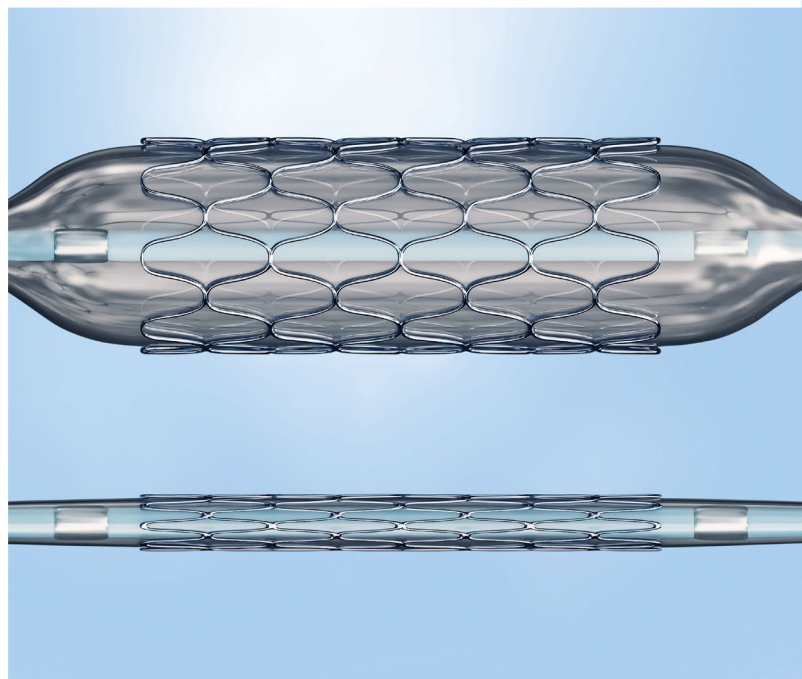




Liveo™ Pharma Tubing



Liveo™ Pharma Tubing are translucent and made from BioMedical grade platinum-cured silicone elastomer, exceeding USP Class VI Plastics Test Requirements.

Liveo™ Pharma Tubing: Low to high pressure / vacuum



- › Pharma-50 Tubing: Fluid transfer and short term pumping applications.
- › Pharma-65 Tubing: Improved kink- and pressure-resistance for moderate pressures.
- › Pharma-80 Tubing: Cost effective option to reinforced tubing for high pressure / vacuum applications.

Liveo™ Pharma-65 Reinforced Tubing: High pressure / high vacuum



Fiber-reinforced Pharma-65 Tubing to service high pressure and high vacuum applications which exceed the Pharma-80's capabilities.

Liveo™ Pharma Advanced Pump Tubing: Peristaltic pumping



Low-hysteresis technology providing long-term pump life, outstanding filling accuracy and low spallation for lab-applications and filling-lines, with benchmarking data available upon request.

Liveo™ Pharma TPE Tubing



Liveo™ Pharma TPE Tubing are translucent and made from pharmaceutical grade thermoplastic elastomer, designed to excel in single-use applications while being compatible with other TPE tubing.

Extensive benchmarking is available to backup superior material properties for:

- | | | |
|------------------------------|-----------------------------|----------------------------------|
| › (Co-)welding performance | › Chemical resistance | › Pump life/accuracy, spallation |
| › Stability upon autoclaving | › Sorption of preservatives | › Purity |

Liveo™ Pharma TPE Ultra-Low Temp Tubing



Liveo™ Pharma TPE Ultra-Low Temp Tubing are made from pharmaceutical grade thermoplastic elastomer, combining the properties of a traditional TPE tubing with an outstanding mechanical resistance in low-temperature conditions, preventing breakage of single-use assemblies during or after storage up to -86° C.

