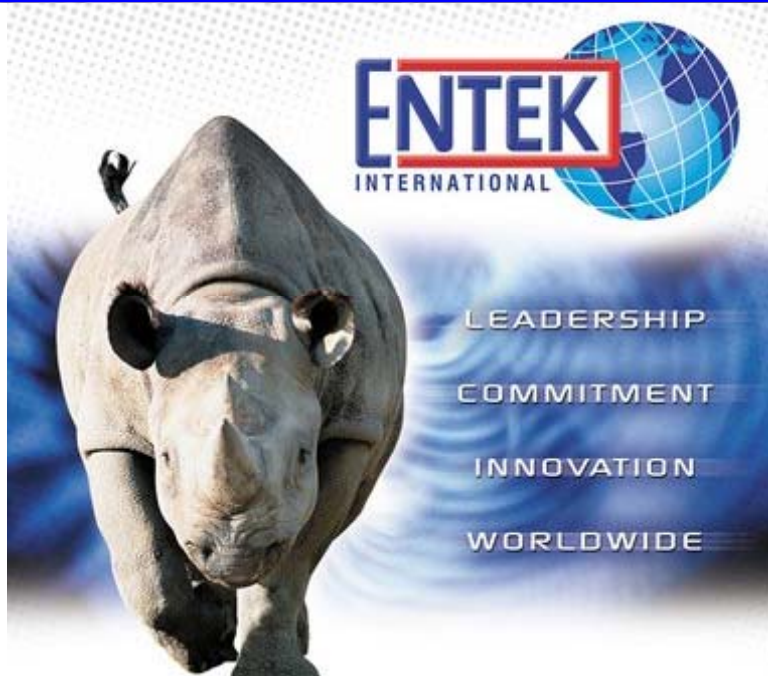


RhinoHide® XS™

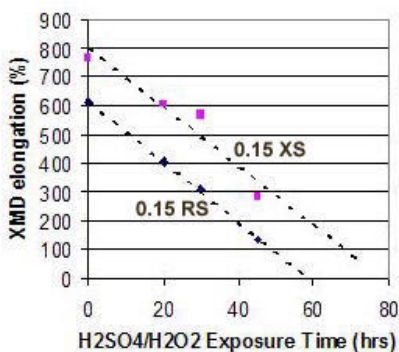


Combines XT™ formula for extra oxidation resistance with a reinforced shoulder for extra puncture strength.



LEADERSHIP
COMMITMENT
INNOVATION
WORLDWIDE

RhinoHide® XS™ was developed in 2001 to maximise the oxidation resistance of the polyethylene separator for modern automotive battery applications. In comparison to standard RhinoHide®, RhinoHide® XS™ contains a special anti-oxidant package, a higher UHMWPE/silica volume ratio, more residual oil and a more highly dispersed silica. The graph shows the resultant improvement in oxidation resistance of the separator.



Perox 80 Oxidation Test at 80°C.
RhinoHide® XS™ shows a 50% improvement in oxidation resistance compared with RhinoHide® RS™.
Even after 60 hours exposure RhinoHide® XS™ retains an XMD elongation of 200%.



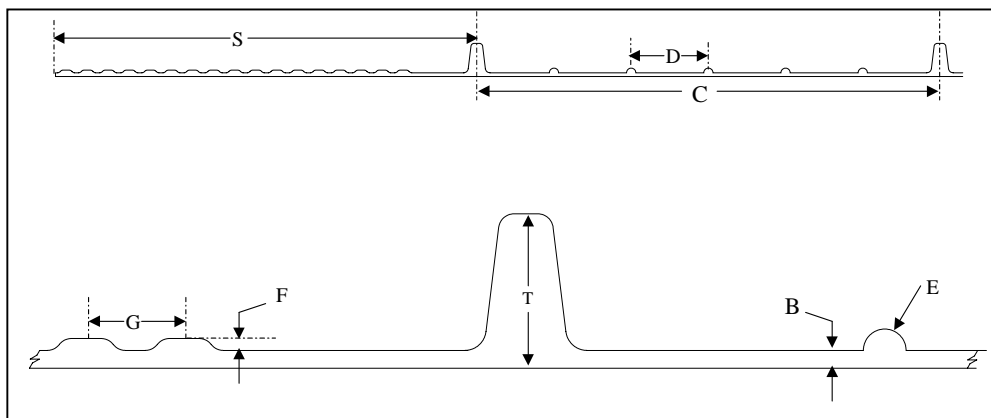
The higher UHMWPE/silica ratio increases the puncture strength of the separator by 30%. In addition, the innovative design of the shoulder area of RhinoHide® XS™ provides extra protection against penetration by sharp edges of the grid when expanded metal grids are used. This increases the puncture strength of the shoulder area by a further 25%.

RhinoHide® XS™ should be specified in applications where high oxidation resistance is of particular importance. RhinoHide® XS™ should also be specified where extra puncture strength is particularly important, eg. where the battery design incorporates expanded metal grids.

Smart Separator Solutions®

RhinoHide[®] XS[™]

RhinoHide[®] XS[™] profile drawing and dimensions



| | | <i>Dimensions - mm</i> | <i>Tolerance</i> |
|----------|----------------------|------------------------|------------------|
| W | Separator width | 160 - 162 | ± 0.8 |
| T | Thickness | 0.6 - 1.4 | ± 0.06 |
| B | Backweb | 0.15 - 0.20 | ± 0.025 |
| S | Shoulder | 16.5 | ± 4.5 |
| C | Major rib spacing | 18.14 | (@ 160mm) |
| D | Mini-rib spacing | 3.02 | (@ 160mm) |
| E | Mini-rib radius | 0.18 | |
| F | Shoulder rib height | 0.10 | |
| G | Shoulder rib spacing | 0.825 | |

(Typical dimensions as shown: other profiles may be available)

RhinoHide[®] XS[™] - Key technical data @ 0.15mm backweb

| | | <i>Nominal Value</i> | <i>Tolerance</i> |
|------------------------------|-------------------|----------------------|------------------|
| Moisture | % | 4 | 5 max |
| Oil content | % | 15 | ± 3 |
| Ash content | % | 66 | ± 4 |
| Electrical resistance | Ω.cm ² | 0.06 | * |
| Elongation XMD | % | 400 | 200 min |
| Puncture | N | 8.7 | 6.5 min |
| Porosity | % | 55 | ± 5 |

(* Maximum ER dependent on profile)

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