

# TIVAR<sup>®</sup> Sterra<sup>™</sup> UHMW-PE

Ultra High Molecular Weight Polyethylene

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TIVAR Sterra Ultra High Molecular Weight Polyethylene UHMW-PE shapes are produced from re-processed, industrial UHMW materials, and re-purposed for use in a variety of industries such as construction and heavy equipment, agriculture and grain handling, bulk material and parcel handling and automotive and transportation. As a premium grade that is both economical and eco-friendly, TIVAR Sterra UHMW-PE components exhibit excellent abrasion and corrosion resistance, outstanding impact strength, minimal moisture absorption, and a low coefficient of friction. For these reasons, TIVAR Sterra UHMW-PE is often a favored solution for wear and outrigger pads, strips, rails, and guides, rollers, conveyors, chutes, hoppers, impact plates, and asphalt equipment components.

As part of the Sterra product portfolio, this material contains recycled content and exhibits a significantly lower carbon footprint compared to similar materials derived from virgin feedstocks.

Recycled Content (post-industrial material)	70%
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TIVAR® Sterra™ UHMW-PE				Comparison with a generic material based on 100% virgin resin	
		Units	Indicative Values	Units / kg product	Indicative Values
Cycle Impact Assessment Results	Climate change	kg CO <sub>2</sub> eq / kg product	1.73	kg CO <sub>2</sub> eq / kg product	3.22
	Acidification	Mole of H <sup>+</sup> eq. / kg product	1.84E-03	Mole of H <sup>+</sup> eq. / kg product	4.92E-03
	Ecotoxicity freshwater	CTUe / kg product	11.02	CTUe / kg product	33.96
	Particulate Matter	Disease inc. / kg product	2.49E-08	Disease inc. / kg product	3.98E-08
	Human toxicity, non-cancer - total	CTUh / kg product	1.62E-08	CTUh / kg product	5.52E-08
	Resource use, fossils	MJ / kg product	38.94	MJ / kg product	104.17
	Resource use, mineral and metals	kg Sb eq. / kg product	3.49E-07	kg Sb eq. / kg product	4.64E-07
	Water use	m <sup>3</sup> world equiv. / kg product	0.36	m <sup>3</sup> world equiv. / kg product	0.84
	Environmental footprint, EF v3.0	eco points / kg product	1.17E-04	eco points / kg product	2.72E-04

More aggregated LCA endpoints are available on request.

Fundamentals	<p>Life cycle assessment was calculated according to ISO 14040/44 (ISO, 2006; ISO/TC, 2006) using a mix of primary and secondary data including the Sphera MLC database version 2022.1. The analysis was performed with Sphera LCA for Experts Software (former GaBi 10.6). The total environmental footprint was calculated with the EFv3.0 method and the carbon footprint was calculated with the IPCC 2013 method. In accordance with the life cycle assessment approach, all processes within the cradle-to-gate system boundary were considered, 1 wt. % cut-off rule and no allocation were applied. The further processing, the use phase and the end-of-life phase of the material products are excluded from the system boundary. The LCA has undergone a critical review by an independent third party according to ISO 14040/44.</p> <p>Value(s) indicated are global average(s) and may be based on a varying number of manufacturing locations, including single location based only.</p> <p>A mass balance method according to ISCC PLUS standards is applied; the corresponding certification process has been initiated.</p>
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Miscellaneous	<p>Mitsubishi Chemical Group's production sites for the manufacturing of this material are certified according to ISO 9001:2015 and ISO 14001:2015.</p> <p>Production sites are using electricity from Renewable Sources (RE).</p>
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