

BULK TUBING

Instech offers a range of bulk tubing for laboratory animal infusion and microdialysis, including polyethylene, polyurethane, silicone, co-extruded PE/PVC and FEP tubing. Most tubing now comes on convenient spools of 30m (98ft).

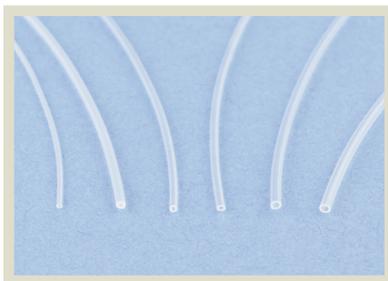


TUBING MATERIAL COMPARISON

| | Silicone | Polyurethane | Polyethylene | Polyvinyl-chloride |
|------------------------|---------------------|---------------------|--------------|---------------------|
| Hemocompatibility | Excellent | Excellent | Fair | Fair |
| Compound Compatibility | Possible reactivity | Possible reactivity | Inert | Possible reactivity |
| Stiffness | Soft | Soft | Stiff | Soft or stiff |
| Ease of Insertion | Difficult | Moderately easy | Easy | Moderately easy |
| Sizes Available | Many | Many | Many | Few |
| Ease of Bonding | Excellent | Fair | Poor | Fair |
| Memory | Excellent | Poor | Poor | Poor |
| Tear Strength | Poor | Excellent | Excellent | Excellent |
| Air Permeability | High | Moderate | Low | Low |
| Sterilization | EtO or steam | EtO | EtO | EtO |

Tubing IDs and ODs typically vary by $\pm .002$ in (.05mm) from the nominal specs noted here. When dead volume is critical measure it directly by comparing the weights of filled and empty segments.

Polyethylene Tubing



Instech's PE tubing solves one of the biggest problems with PE: the price. The low density formulation is comparable to the product offered by the large catalog suppliers. To avoid kinking, consider co-extruded PE/PVC (p 45).

| Part No. | Compare | Fits | OD | ID | 1mm |
|----------|---------|------|--------------|--------------|-----|
| BTPE-10 | PE-10 | | .024in .60mm | .011in .28mm | ○ |
| BTPE-20 | PE-20 | | .043 1.09 | .015 .38 | ● |
| BTPE-25 | | 25ga | .036 .91 | .018 .46 | ○ |
| BTPE-50 | PE-50 | 22ga | .038 .97 | .023 .58 | ○ |
| BTPE-60 | PE-60 | 20ga | .048 1.22 | .030 .76 | ○ |
| BTPE-90 | PE-90 | | .050 1.27 | .034 .86 | ○ |

Spool of 30m (98ft), non-sterile. Do not autoclave.

www.instechlabs.com/Infusion/tubing/polyethylene.php

Polyurethane Intravascular Tubing



This is the most commonly used formulation of polyurethane for laboratory animal research. It is the same tubing we use to make our finished catheters. The two sizes have been specifically extruded to have ideal fits with PinPorts and Vascular Access Harnesses and Buttons: 2Fr fits 25ga, 3Fr fits 22ga.

| Part No. | Size | Fits | OD | ID | 1mm |
|----------|------|------|-------------|-------------|-----|
| BTPU-027 | 2Fr | 25ga | .027in .7mm | .017in .4mm | ○ |
| BTPU-040 | 3Fr | 22ga | .040 1.0 | .025 .6 | ○ |

Spool of 30m (98ft), non-sterile. Do not autoclave.

www.instechlabs.com/Infusion/tubing/polyurethaneIntra.php

Silicone (Silastic®) Intravascular Tubing



This tubing, made from Dow Corning Silastic®, is the same platinum-cure material that has been implanted in laboratory animals for years. Sterilize by EtO gas or steam/autoclave.

| Part No. | Size | OD | | ID | | |
|-----------|--------|--------|-------|--------|-------|---|
| BTSIL-025 | 2 Fr | .025in | .64mm | .012in | .31mm | ○ |
| BTSIL-037 | 3 Fr | .037 | .94 | .020 | .51 | ○ |
| BTSIL-047 | 3.5 Fr | .047 | 1.2 | .025 | .64 | ○ |
| BTSIL-065 | 5 Fr | .065 | 1.7 | .030 | .76 | ○ |
| BTSIL-085 | 7 Fr | .085 | 2.2 | .040 | 1.0 | ○ |

