

CASE STUDY – K-Slip® Rubber Backed UHMWPE Flow Liner

Kinder Australia Products:

Product Category:

Application:

Customer:

K-Slip® Rubber Backed UHMWPE Flow Liner

Materials Flow / Flow and Anti-Wear

Mass Flow Cone / Transition Area

Queensland Engineering Company

BACKGROUND:



Based in Brisbane, our customer builds and operates safe, economically viable and sustainable shale-to-liquids energy plants. Their vision is to help secure Australia's energy future. The engineering company based in QLD, needed to install a mass flow cone into an internal feed bin in the retort. The best half angle for the bulk solid to allow mass flow was 70° for mild steel. They also knew that at 60° the flow was within the transition area (mass flow/ funnel flow). Due to constraints within the retort, the maximum half angle that could be achieved was 64.3°.

The K-Slip® Rubber Backed UHMWPE Flow Liner features a low co-efficient of friction thin polyethylene lining material, with a synthetic rubber backing (SBR). The thin flexibility of Kinder Australia's K-Slip® Rubber Backed UHMWPE Flow Liner suited the customer's needs because it allows almost any complicated shape to be lined including bins, hoppers and chutes, providing a reliable and effective uniform surface and therefore improve the controlled rate of flow. The application to a metal surface is by normal cold rubber bonding.

In 2010, the Queensland Government gave approval for the engineering company to produce high quality ultra- low sulphur diesel, aviation fuel and other transport fuels from oil shale at its New Fuels Development Centre near Gladstone.

Part No.	Rubber backed UHMWPE Sheet (mm)
K-SLIP-1+1	900 x 1800 x 2mm thick
K-SLIP-1+2	900 x 1800 x 3mm thick
K-SLIP-1+3	900 x 1800 x 4mm thick
K-SLIP-1+4	900 x 1800 x 5mm thick

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Kinder Australia Pty Ltd

26 Canterbury Road, Braeside VIC 3195
PO Box 1026, Braeside VIC 3195

☎ +61 3 8587 9111
☎ +61 3 8587 9101

✉ conveyorsolutions@kinder.com.au

ABN: 28 006 489 238

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RESOLUTION:

The addition of the K-Slip® Rubber Backed UHMWPE Flow Liner reduced the half angle requirement for mass flow below 64° and hence the hopper was capable of achieving targets to meet effective mass flow levels. To fit the pieces of K-Slip® Rubber Backed UHMWPE Flow Liner in through the door, it was cut into 3 sections. The steel faces were cleaned and the K-Slip® Rubber Backed UHMWPE Flow Liner was glued into position with industrial adhesive (similar to contact cement).

Having K-Slip® on a rubber backing makes it simple to glue into position. The Lead Mechanical Engineer had used K-Slip® Rubber Backed UHMWPE Flow Liner in the past on similar problems and had discovered then that it improved flow effectively but that it was also straightforward to apply.

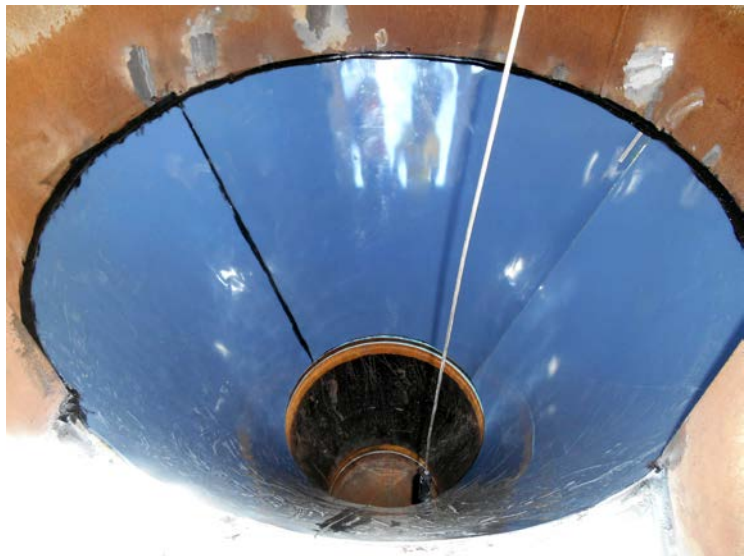
hDensity:
(ASTM D1505) 0.94g/cm²

Durometer Hardness:
(Scale D; ASTM D2240) 67

Thermal Deformation:
4.6 kgf/cm³(ASTM D648) 95

Frictional Co-Efficient:
(ASTM D1894) 0.09

Operating Temperature Limit Range:
0 to +80 °C



Above Photo:
K-Slip® Rubber Backed UHMWPE Flow Liner installed.

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