

## Ultralite Loose Fill (ULF) - Technical Data Sheet

Ultralite is the ultimate kiln car loose fill insulator. It is a unique lightweight refractory aggregate with exceptional insulating properties and has been designed to replace less thermally stable kiln car insulation media such as ceramic fibre, vermiculite and perlite.

The unique properties of Ultralite make it an ideal loose fill insulator especially within kiln car bases. Unlike other typical insulation materials, the thermal efficiency of **Ultralite Loose Fill (ULF)** insulation does not degrade so it will perform consistently over its whole lifetime.

The Ultralite Loose Fill range of products covers classification temperatures **up to 1450°C/2642°F**, dependent upon the application (see below).

Ultralite Loose Fill is supplied in pellet form – a neat, simple and small aggregate that is easy and safe to handle. It pours very conveniently into awkward spaces and reduces kiln car construction time as no physical packing is required.



Whichever Ultralite Loose Fill grade customers choose, there are demonstrable energy savings on every firing. Mantec Refractories, a division of Mantec Technical Ceramics Ltd., can readily prove energy savings **up to 40%** in kiln car bases and there are case studies to support this. Please contact Mantec for further information or download the case studies from our website.

### Ultralite Loose Fill Product Range:

There are 3 standard grades of Ultralite Loose Fill available:

- **ULF-10** - The standard loose fill product, with a classification temperature of **1050°C/1922°F**. Typical industry sectors are brick, roof tile and sanitaryware.
- **ULF-12** – Similar to ULF-10 but with a classification temperature of **1250°C/2282°F**. Typical industry sectors are sanitaryware, tableware and refractories.
- **ULF-14** – This grade has an enhanced Alumina content to allow it to have a classification temperature of **1450°C / 2642°F**. Typical industry sectors are refractories, technical ceramics and industrial ceramics.

### The Benefits of Ultralite Loose Fill:

- Highly efficient and lightweight, resulting in real energy savings on every firing and ease of handling
- Low density, low thermal mass and high porosity, resulting in lower kiln energy costs which reduces carbon footprint
- Free flowing loose fill – very easy to install. It pours very conveniently into awkward spaces and reduces construction time (no physical packing required)
- No refractory ceramic fibre (RCF), therefore not classified as hazardous waste
- Stable at high temperatures - does not degrade in use, therefore can be re-used time and again
- Superior alternative to conventional kiln car insulation materials
- Can be re-used after kiln car repairs and maintenance

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Note: Mantec Refractories is a division of Mantec Technical Ceramics Ltd. The information and technical data contained herein are correct at the date of issue and represent typical values obtained in accordance with normal manufacturing tolerances. Mantec Technical Ceramics Ltd. reserves the right however to change this information and technical data at any time without notice. Contact Mantec Technical Ceramics for the most current information.

Main Properties		Units	ULF-10	ULF-12	ULF-14
Recommended Maximum Service Temperature		°C (°F)	1050 (1922)	1250 (2282)	1450 (2642)
Determination of Refractoriness ASTM C24-09 (13)		PCE Value (°C / °F)	29 (1659°C / 3018°F)	29 (1659°C / 3018°F)	>36 (>1804°C / 3279°F)
Powder Loose Bulk Density (Subject to settling in transit)		Kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	75 (4.68)	110 (6.87)	232 (14.48)
Thermal Conductivity (ASTM C201/182)  N.B. All temperatures are <b>MEAN</b> temperatures	200°C (392°F)	W/m K (BTU in/hr ft <sup>2</sup> °F)	0.08 (0.55)	0.08 (0.55)	0.12 (0.83)
	400°C (752°F)	W/m K (BTU in/hr ft <sup>2</sup> °F)	0.10 (0.69)	0.10 (0.69)	0.17 (1.18)
	800°C (1472°F)	W/m K (BTU in/hr ft <sup>2</sup> °F)	0.17 (1.18)	0.17 (1.18)	0.28 (1.94)
	1000°C (1832°F)	W/m K (BTU in/hr ft <sup>2</sup> °F)	0.23 (1.59)	0.23 (1.59)	0.35 (2.43)
	1200°C (2192°F)	W/m K (BTU in/hr ft <sup>2</sup> °F)	0.32 (2.22)	0.32 (2.22)	0.43 (2.98)
Specific Heat Capacity at 1000°C (1832°F)		kJ/kg K	1.15	1.15	1.21
Determination of Resistance to Carbon Monoxide (BS EN ISO 12676:2003) after 200 hours at 500°C (932°F)			Classification 1	Classification 1	Classification 1
Chemical Composition	Al <sub>2</sub> O <sub>3</sub>	%	31.34	31.34	64.90
	SiO <sub>2</sub>	%	53.47	53.47	28.20
	Fe <sub>2</sub> O <sub>3</sub>	%	0.84	0.84	0.50
	TiO <sub>2</sub>	%	1.21	1.21	0.50
	CaO	%	0.36	0.36	0.20
	MgO	%	0.56	0.56	0.40
	Na <sub>2</sub> O	%	0.36	0.36	0.50
	K <sub>2</sub> O	%	2.19	2.19	1.20
	Alkalis	%	< 3.5	< 3.5	< 2.5
Standard Packaging			Nominally 1m <sup>3</sup> Bulk Bags	Nominally 1m <sup>3</sup> Bulk Bags	Nominally 1m <sup>3</sup> Bulk Bags

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