Spool of 15m (50ft), non-sterile.

www.instechlabs.com/Infusion/tubing/silastic.php

Polyurethane External Infusion Tubing



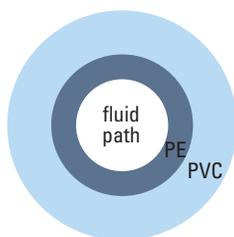
This PU tubing is designed for a reliable friction fit with 22 or 25 gauge swivels and couplers. The elasticity and thick wall minimizes the chance of accidental disconnection, kinking or perforation. Used in VAH and VAB tethers. The 22ga version is available with a white stripe to differentiate dual channel connections. Not intended for intravascular use.

| Part No. | Fits | Stripe | OD | | ID | | |
|-------------|------|--------|--------|------|--------|------|---|
| VAHBPU-T25 | 25ga | none | .037in | .9mm | .017in | .4mm | ○ |
| VAHBPU-T22 | 22ga | none | .055 | 1.4 | .024 | .6 | ○ |
| VAHBPU-T22W | 22ga | white | .055 | 1.4 | .024 | .6 | ○ |

Spool of 30m (98ft), non-sterile.

www.instechlabs.com/Infusion/tubing/pu.php

Co-extruded PE/PVC Tubing



This tubing is co-extruded with polyethylene on the inside for compound compatibility and PVC on the outside to resist kinking and prevent evaporation.

It is designed for external infusion set connections and is not for intravascular use. Critical joints should be glued to prevent accidental disconnection as this type of tubing can take a set around the stainless steel tube.

It is available in two sizes to mate with 22ga or 25ga swivels, PinPorts, couplers and luer stubs. A version with black PVC is available for protection of light sensitive compounds.

| Part No. | Fits | Color | OD | | ID | | |
|------------|------|-------|--------|-------|--------|------|---|
| BTCOEX-25 | 25ga | Clear | .051in | 1.3mm | .017in | .4mm | ○ |
| BTCOEX-22 | 22ga | Clear | .064 | 1.6 | .024 | .6 | ○ |
| BTCOEX-22B | 22ga | Black | .072 | 1.8 | .024 | .6 | ○ |

Spool of 30m (98ft), except black which is spool of 15m (49ft), non-sterile.

www.instechlabs.com/Infusion/tubing/coex.php

FEP Microdialysis Tubing



Designed to connect microdialysis probes to swivels, pumps and fraction collectors, this custom-extruded FEP tubing has the same inner and outer diameters as our 22ga quartz-lined swivels: 0.006x0.028in (0.15x0.71mm). Internal volume is approximately 0.18µL/cm. Use MC015/10 tubing connectors.

| Part No. | Description | | Unit |
|-----------|--|---|-----------|
| BFEP-T22Q | FEP tubing, .006x.028in, 1m lengths, sterile | ● | pkg of 10 |

www.instechlabs.com/Infusion/tubing/fep.php

Microdialysis Tubing Connectors



These silicone tubing segments are sized to connect FEP microdialysis tubing to swivels, probes, and syringes with no added dead volume. They do not need to be swelled by soaking in alcohol prior to installation, as do traditional "blue widgets," which in turn eliminates the possibility of damage to the swivel when removing tubing.

| Part No. | Description | Unit |
|----------|---|------------|
| MC015/10 | Microdialysis tubing connector, .015inIDx10mm | pkg of 100 |

www.instechlabs.com/Infusion/tubing/mc.php

TUBING CONNECTORS

Luer stubs, couplers, plugs, and injection ports are used to connect and allow access to the various pieces of an infusion system. Instech supplies these components individually or as part of pre-assembled infusion kits.

For gauge dimensions see *Tubing Size Reference Chart* at the end of this catalog.

