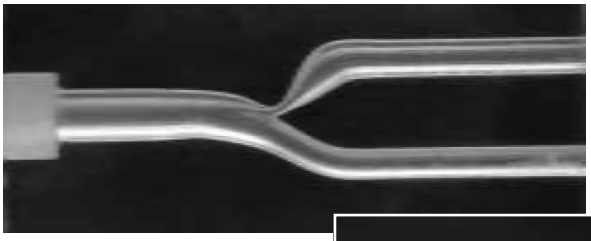
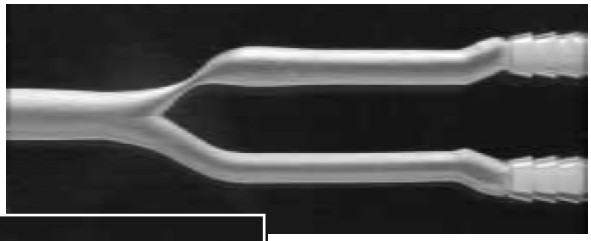
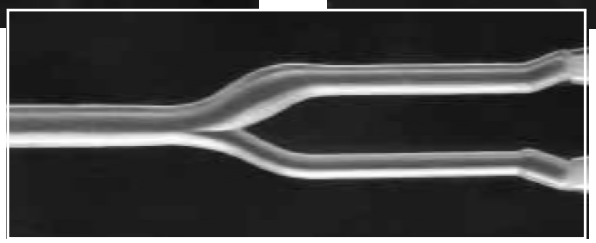
Carotid Anthropomorphic Vascular Phantoms



Asymmetric 70% diameter stenosis



Symmetric 70% diameter stenosis



Normal Bifurcation

Product Description

Shelley's rigid silicone block Carotid Anthropomorphic Vascular Phantoms are designed to very accurately mimic complex physiological vascular geometries and are compatible with MR, radiographic imaging and particle imaging velocimetry (PIV) modalities.

Thin walled silicone versions of the carotid bifurcation vessel geometries are ideally suited for MRI and radiographic imaging.

These same thin walled silicone carotid bifurcation vessels are embedded in agar to ensure compatibility with Doppler ultrasound imaging techniques (photograph on bottom of back page).

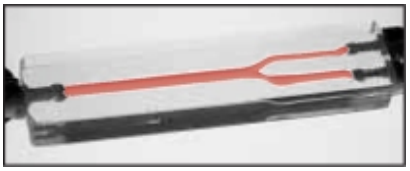
The phantoms are manufactured using CAD/CAM and NC machining techniques. The carotid vessels are made using a transparent, compliant silicone material. Custom carotid vasculatures can be manufactured for individual applications.

Applications

- Calibration of clinical angiographic imaging systems.
- Research and product development requiring complex vascular geometies.
- Comparisons between finite-element modeling and *in vitro* measurements.
- Ideal for flow experiments when used with the CompuFlow 1000 MR System or CompuFlow 1000 System.

Features

- Complex geometries including arterial bifurcations with various stenosis or normal.
- Geometry is known to within ± 0.25 mm
- Geometrical parameters can be specified by customer's CAD files
- Phantoms are fitted with quick-disconnect entrance and exit fluid connectors.
- Phantoms compatible with MRI, x-ray, PIV and ultrasound techniques.
- Available as a sealed, non-flow model for MR and x-ray imaging studies.



Phantoms are ideal for magnetic resonance angiography evaluation

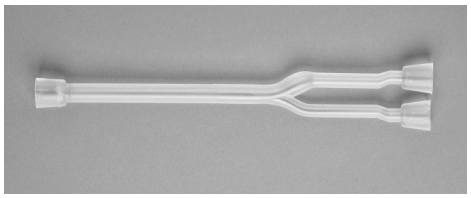
Carotid Anthropomorphic Vascular Phantoms

Shelley's rigid silicone block carotid bifurcation phantom is ideal for MRI, Particle Imaging Velocimetry (PIV) and X-ray techniques (with flow or static). The same geometries can be fabricated with 1mm silicone walls (below), and when embedded in an agar tissue mimicking material, are ideally suited for Doppler ultrasound applications .

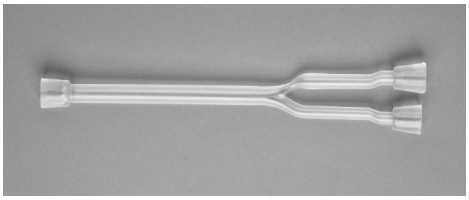
Carotid Bifurcation Stenosis Phantoms and Measurements

Common carotid: 8mm I.D., 90mm from inlet to the beginning of the bifurcation
External: 4.62mm I.D., 60mm from the apex to outlet
Internal: 5.56mm I.D., 60 mm from the apex to outlet

Measurements are accurate to within +/- 0.25 mm
Dimensions are based on the CAD drawings.



Normal Bifurcation
Model: CNB-STWV



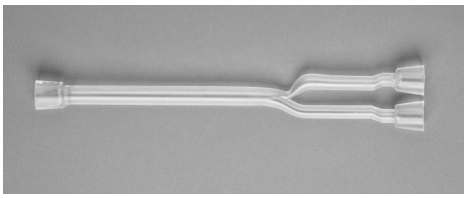
70% symmetric Carotid Bifurcation
Model: C70-SSTWV
1.66mm in diameter at the narrowest part

Other geometries available:

30% symmetric Carotid Bifurcation
Model: C30-SSTWV
3.92mm in diameter at the narrowest part

50% symmetric Carotid Bifurcation
Model: C50-SSTWV
2.77mm in diameter at the narrowest part

60% symmetric Carotid Bifurcation
Model: C60-SSTWV
2.21mm in diameter at the narrowest part



70% asymmetric Carotid Bifurcation
Model: C70-ASTWV
1.70mm in diameter at the narrowest part

Other geometries available:

30% asymmetric Carotid Bifurcation
Model: C30-ASTWV
4.00mm in diameter at the narrowest part

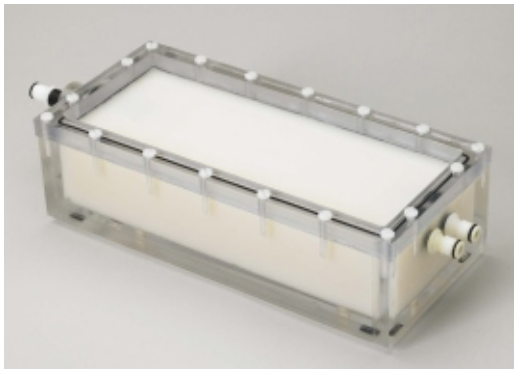
50% asymmetric Carotid Bifurcation
Model: C50-ASTWV
2.87mm in diameter at the narrowest part

60% asymmetric Carotid Bifurcation
Model: C60-ASTWV
2.29mm in diameter at the narrowest part

Journal Publications

Smith RF, Rutt BK, Fox AJ, Rankin RN, Holdsworth DW., **Geometric characterization of stenosed human carotid arteries.** Acad Radiol. 3 (11):898-911

Poepping TL, Nikolov HN, Thorne ML, Holdsworth DW. **A thin-walled carotid vessel phantom for Doppler ultrasound flow studies.** Ultrasound Med Biol. 2004 Aug, 30 (8):1067-78



For Doppler flow applications

Thin walled silicone carotid bifurcation vessels embedded in agar are ideal for Doppler & Colour Doppler flow research and development applications.

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