

# Plastic Water® LR Low Energy Range



## PLASTIC WATER® LOW RANGE USER GUIDE

**CIRS**

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## **INTENDED ENERGY RANGE**

Plastic Water LR - 15 keV - 8 MeV

Use for such things as dose evaluation for low energy brachytherapy sources or CT dose verification. <sup>(1)</sup>

## **VISUAL APPEARANCE AND VARIATION:**

The visual pattern variations on the top and bottom surface are due to the interaction of the released mold surface and the speed in which the material is flowing in the mold. Variation on the sides of the slab occurs during finishing. The slabs are cut to size which leads to different surface appearances. Surfaces untouched will appear shiny while machined surfaces may have a matte, textured finish. Over time you may notice “yellowing” of the slab. This generally starts on the outer edges of the slab and works in. This is a common aging phenomenon experienced in most epoxies. These variations will have no impact on the attenuation properties of the material.

## **CLEANING**

Clean with mild soap and water. DO NOT use solvent based cleaners.

## **HANDLING AND STORAGE**

Plastic Water LR, like most plastics, is flexible in nature and will creep (warp/bow/deform) under constant stress over time, even under its own weight. This deformation is not permanent. The slab will self correct and recover its original shape if placed back in its original geometry. An easy way to maintain slab flatness and minimize creep is to store the slabs, clean free of debris on or in between flat surfaces.

### References:

1. Wallace, R.E., Evaluated phantom material for <sup>125</sup>I and <sup>103</sup>Pd dosimetry poster: SU-DD-EXH-12, AAPM Annual Meeting, Montreal, CANADA July, 2002.
2. Heaton, R., et. al, Dosimetric Evaluation of Plastic Water-Diagnostic Therapy (PWDT) Phantom Material poster: PO-T-97, AAPM Annual Meeting, 2003.
3. Tello, V.M., Taylor, R.C., and Hanson, W.F. How water equivalent are water equivalent solid materials for output calibration of photon and electron beams? Medical Physics 22 (7), July 1995 pgs. 1177-1189.

## PLASTIC WATER LR

Photon Recalculated Linear Attenuation Coefficients (cm<sup>-1</sup>) of Plastic Water LR

Plastic Water® - Low Energy Range			
En, MeV	H <sub>2</sub> O	CIRS	Ratio%
0.01	5.2225	5.1082	97.81
0.015	1.6389	1.6282	99.35
0.02	0.7958	0.7958	100.00
0.04	0.2668	0.2669	100.00
0.06	0.2055	0.2050	99.76
0.08	0.1835	0.1829	99.67
0.10	0.1707	0.1701	99.65
0.20	0.1370	0.1365	99.64
0.40	0.1062	0.1058	99.62
0.60	0.0896	0.0893	99.67
0.80	0.0787	0.0784	99.62
1.00	0.0707	0.0705	99.72
2.00	0.0494	0.0492	99.60
4.00	0.0340	0.0338	99.41
6.00	0.0277	0.0275	99.28
8.00	0.0243	0.0241	99.18
10.0	0.0222	0.0219	98.65
20.0	0.0181	0.0178	98.34
30.0	0.0171	-	-
60.0	0.0168	-	-
100.0	0.0172	-	-
Electron Density per gram	3.343	3.332	99.67
Density g/cm <sup>3</sup>	1.00	1.03	-

## 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 your local distributor prior to returning the product. Visit <https://www.cirsinc.com/distributors/> to find your local distributor. If you purchased your product direct through CIRS, call Customer Service at 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
Plastic Water Low Range	60 Months

