

The Precision Benchmark for Micro-Elastomers

In the era of micro-fluidics and nano-precision devices, the “highest” global standards—such as ISO 3302-1 Class M1—have gracefully become a part of industrial history. While they once represented the pinnacle, today’s compact engineering demands more than just “standard” accuracy.

Modern innovation doesn’t happen in millimeters; it happens in microns. A tolerance of ±0.08 mm is no longer a benchmark—it is a limitation.

Vina Rubber is proud to introduce the **VINA-MEMBRANE® Standard**. By refining our HCR Silicone processing and In-house Tooling, we have moved beyond traditional boundaries to offer a definitive industry pulse: **±30µm (±0.03 mm)**.

VINA-MEMBRANE® UNIFIED TECHNICAL STANDARD (2026)

Precision Guidelines for Flat & 3D Geometry Membrane and Diaphragm Solutions

Product Classification	Specification (T x W)	Material (Shore A ≥ 30)	Guaranteed Tolerance
I. VINA-FLATMEMBRANE® (Standard Flat Profile)			
Ultra-Thin	0.2 – 0.3 mm ≈ 0.008" – 0.012"	Silicone (HCR)	± 0.03 mm ± 0.0012"
Ultra-Thin	0.2 – 0.3 mm ≈ 0.008" – 0.012"	EPDM / NBR	± 0.05 mm ± 0.0020"
Thin	0.5 – 1.0 mm ≈ 0.020" – 0.039"	Si / EPDM / NBR	± 0.05 mm ± 0.0020"
Micro Precision	T > 1.0 mm & W < 10 mm T > 0.039" & W < 0.394"	Si / EPDM / NBR	± 0.10 mm ± 0.0039"

Product Classification	Specification (T x W)	Material (Shore A ≥ 30)	Guaranteed Tolerance
Precision Components	T > 1.0 mm & W > 10 mm <i>T > 0.039" & W > 0.394"</i>	Si / EPDM / NBR	± 0.10 mm ± 0.0039"
Large-Scale	Footprint 20 – 100 mm <i>Footprint 0.787" – 3.937"</i>	Si / EPDM / NBR	± 0.12 mm ± 0.0047"
II. VINA-NON-FLAT® (3D / Formed Geometry)			
Thin	0.5 – 1.0 mm <i>≈ 0.020" – 0.039"</i>	Si / EPDM / NBR	± 0.05 mm ± 0.0020"
Micro Precision	T > 1.0 mm & W < 10 mm <i>T > 0.039" & W < 0.394"</i>	Si / EPDM / NBR	± 0.10 mm ± 0.0039"
Precision Components	T > 1.0 mm & W > 10 mm <i>T > 0.039" & W > 0.394"</i>	Si / EPDM / NBR	± 0.10 mm ± 0.0039"
Large-Scale	Footprint 20 – 100 mm <i>Footprint 0.787" – 3.937"</i>	Si / EPDM / NBR	± 0.12 mm ± 0.0047"

ENGINEERING TECHNICAL NOTES

- **Production Method:** Vacuum compression molding for air-trap prevention and high-density structural integrity.
- **Material Specification (HCR):** High Consistency Rubber. Superior dimensional stability for ultra-thin sections.
- **Silicone:** FDA-compliant and Medical Grade.
- **EPDM:** Superior chemical and weather resistance.
- **NBR:** Excellent oil and fuel resistance.

- **Dimensional Stability:** Guaranteed wall thickness across flat sheets and 3D geometries (**valves, diaphragms**, bellows, ribs).
- **In-house Tooling:** All tolerances achieved via internal CNC tooling and precise shrinkage compensation.
- **Quality Verification:** 100% inspection to ensure $\pm 30\mu\text{m}$ / $\pm 50\mu\text{m}$ threshold.

WHY VINA-MEMBRANE® ?

Beyond ISO Limits: Traditional ISO standards allow variances that can represent up to 40% of an ultra-thin membrane's thickness. We close that gap. Our internal standards exceed ISO 3302-1 Class M1 requirements by over 50%, ensuring your **micro-diaphragms** and precision designs perform exactly as simulated

Material Integrity: By utilizing High Consistency Rubber (HCR) instead of liquid systems (LSR), we provide **membranes and diaphragms** with significantly higher tear strength and mechanical durability while maintaining sub-micron precision.

Ready for Micro-Technology: Designed specifically for Lab-on-a-Chip technologies, handheld medical diagnostics, and high-sensitivity pressure sensors.

REQUEST A FEASIBILITY REVIEW

Does your design require micron-level certainty?

[Upload CAD File \(.STP / .STEP / .IGES\)](#)

[Download Technical Data Sheet \(PDF\)](#)