Luer Stubs (Blunt Needles)



Female luer stubs have blunt tips to connect infusion tubing or catheters to syringes or other male luer connectors. They can be EtO sterilized on request.

| Size | Color | Tube Length | Part Numbers | |
|------|------------|--------------|--------------|----------|
| | | | 100 pcs | 1000 pcs |
| 14ga | dark green | 0.5in (13mm) | LS14 | LS14K |
| 15ga | amber | 0.5in (13mm) | LS15 | LS15K |
| 16ga | violet | 0.5in (13mm) | LS16 | LS16K |
| 17ga | white | 0.5in (13mm) | LS17 | LS17K |
| 18ga | green | 0.5in (13mm) | LS18 | LS18K |
| 20ga | pink | 0.5in (13mm) | LS20 | LS20K |
| 21ga | purple | 0.5in (13mm) | LS21 | LS21K |
| 22ga | blue | 0.5in (13mm) | LS22 | LS22K |
| 22ga | blue | 0.25in (6mm) | LS22/6 | LS22/6K |
| 23ga | orange | 0.5in (13mm) | LS23 | LS23K |
| 25ga | red | 0.5in (13mm) | LS25 | LS25K |
| 27ga | gray | 0.5in (13mm) | LS27 | LS27K |

Provided in a single tube, non-sterile.

www.instechlabs.com/Infusion/tubing/luer.php



The PinPort™ for Externalized Rodent Catheters NEW

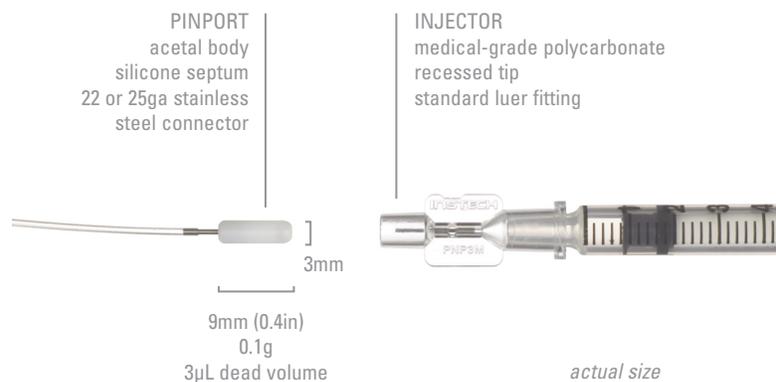


The PinPort™ provides fast, aseptic access to externalized catheters for dosing or blood sampling. It can reduce study costs and improve compliance with the 3Rs. The system consists of a lightweight port and a mating injector which can access the port hundreds of times.

Quick. Infuse or withdraw from a catheter in a fraction of the time it takes with plugs and blunt needles.

Clean. The PinPort is a closed system that permits aseptic technique. This can reduce infection, improve patency and ultimately reduce the number of animals required for a study.

Safe. The injector is recessed and provides complete needle stick protection for personnel.



The PinPort™ is available in white or red and with 22ga or 25ga couplers. Use colors to distinguish vessels. One injector works with all PinPort varieties.

TUBING CONNECTORS

Both the ports and the injectors are available separately in boxes of 50 or 250, packaged 5 to a sterile pouch. Ports and injectors are also available as a set, packaged one set per pouch, 20 pouches per box. All parts are provided EtO sterilized.

PinPorts

| Color Connector (ODxID) | 250 pc box x 50 | 50 pc box x 10 |
|--|--------------------|-------------------|
|  White 22ga (.028x.016in) | PNP3F22 | PNP3F22-50 |
|  Red 22ga (.028x.016in) | PNP3F22R | PNP3F22R-50 |
|  White 25ga (.020x.010in) | PNP3F25 | PNP3F25-50 |
|  Red 25ga (.020x.010in) | PNP3F25R | PNP3F25R-50 |

PinPort Injectors

| | 250 pc box x 50 | 50 pc box x 10 |
|--|--------------------|-------------------|
|  PNP3M | PNP3M | PNP3M-50 |

Use only Instech PNP3M injectors to access PinPorts. Any other type of needle will damage the PinPort septum.

