

## System Specification

# SYGEF Plus

Piping systems in PVDF-HP



# SYGEF Plus – System Specification

<b>Material</b>	High Purity Polyvinylidene fluoride (PVDF HP)
Colour	Virgin material, opaque
Density	~1.78 g/cm <sup>3</sup> (ISO 1183 / ASTM D 792)
Surface tension	30–35 mJ/m <sup>2</sup>
Linear expansion coefficient	0.12–0.18 mm/mK (DIN 53752)
E-modulus	≥1700 N/mm <sup>2</sup> (EN ISO 527 / ASTM D 790)
Thermal conductivity	0.19 W/mK (EN12664)
Surface resistivity	5 x 10 <sup>14</sup> Ωcm (IEC 60093)
<b>Dimension</b>	d20 (½") – d450 (18") in accordance to ISO 10931
<b>Pressure rating</b>	Pipes/fittings: PN16 (d20 – d315), PN10 (d90 – d450) Valves: separate specification
<b>Temperature rating</b>	From –20 °C to +140 °C (–4 °F to +284 °F)
<b>Production</b>	Fittings/diaphragm valves: injection moulded Pipes: extruded Produced under clean room ISO 14644-1 Class 7 (U.S. Fed. Std. 209E Class 10'000) conditions. Subsequent assembling, quality inspection and cleaning is carried out using 18 MΩ pure water under clean room ISO 14644-1 Class 5-6 (U.S. Fed. Std. 209E Class 100-1000) conditions.
<b>Surface finish compliant to Semi F57</b>	Inner surface (PN10/SDR33): ≤d225 Ra ≤0.2µm (8µin) / >d225 Ra ≤0.3µm (12µin) / ≥d280 Ra ≤0.4µm (16µin) / ≥d355 Ra ≤0.65µm (26µin) for injection moulded and extruded components
<b>Marking</b>	All components are embossed with a permanent identification during the production process to ensure full traceability. Lot No Material Dimension Pressure Rating
<b>Testing and inspection (ISO 10931)</b>	Inclusions Visual inspection Surface finish Dimension tolerance Pressure testing Periodic leachout per SEMI F40/F57
<b>Approvals/conformance</b>	DIBt ASME BPE FDA CFR 21 177.2510 USP 25 class VI (physiological non-toxic) SEMI F57 FM-4910 listing
<b>Welding technology</b>	BCF Plus, bead and crevice free fusion, size d20 (½") – d110 (4") IR Plus, infrared fusion (DVS 2207-6), size d20 (½") – d450 (18")
<b>Documentation*</b>	Certificate of Conformance with FDA, USP EN 10204 2.2 EN 10204 3.1
<b>Packing</b>	Pipes capped and each component double bagged in an specified inner bag and an outer bag under clean room ISO 14644-1 Class 6 (U.S. Fed. Std. 209E Class 1000) conditions.
<b>Labeling</b>	Brand Name Product Description Code Number Material Dimension
<b>Main applications</b>	Uses include delivery of ultrapure water in the semiconductor/electronic industry, pharmaceutical grade purified water (WFI/PW) and analytical DI water to highest purity requirements. A wide range of sanitisation methods is suitable such as Ozone, hot water or steam.

\* On request