03) 9265 4000	(03) 9265 4011
TAS	(03) 6272 5677	(03) 6272 2387
QLD	(07) 3875 9600	(07) 3875 9699
SA	(08) 8344 0640	(08) 8344 0644
NT	(08) 8984 4070	(08) 8947 0034
WA	(08) 9365 1666	(08) 9365 1656

INTERNATIONAL.

Country	Phone	Fax
New Zealand	64 9579 9059	64 9571 1017
Hong Kong	852 2754 0877	852 2758 2005
China (Glasswool)	86 756 551 1448	86 756 551 1447
China (Rockwool)	86 769 611 1401	86 769 611 2900
Thailand	66 2736 0924	66 2736 0934
Malaysia	60 3 3341 3444	60 3 3341 5779
Singapore	65 861 4722	65 862 3533

Health and Safety Information.

Information on any known health risks of our products and how to handle them safely is displayed on the packaging and/or the documentation accompanying them. Additional information is listed in product Material Safety Data Sheets available from your regional CSR Bradford Insulation office or visit our website.

Warranty.

CSR Limited warrants its Bradford Insulation products to be free of defects in materials and manufacture. If a CSR Bradford Insulation product does not meet our standard, we will, at our option, replace or repair it, supply an equivalent product, or pay for doing one of these. This warranty excludes all other warranties and liability for damage in connection with defects in our products, other than those compulsorily imposed by legislation.

CSR Bradford Insulation is a business of CSR Limited A.B.N. 90 000 001 276.

CSR Limited is the owner of the following trade marks. Acousticladd™, Acousticon™, Acoustilag™, Anticon™, Bradfix™, Bradford™, Comfort Plus™, Ductel™, Fibermesh™, Fibertex™, Firesal™, Flexitel™, Flex-skin™, Gold Batts™, Multitel™, Quietel™, SoundScreen™, Spansal™, Specitel™, Supertel™, Thermofoam™, Thermofoil™, Thermokraft™, Thermoplast™, Thermotuff™, Ultratel™.

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