PinPort and Injector Sets

| Color Connector (ODxID) | | 20 pc box x 20 |
|--|---|-------------------|
|  White 22ga (.028x.016in) |  | PNP3M-F22 |
|  Red 22ga (.028x.016in) |  | PNP3M-F22R |
|  White 25ga (.020x.010in) |  | PNP3M-F25 |
|  Red 25ga (.020x.010in) |  | PNP3M-F25R |

Compatible Catheters

Instech provides a range of rat and mouse catheters that have been extruded for a perfect fit with 22 and 25ga PinPorts. Access smaller anatomy, such as the mouse carotid artery or rat intrathecal space, with tapered or two-piece catheters.

| PinPort | Mating Catheter |
|---------|---|
| 22ga | 3Fr, polyurethane preferred, .024-.025in (.61-.63mm) ID ideal |
| 25ga | 2Fr, polyurethane preferred, .016-.017in (.41-.43mm) ID ideal |

www.instechlabs.com/Infusion/tubing/pinport.php

BENEFITS

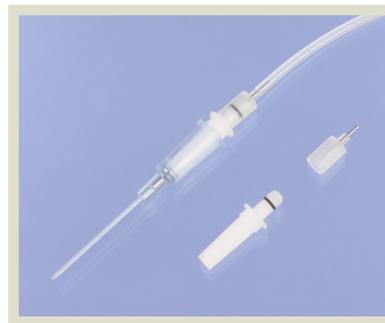


Septum permits aseptic technique which can reduce infection and improve patency

Quick access reduces handling and stress

PinPorts are not designed for continuous tethered access with a swivel; for that application use Vascular Access Harnesses (p 31) or Buttons (p 36).

Low Volume Port for Luers NEW



This miniature injection port fits into standard female luer hubs, converting a luer into a PinPort and reducing the dead volume significantly. Access the LVP3F manually with a PinPort injector, or use the LVP3F-PNP3M/25 set for continuous connection to tubing that fits

25ga, such as BTCOEX-25, VAHBPU-T25, or BSIL-T015. (The peripheral IV catheter shown is not included.)

| Part No. | Description | Unit |
|-----------------|--|------|
| LVP3F | Low-volume luer injection port | ea |
| LVP3F- PNP3M/25 | LV luer inj. port w/ mating 25ga connector | ea |

www.instechlabs.com/Infusion/tubing/lowvolumeluerport.php

TUBING CONNECTORS

Couplers & Plugs



Use couplers to connect catheters to external infusion tubing. Use a plug to seal off an externalized catheter before an infusion experiment begins.

These are made of medical grade stainless steel and deburred to prevent damage to tubing. Can be sterilized on request.

| Part No. | Type | Size | Length | Unit |
|----------|---------|------|--------|------------|
| SC17/15 | Coupler | 17ga | 15mm | pkg of 100 |
| SC20/15 | Coupler | 20ga | 15mm | pkg of 100 |
| SC22/15 | Coupler | 22ga | 15mm | pkg of 100 |
| SC22/8 | Coupler | 22ga | 8mm | pkg of 100 |
| SC23/8 | Coupler | 23ga | 8mm | pkg of 100 |
| SC25/10 | Coupler | 25ga | 10mm | pkg of 100 |
| SC27/8 | Coupler | 27ga | 8mm | pkg of 100 |
| SP20/12 | Plug | 20ga | 12mm | pkg of 100 |
| SP22/12 | Plug | 22ga | 12mm | pkg of 100 |
| SP23/12 | Plug | 23ga | 12mm | pkg of 100 |
| SP25/12 | Plug | 25ga | 12mm | pkg of 100 |

100 pieces per package, non-sterile

www.instechlabs.com/Infusion/tubing/connectors.php

Pin Plug



These catheter plugs are made of a 22 gauge-12mm medical grade stainless steel plug with a polyethylene handle molded on one end to simplify insertion and removal from catheters.

The pin handle, 3mm diameter x 6mm long, is also designed to fit into the stalk of a DC95 button and thereby seal it when the catheter is not externalized. A raised ring in the middle of the handle prevents the pin plug from advancing too far into the button stalk. Note these are different from PinPorts which have a septum to allow access to the catheter without removal.

| Part No. | Description | Unit |
|----------|--|------------|
| SPP22/12 | Stainless steel pin plugs, 22ga x 12mm | pkg of 100 |

Sterile, in 5 pouches of 20 pieces each.