Liveo™ Pharma Overmolded Assemblies



Liveo™ Pharma Overmolded Assemblies are available for silicone, TPE and TPE Ultra-Low Temp tubing, offering several key-benefits:

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|----------------------------------|-----------------------------|-----------------------------|
| › Improved integrity | › Increased volume accuracy | › Lower cross-contamination |
| › Simplified extractable profile | › Reduced labor time | › Customized and flexible |

Liveo™ RX Medical Grade Tubing



Liveo™ Pharma Overmolded Assemblies are available for silicone, TPE and TPE Ultra-Low Temp tubing, offering several key-benefits:

Liveo™ RX-50, -65, -80 Tubing: Low to high pressure / vacuum



All 3 available durometers RX-50, RX-65 and RX-80 Medical Grade Tubing can be obtained as radiopaque or multi-lumen options, increasing the range of customizable features.

Screening tests for implantations up to 29 days have been passed by the material, but the responsibility to ensure safety and efficacy of such application is always with the end-user. The same applies for ensuring the suitability of applications of greater than 29 days of implantation.

Liveo™ RX Pump Medical Grade Tubing: Critical medical device application



Intended for applications where pyrogenic tests on tubing are mandatory, i.e. blood bypass. Not suited for peristaltic pump applications.

Spectrum Plastics Group



Spectrum Plastics Group is specialized in supporting medical device related projects from design & development to quick-turn prototyping and finally scale-up.

For tubing, Spectrum Plastics Group services applications like fluid management, interventional and surgical technologies as well as other with **extrusions** such as:

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|-------------------------|-------------------------|-----------------------------|--------------|
| › Thin-Wall & Microbore | › High Pressure Braided | › Reinforced shafts | › Paratubing |
| › Single- & Multi-lumen | › Core Mandrel | › Balloons | › Striped |
| › Co-, Tri-, Multilayer | › Radiopaque | › Lubricious / Low friction | › Tapered |

For all extrusions a broad variety of **materials** is available, including but not limited to:

- | | | | |
|---------------|--------------|--------|------------|
| › PMMA | › PET | › PP | › PEEK |
| › ABS | › PA / Nylon | › TPU | › Silicone |
| › LDPE / HDPE | › PC | › PEBA | › TPE |

Secondary operations help to further support customized demands:

- | | | |
|--------------------|-----------------------------|-------------|
| › Laser processing | › Heat forming/tube bending | › Bonding |
| › Welding | › Drilling | › Assembly |
| › Pad printing | › Hole punching | › Packaging |

Liveo™ Pharma and Medical Grade Tubing are developed to service ultrapure fluid transfer either in pharmaceutical, biotechnological processes or medical device applications, respectively.

An in-depth library for regulatory related documents and data collection support fast qualification and validation, while optional customized materials (dimension, length, labeling) fulfill individual demands.

Material	Compliance										
	USP Class VI	Ph. Eur.	JP XVII Section G7	USP <85>, <87>, <88>, <151>, <661>, <788>	ISO 11737-1	ISO-10993-3, -4, -5, -6, -10, -11 23?	Skin Sensitization (ASTM F2147)	FDA 21 CFR 177.2600	MDR (EU) 2017/745	Implantable	Shelf life (months)
Pharma 50	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	60
Pharma 65	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	60
Pharma 80	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	60
Pharma 65 reinforced	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	36
APT	✓	✓	✓	✓	✓	✓	✓	(ANSI/ NSF 51)	✓	X	60
RX-50	✓	✓	X	<87>, <88>, <151>	X	✓	✓	X	✓	To be discussed	36
RX-65	✓	✓	X	<87>, <88>, <151>	X	✓	✓	X	✓	To be discussed	36
RX-80	✓	✓	X	<87>, <88>, <151>	X	✓	✓	X	✓	To be discussed	36
RX-pump	✓	✓	X	<87>, <88>, <151>	X	✓	✓	X	✓	To be discussed	36

Material	Compliance							
	USP Class VI	USP <85>, <87>, <88>, <151>, <232>, <661>, <665>, <788>	ISO 11737-1	ISO-10993-5, -6, -11, -23	Skin Sensitization (ASTM F2147)	FDA 21 CFR 177.2600	Implantable	Shelf life (months)
TPE	<USP88>	✓	✓	✓	✓	X	X	60
UL-TPE	<USP88>	<85>, <87>, <88>, <151>, <232>, <665>, <788>	✓	✓	✓	(e & f)	X	36

