

# *Micro-CT Density Reference Rods*

Model 092



## USER GUIDE

**CIRS**

900 Asbury Ave • Norfolk, Virginia 23513 • USA • Tel: 757-855-2765 • [WWW.CIRSINC.COM](http://WWW.CIRSINC.COM)

## INTENDED USE

Model 92 Micro-CT Density Reference Rods are used to develop and maintain consistent protocols in micro-computed tomography ( $\mu$ CT) imaging studies. Each rod in the kit contains a specific concentration of pure hydroxyapatite (HA) in a soft-tissue equivalent background.

## INSTRUCTIONS FOR USE

There are many commercially available imaging systems and as such there is a need to achieve consistent results allowing easily interpreted and repeatable data. The end user should establish proper test methods that suit their objectives.

The 0 mg/cc rod, made of pure epoxy resin, is provided as a baseline and is recommended to image with other rods to normalize or establish baseline readings.

## SPECIFICATIONS

### PHYSICAL PRODUCT DESCRIPTION

The Model 092 kit contains five sets of reference rods with different HA concentrations:

- 0 mg/cc
- 25 mg/cc
- 100 mg/cc
- 250 mg/cc
- 750 mg/cc

Each set contains three rods of different diameter: 2, 5 and 16 mm. All rods are 20 mm long. The rods are color-coded to match their HA concentration, as shown in figure 1 below.

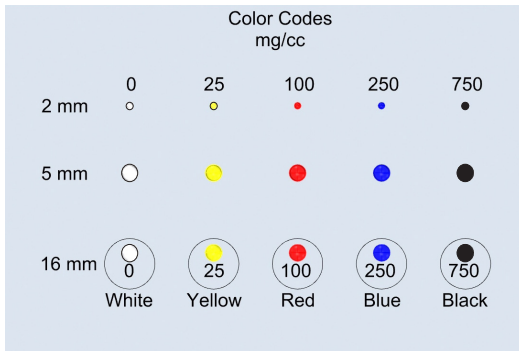


Figure 1: Color coding of rods

Table 1 below provides the electron density data for each HA concentration.

ELECTRON DENSITY DATA			
DESCRIPTION	PHYSICAL DENSITY, G/CC	ELECTRON DENSITY PER CC, X 10 <sup>23</sup>	RED (RELATIVE TO H2O)
0 mg/ cc	1.083	3.564	1.067
25 mg/cc	1.099	3.608	1.080
100 mg/cc	1.146	3.743	1.121
250 mg/cc	1.241	4.011	1.201
750 mg/cc	1.558	4.907	1.469

**Table 1: Electron Density Data**

## TEST CRITERIA

Physical density measurements are performed on each batch used in rod production to ensure electron density measurements are within 1% of values published in Table 1, as recommended for tissue equivalent materials in the International Commission on Radiation Units (ICRU) Report 44.

## MODEL 092 KIT INCLUDES

QTY	COMPONENT DESCRIPTION
1	Micro-CT Density Reference Rods
1	User Guide
1	Hard case
-	60-Month Warranty

## CARE AND STORAGE

- o Clean with mild soap and water. Do not use solvents!
- o Keep in cool dry location. Avoid direct sunlight.

## WARRANTY

All standard CIRS products and accessories are warranted by CIRS against defects in material and workmanship for a period as specified below. During the warranty period, the manufacturer will repair or, at its option, replace, at no charge, a product containing such defect provided it is returned, transportation prepaid, to the manufacturer. Products repaired in warranty will be returned transportation prepaid.

There are no warranties, expressed or implied, including without limitation any implied warranty of merchantability or fitness, which extend beyond the description on the face hereof. This expressed warranty excludes coverage of, and does not provide relief for, incidental or consequential damages of any kind or nature, including but not limited to loss of use, loss of sales or inconvenience. The exclusive remedy of the purchaser is limited to repair, recalibration, or replacement of the product at manufacturer's option.

This warranty does not apply if the product, as determined by the manufacturer, is defective because of normal wear, accident, misuse, or modification.

## NON-WARRANTY SERVICE

If repairs or replacement not covered by this warranty are required, a repair estimate will be submitted for approval before proceeding with said repair or replacement.

## RETURNS

If you are not satisfied with your purchase for any reason, please contact Customer Service or your local distributor prior to returning the product. Visit <https://www.cirsinc.com/distributors/> to find your local distributor. Call 800-617-1177, email [rma@cirsinc.com](mailto:rma@cirsinc.com), or fax an RMA request form to 757-857-0523. CIRS staff will attempt to remedy the issue via phone or email as soon as possible. If unable to correct the problem, a return material authorization (RMA) number will be issued. Non-standard or "customized" products may not be returned for refund or exchange unless such product is deemed by CIRS not to comply with documented order specifications. You must return the product to CIRS within 30 calendar days of the issuance of the RMA. All returns should be packed in the original cases and or packaging and must include any accessories, manuals and documentation that shipped with the product. The RMA number must be clearly indicated on the outside of each returned package. CIRS recommends that you use a carrier that offers shipment tracking for all returns and insure the full value of your package so that you are completely protected if the shipment is lost or damaged in transit. If you choose not to use a carrier that offers tracking or insure the product, you will be responsible for any loss or damage to the product during shipping. CIRS will not be responsible for lost or damaged return shipments. Return freight and insurance is to be pre-paid.

## WITH RMA NUMBER, ITEMS MAY BE RETURNED TO:

CIRS  
Receiving  
900 Asbury Ave  
Norfolk, Virginia, 23513 USA

PRODUCT	WARRANTY PERIOD
Mode 092	60 Months