www.instechlabs.com/Infusion/tubing/pinplugs.php

Right Angle Coupler



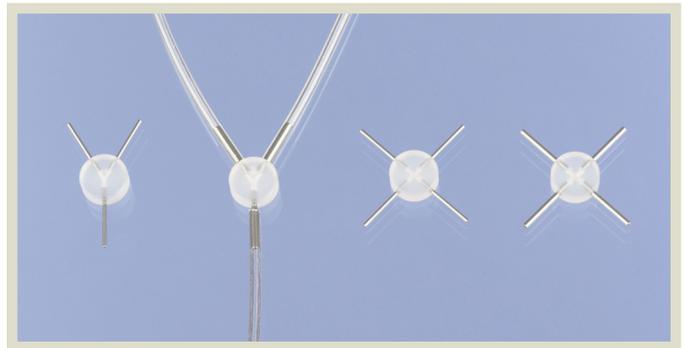
These 22ga couplers are bent to a right angle; one side is approximately 11mm; the other 5mm. Provided with a sealed segment of tubing to close off one end.

| Part No. | Description | Unit |
|-----------|-------------------------------------|------|
| SC22/15RA | Right angle couplers, 22ga, sterile | ea |

Individually packaged and sterilized by EtO. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/tubing/ra.php

3-Way and 4-Way Connectors



Commonly used in glucose clamp studies, Instech's 3- and 4-way tubing connectors feature stainless steel tubes and a hub made of PCTFE, a chemically resistant plastic. Tubes extend approximately 6mm from the hub. Dead volume from one channel to the next is less than 3µl.

| Part No. | Type | Tubing Size | Unit |
|---|-------|-------------|------|
| SCY22 | 3-way | 22ga | ea |
| SCY25 | 3-way | 25ga | ea |
| SCX22 NEW | 4-way | 22ga | ea |
| SCX25 NEW | 4-way | 25ga | ea |

Individually packaged and EtO sterilized

www.instechlabs.com/Infusion/tubing/y.php

TUBING REFERENCE CHART

GAUGE

For swivels, needles, connectors, ports and cannulae

| Gauge | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|-------|---------|---------|---------|---------|----------------|
| 13TW | 0.095 | 2.41 | 0.077 | 1.96 | 30.0 |
| 13 | 0.095 | 2.41 | 0.071 | 1.80 | 25.5 |
| 14TW | 0.083 | 2.11 | 0.067 | 1.70 | 22.8 |
| 14 | 0.083 | 2.11 | 0.063 | 1.60 | 20.1 |
| 15TW | 0.072 | 1.83 | 0.061 | 1.55 | 18.9 |
| 15 | 0.072 | 1.83 | 0.054 | 1.37 | 14.8 |
| 16TW | 0.065 | 1.65 | 0.054 | 1.37 | 14.8 |
| 16 | 0.065 | 1.65 | 0.047 | 1.19 | 11.1 |
| 17TW | 0.058 | 1.47 | 0.048 | 1.22 | 11.7 |
| 17 | 0.058 | 1.47 | 0.042 | 1.07 | 8.99 |
| 18TW | 0.050 | 1.27 | 0.039 | 0.99 | 7.70 |
| 18 | 0.050 | 1.27 | 0.033 | 0.84 | 5.54 |
| 19TW | 0.042 | 1.07 | 0.033 | 0.84 | 5.54 |
| 19 | 0.042 | 1.07 | 0.027 | 0.69 | 3.74 |
| 20TW | 0.036 | 0.91 | 0.026 | 0.66 | 3.42 |
| 20 | 0.036 | 0.91 | 0.024 | 0.61 | 2.92 |
| 21TW | 0.032 | 0.81 | 0.023 | 0.58 | 2.64 |
| 21 | 0.032 | 0.81 | 0.020 | 0.51 | 2.04 |
| 22TW | 0.028 | 0.71 | 0.020 | 0.51 | 2.04 |
| 22 | 0.028 | 0.71 | 0.016 | 0.41 | 1.32 |
| 22Q | 0.028 | 0.71 | 0.006 | 0.15 | 0.18 |
| 23TW | 0.025 | 0.64 | 0.017 | 0.43 | 1.45 |
| 23 | 0.025 | 0.64 | 0.013 | 0.33 | 0.86 |
| 24TW | 0.022 | 0.56 | 0.015 | 0.38 | 1.13 |
| 24 | 0.022 | 0.56 | 0.012 | 0.30 | 0.71 |
| 25TW | 0.020 | 0.51 | 0.012 | 0.30 | 0.71 |
| 25 | 0.020 | 0.51 | 0.010 | 0.25 | 0.49 |
| 26 | 0.018 | 0.46 | 0.010 | 0.25 | 0.49 |
| 27 | 0.016 | 0.41 | 0.008 | 0.20 | 0.31 |
| 28 | 0.014 | 0.36 | 0.007 | 0.18 | 0.25 |
| 29 | 0.013 | 0.33 | 0.007 | 0.18 | 0.25 |
| 30 | 0.012 | 0.30 | 0.006 | 0.15 | 0.18 |
| 31 | 0.010 | 0.26 | 0.005 | 0.13 | 0.12 |
| 32 | 0.009 | 0.24 | 0.004 | 0.10 | 0.08 |

