

Ultralite Loose Fill (ULF) - Recommended Best Practice

Ultralite Loose Fill 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.

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 is available in 3 grades (**ULF-10, ULF-12 & ULF-14**) that cover classification temperatures **up to 1450°C/2642°F**, dependent upon the application.

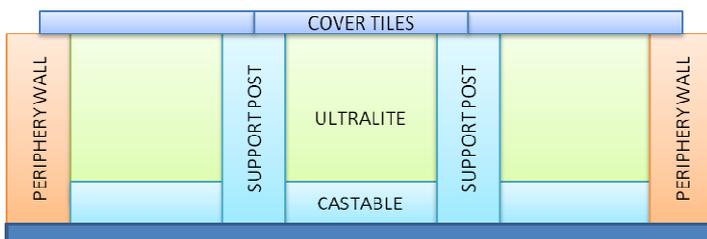
Ultralite Loose Fill is supplied in pellet form – a neat, simple and small aggregate that is easy and safe to handle. It pours very conveniently into awkward spaces and reduces kiln car construction time as no physical packing is required.



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

Kiln Car Construction:

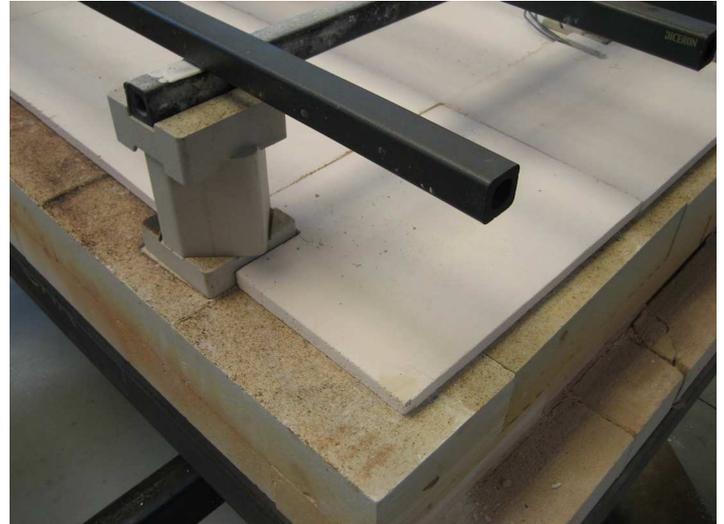
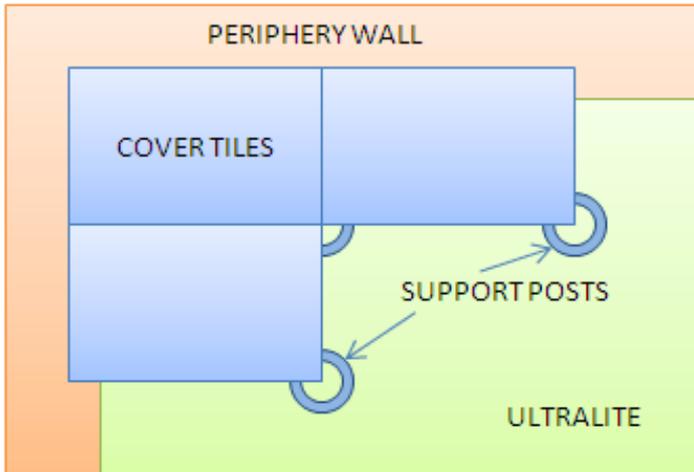
- 1) Ensure that the kiln car has a suitable brick periphery wall that can fully contain the Ultralite Loose Fill within the kiln car void. Although not absolutely necessary, the kiln car void can be lined with a thin refractory veneer.
- 2) Ensure that there is a solid kiln car base on which to pour the Ultralite Loose Fill. Mantec Technical Ceramics recommends a 50mm thick layer of Ultralite Castable to be installed before the Ultralite Loose Fill in order to help seal the kiln car base.
- 3) All support posts must be fixed and secured to the kiln car base. This can be achieved by either securing the posts with a suitable refractory castable or by fitting the posts over engineered fitted studs
- 4) Fill the remaining kiln car void completely and evenly with Ultralite Loose Fill including any hollow support posts.
- 5) If more than one grade of Ultralite Loose Fill is installed inside the kiln car, ensure that the different grades are separated by a thin layer of ceramic fibre paper. This will enable the individual grades of Ultralite Loose Fill to be easily identified and kept separate should they need to be removed and re-installed inside the kiln car, for example during routine maintenance.
- 6) To ensure that the Ultralite Loose Fill surface is flat and even, it is recommended that it is lightly tamped all over.
- 7) In order to fully contain the Ultralite Loose Fill inside the kiln car, it is recommended to cover the Ultralite Loose Fill with suitable refractory cover tiles. As the size, thickness and grade of the cover tiles will be determined by the operating temperatures and conditions within the kiln, please seek the appropriate guidance and correct specification from your refractory cover tile supplier.



www.mantectechnicalceramics.com / email: ultralite@mantectc.com

Note: 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 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.

- 8) Cover tiles must be supported, preferably on all corners, by load-bearing support posts and **not** by the Ultralite Loose Fill alone.
- 9) Cut the cover tiles around the support posts to allow for easy removal and inspection.



Plan View - Kiln Car Section showing typical position of Cover Tiles and Support Posts

Maintenance:

Regular checking of the Ultralite Loose Fill in the kiln car bases is always advisable and highly recommended in order to ensure its long term effectiveness.

- 1) After the initial kiln car construction and the first few firings, a minimal top-up of the level of Ultralite Loose Fill may be required usually as a result of travel vibration in the kiln car and a minor natural contraction within the material. Natural contraction is to be expected in all insulation materials, including Ultralite Loose Fill, shortly after they have been used inside a kiln.
- 2) If any natural contraction occurs in the Ultralite Loose Fill, the following remedy is incredibly easy provided the recommended construction procedures above have been adhered to:-
 - a) When the cover tiles are lifted, a “rice cake” effect or bonding of the Ultralite Loose Fill surface may have occurred.
 - b) To alleviate the “rice cake” effect or bonding, simply break-up and crumble the Ultralite Loose
 - c) Fill by hand ensuring the Ultralite Loose Fill is spread evenly and any cracks or voids are filled with **used** Ultralite Loose Fill.
 - d) If required, apply a thin layer of **fresh, unused** Ultralite Loose Fill across the whole surface layer of the existing **used** Ultralite Loose Fill ensuring that the same type is used as the original layer.
 - e) Under no circumstances should any cracks or voids, which may have developed in the Ultralite Loose Fill surface, be filled with **fresh, unused** Ultralite Loose Fill as this will lead to greater cracks and voids forming deeper into the bed of Ultralite Loose Fill material.
 - f) Replace the cover tiles.
- 3) Once the Ultralite Loose Fill has been sufficiently topped up by following the above steps, there is usually no need for further attention during the life of the kiln car or until the periphery wall repair stage.

General Health & Safety Advice:

Ultralite Loose Fill can become dusty and although there is no significant health hazard associated with its use, the wearing of face masks is always recommended.

A Material Safety Data Sheet for Ultralite Loose Fill is available upon request.

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