

STAR LAMINATOR

STARLAM GROUP CLASS-30, -300, -3000, -30000

03



The StarLam family

Principle

The Star Laminators are the first real production tools of IMM for mixing purposes. They create an alternate, interdigital-type feeding array which is generated by stacking thin foils with star-like through-holes. In this way, a finely-dispersed injection of two fluid streams is achieved. The foil stack is inserted into the recess of a housing where it is tightened by applying compression.

The novel Star Laminators are large-

capacity microstructured mixers reaching volume flows up to the m^3/h domain. The apparatuses yield at higher flow rates a mixing efficiency which compares the high performance of today's low-capacity (l/h) micro mixers. Therefore, continuity from the "real" micro mixers over the herein described high-throughput tools to conventionally manufactured static mixers with even higher flow rates is given. A classification of the mixing efficiency versus the power input confirms this

continuity as well. For the Star Laminator StarLam 3000 e.g. a throughput of about $3 \text{ m}^3/\text{h}$ at a pressure loss of 0.7 bar was determined for watery systems. In this way, the StarLam series expands the range of operation from pilot-scale microstructured mixers of the Caterpillar series into production applications.



StarLam 30000



StarLam 3000



StarLam 300



StarLam 30

Technical Data

Name	Star Laminator 3000	Star Laminator 300	Star Laminator 30
Order number	StarLam 3000	StarLam 300	StarLam 30
Mixing principles	Multi-Lamination	Multi-Lamination	Multi-Lamination
Size (L x B x H)	95 x 95 x 150	40 x 40 x 64	40 x 40 x 64
Connectors (Inlet/Outlet)	DN 15/DN 25	8 mm/10 mm	8 mm/10 mm
Standard mixing channels (µm)	250	100	50
Standard material	Body: 1.4571 Foil: 1.4401	Body: 1.4571 Foil: 1.4401	Body: 1.4571 Foil: 1.4401
Options	Other materials like Hastelloy, Monell or Titan on request	Other materials like Hastelloy, Monell or Titan on request	Other materials like Hastelloy, Monell or Titan on request

Operating Conditions

Order number	StarLam 3000	StarLam 300	StarLam 30
Temperature (°C)	-40 – 220	-40 – 220	-40 – 220
Pressure stability (bar)	100	100	100
Flowrate (l/h)	600 – 8000	80 – 1000	12 – 150
Residence time (ms)	72 – 960	1.7 – 220	24 – 840
Inner volume (ml)	160	5	2.8
Max Viscosity (mPas)	10000	10000	10000
Leakage Class	< L _{0.001}	< L _{0.001}	< L _{0.001}