TW=thin wall, Q=quartz-lined swivel channel

FRENCH

French scale defines catheter OD (3Fr = 1mm)

| French | OD (in) | OD (mm) |
|--------|---------|---------|
| 1Fr | 0.013 | 0.33 |
| 2Fr | 0.026 | 0.67 |
| 3Fr | 0.039 | 1.00 |
| 4Fr | 0.053 | 1.33 |
| 5Fr | 0.066 | 1.67 |
| 6Fr | 0.079 | 2.00 |
| 7Fr | 0.092 | 2.33 |
| 8Fr | 0.105 | 2.67 |
| 9Fr | 0.118 | 3.00 |
| 10Fr | 0.131 | 3.33 |

POLYURETHANE (PU)

page 42-47

| | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|----------------|---------|---------|---------|---------|----------------|
| BTPU-027 (2Fr) | 0.027 | 0.69 | 0.017 | 0.43 | 1.5 |
| BTPU-040 (3Fr) | 0.040 | 1.01 | 0.025 | 0.64 | 3.2 |
| VAHBPU-T25 | 0.037 | 0.94 | 0.017 | 0.43 | 1.5 |
| VAHBPU-T22 | 0.055 | 1.40 | 0.024 | 0.61 | 2.9 |

SILICONE (SIL)

page 47

| | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|-------------------|---------|---------|---------|---------|----------------|
| BTSIL-025 (2Fr) | 0.025 | 0.64 | 0.012 | 0.30 | 0.7 |
| BTSIL-037 (3Fr) | 0.037 | 0.94 | 0.020 | 0.51 | 2.0 |
| BTSIL-047 (3.5Fr) | 0.047 | 1.19 | 0.025 | 0.64 | 3.2 |
| BTSIL-065 (5Fr) | 0.065 | 1.65 | 0.030 | 0.76 | 4.5 |
| BTSIL-085 (7Fr) | 0.085 | 2.16 | 0.040 | 1.02 | 8.2 |

POLYETHYLENE (PE)

page 46

| | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|---------|---------|---------|---------|---------|----------------|
| BTPE-10 | 0.024 | 0.61 | 0.011 | 0.28 | 0.6 |
| BTPE-20 | 0.043 | 1.09 | 0.015 | 0.38 | 1.1 |
| BTPE-25 | 0.036 | 0.91 | 0.018 | 0.46 | 1.7 |
| BTPE-50 | 0.038 | 0.97 | 0.023 | 0.58 | 2.6 |
| BTPE-60 | 0.048 | 1.22 | 0.030 | 0.76 | 4.5 |
| BTPE-90 | 0.050 | 1.27 | 0.034 | 0.86 | 5.8 |

CO-EXTRUDED PE/PVC

page 47

| | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|-----------|---------|---------|---------|---------|----------------|
| BTCOEX-25 | 0.051 | 1.30 | 0.017 | 0.43 | 1.5 |
| BTCOEX-22 | 0.064 | 1.60 | 0.024 | 0.61 | 2.9 |

FEP

page 47

| | OD (in) | OD (mm) | ID (in) | ID (mm) | Volume (µl/cm) |
|-----------|---------|---------|---------|---------|----------------|
| BFEP-T22Q | 0.028 | 0.71 | 0.006 | 0.15 | 0.18 |

Values are approximate; in particular IDs and ODs of extruded tubing typically vary by ±.002in (.05mm) from nominal values. If dead volume is critical measure it directly by comparing weights of filled and empty samples.