

# Shear Wave Liver Fibrosis Phantom

- Set of 4 phantoms, each with a different stiffness (Young's modulus ranges from 2-36 kPa)
- Enables quantitative assessment of shear wave speed measurements used in the diagnosis of diffuse liver disease
- Certified measurement of shear wave speed according to protocol developed by Quantitative Imaging Biomarkers Alliance Ultrasound Shear Wave committee
- Re-certification of phantoms available



## Measure Known Tissue Elasticity

Shear wave elasticity imaging is an emerging biomarker with many possible applications, most prominently for determining the stage of liver fibrosis in a patient without the need for invasive biopsies. The design of the Shear Wave Liver Fibrosis Phantom, Model 039, was developed and validated in a joint study sponsored by the Quantitative Imaging Biomarker Alliance, and serves as the standard reference tool for determining sources of variance in shear wave elasticity measurements.

## Tissue Equivalent Technology

Our Model 039 consists of four phantoms – each filled with Zerdine® gel formulated with differing values of Young's modulus, a tissue-average speed of sound of 1540 m/s and speckle contrast levels matching that of a healthy liver.

## Designed to Comply with QIBA Standards

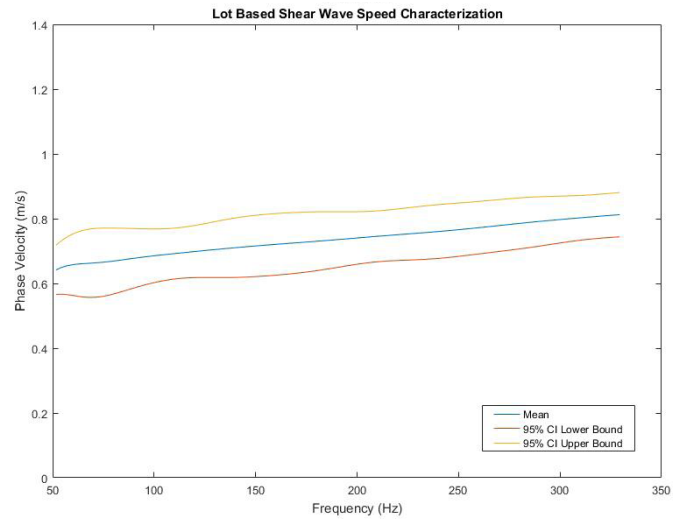
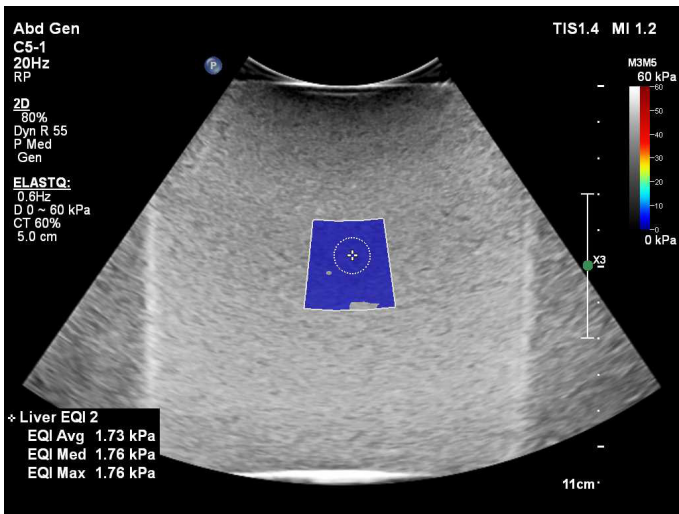
Certification of shear wave speed will be provided with each phantom, with tests run on Verasonics Vantage™ research platform running open source code developed for the Quantitative Imaging Biomarkers Alliance (QIBA) Ultrasound Shear Wave Speed Committee.

The certification sheet provides the full dispersive analysis of shear wave speed, allowing performance assessment at different frequencies.

Model 039 comes with a carry case for easy transport and phantom set up.

Custom versions of this phantom, with different values for Young's modulus and different sizes, are available upon special request. CIRS can also produce viscoelastic versions of this phantom.

## Phantom In Use



The Shear Wave Liver Fibrosis Phantom is compatible with many elastography systems.

Certification includes a dispersion curve characterizing shear wave speed throughout a frequency range in addition to a single group velocity value

### Specifications

<b>External Dimensions</b>	Ø 11.6 cm, height 14 cm
<b>Internal Dimensions</b>	Ø 10 cm, height 12 cm
<b>Weight</b>	6.7 lbs (3 kg)
<b>Housing Material</b>	ABS Plastic
<b>Membrane</b>	Saran-based laminate
<b>Scanning Well</b>	16.5 cm x 10 cm x 1 cm deep
<b>Material</b>	Zerdine solid elastic hydrogel
<b>Freezing point</b>	0° C
<b>Melting point</b>	Above 100° C
<b>Speed of Sound</b>	1540 m/s
<b>Density</b>	1.03 g/cc
<b>Poisson's Ratio</b>	0.5

### Items Included with Model 039

Quantity	Description
1	Shear Wave Liver Fibrosis Phantom
1	Carry Case
-	User Guide
-	Certificate of Compliance

### Phantom Stiffness (Nominal)\*

Quantity	Young's Modulus	Shear Wave Velocity
Phantom 1	2 (+2/-1) kPa	0.8 (+0.34/-0.24) m/s
Phantom 2	8 (+3/-2) kPa	1.6 (+0.28/-0.22) m/s
Phantom 3	18 (+/- 4) kPa	2.5 (+0.26/-0.29) m/s
Phantom 4	36 (+/- 6) kPa	3.5 (+0.28/-0.30) m/s

\*Nominal values and expected range are based on mechanical compressional testing based on ASTM Standard D575-91. Certified shear wave speed values may vary.