

# R-Cast™ rod & tube



## Applications

- Aquariums
- Displays
- Fountains
- Furniture
- Optical lenses
- Port hole windows
- Sight glass
- Scientific applications
- Hyperbaric chambers
- Vacuum chambers
- Bio-safety chambers
- and more...

## Benefits

- Outstanding optical clarity
- Excellent UV properties
- High impact resistance - 17x greater than glass and 4x greater than concrete
- Superb weatherability - won't yellow or show signs of aging
- Structural & can be engineered to support weight
- UVT available

## Color Availability

- Clear
- Custom colors available by special order*

## Surface Finishes

- Frosted finish
- Gloss finish

## Edge Finishes

- Saw cut
- Polished edge
- Radius
- Chamfer

## Fabrication Options Available

- Forming
- Bonding
- Drilling
- Cutting
- Routing

## R-Cast™ rod & tube

### Warranty

10 years

### Care & Cleaning

To polish out scratches and restore original lustre, we recommend our R-Cast™ Care Kit to maintain your acrylic R-Cast™ Rods & Tubes.

Standard soap and water is also acceptable.

Avoid using solvent-based cleaners on R-Cast™ Rods & Tubes.

Please contact us with any questions regarding cleaners.



# R-Cast™ rod & tube

## R-Cast™ Acrylic Rod

Diameter in (mm)	Minimum Length in (m)	Maximum Length in (m)
4.0 (102)	48 (1.22)	48 (1.22)
4.5 (114)	48 (1.22)	48 (1.22)
5.0 (127)	48 (1.22)	48 (1.22)
5.5 (140)	48 (1.22)	60 (1.52)
6.0 (152)	48 (1.22)	60 (1.52)
6.5 (165)	48 (1.22)	60 (1.52)
7.0 (178)	48 (1.22)	60 (1.52)
7.5 (191)	48 (1.22)	60 (1.52)
8.0 (203)	48 (1.22)	60 (1.52)
8.5 (216)	48 (1.22)	60 (1.52)
9.0 (229)	48 (1.22)	60 (1.52)
9.5 (241)	48 (1.22)	60 (1.52)
10.0 (254)	48 (1.22)	60 (1.52)
10.5 (267)	48 (1.22)	60 (1.52)
11.0 (279)	48 (1.22)	60 (1.52)
11.5 (292)	48 (1.22)	60 (1.52)
12.0 (305)	48 (1.22)	60 (1.52)

Also Available: UVT, custom diameter and cut-to-length sizes.

## R-Cast™ Rod Tolerances

Diameter in (mm)	Tolerance in (mm)
4 - 6 (102 - 152)	± .045 (1.143)
6 - 12 (152 - 305)	± .090 (2.286)

## R-Cast™ Standard Cut Tolerance

in (mm)
+0.25/- 0.00 (+6.35/- 0.00)

R-Cast™ acrylic rods meet the tolerances and physical properties specified in ASTM D-5436-99 for Type UVA finish 1 cast acrylic rods.

# R-Cast™ rod & tube

## R-Cast™ Acrylic Tube

O.D. in (mm)	Wall Thickness					Standard Length in (m)
	1/4" (6.4)	3/8" (9.5)	1/2" (12.7)	3/4" (19.1)	1" (25.4)	
7.0 (178)	x	x	x	x		72 (1.83)
7.0 (178)	x	x	x	x		96 (2.44)
8.0 (203)	x	x	x	x		72 (1.83)
9.0 (229)	x	x	x	x		96 (2.44)
9.5 (241)	x	x	x	x		72 (1.83)
10.0 (254)	x	x	x	x		72 (1.83)
10.6 (270)	x	x	x	x	x	52 (1.32)
11.0 (279)	x	x	x	x	x	72 (1.83)
12.0 (305)	x	x	x	x	x	72 (1.83)
12.0 (305)	x	x	x	x	x	96 (2.44)
13.0 (330)	x	x	x	x	x	90 (2.29)
14.0 (356)	x	x	x	x	x	96 (2.44)
16.0 (406)	x	x	x	x	x	96 (2.44)
18.0 (457)	x	x	x	x	x	96 (2.44)
20.0 (508)	x	x	x	x	x	96 (2.44)
24.0 (610)	x	x	x	x	x	96 (2.44)
25.5 (648)	x	x	x	x	x	96 (2.44)
27.5 (699)	x	x	x	x	x	84 (2.13)
32.6 (828)	x	x	x	x	x	96 (2.44)
35.0 (889)	x	x	x	x	x	90 (2.29)
36.0 (914)	x	x	x	x	x	96 (2.44)
42.5 (1,080)		x	x	x	x	90 (2.29)
44.7 (1,140)		x	x	x		90 (2.29)
60.0 (1,520)				x		132 (3.35)
72.0 (1,830)					x	90 (2.29)
96.0 (2,440)					x	90 (2.29)

Also available: UVT, Custom O.D., Custom Wall and Cut-to-Length Sizes.

O.D. in	(mm)	Tolerance in	(mm)
7 - 12	(178 - 305)	±.06	(±1.50)
13 - 18	(330 - 457)	±.08	(±2.03)
20 - 27.5	(508 - 699)	±.10	(±2.54)
32.6	(828)	+ .25 / - .10	(+6.35 / -2.54)
36	(914)	±.10	(±2.54)
42.5	(1,080)	+ .00 / - .28	(+0.00 / -7.11)
44.7 - 60	(1,140 - 1,520)	±.10	(±2.54)
72	(1,830)	+ .10 / - .30	(+2.54 / -7.62)
96	(2,440)	+ .10 / - .50	(+2.54 / -12.7)

- Quoted upon request: UVT, Custom O.D., Custom Wall and Cut-to-Length Sizes
- All cylinders larger than 27.50" (699mm) require a wooden shipping crate. Call for pricing.
- Minimum order length of 72" (1.83m) for 60" (1.52m) O.D. cylinders.
- Minimum order length of 90" (2.29m) for 72" (1.83m) O.D. and 96" (2.44m) O.D. cylinders.
- Contact RPT for wall thickness tolerance

# R-Cast™ rod & tube



## Manufacturing

R-Cast™ Rods & Tubes are monolithically cast polymethyl methacrylate (PMMA). R-Cast™ Rods & Tubes are manufactured to meet strict internationally accepted structural standards.

## Short Term Loading

Impact, live, and seismic loading conditions are short term and infrequent conditions. All R-Cast™ Rods & Tubes can be designed to handle these conditions.

## Safety Glazing

Meets ANSI Z 97.1 for safety glazing material used in buildings.

Approved for safety glazing according to model building codes.

Suitable for use in Consumer Products Safety Commission, Safety Standard for Architectural Glazing Material under 16 CFR 1201, Categories 1 & 11.

## FDA Approval

R-Cast™ Rods & Tubes are approved by the U.S. Food and Drug Administration for use as a surface suitable for food preparation.

# R-Cast™ rod & tube

## R-Cast™ Physical Properties

### Property

### ASTM Method

### US Customary Units

### Average Value

### Metric Units

### Average Value

### MECHANICAL

Tensile Strength	ASTM-D638	psi	10800	Kg/cm <sup>2</sup>	759
Tensile Modulus	ASTM-D638	psi	450000	Kg/cm <sup>2</sup>	31 x 10 <sup>3</sup>
Tensile Elongation	ASTM-D638	%	4.0	-	-
Flexural Strength	ASTM-D790	psi	16000	Kg/cm <sup>2</sup>	1125
Compression Strength	ASTM-D695	psi	17500	Kg/cm <sup>2</sup>	1230
Shear Strength	ASTM-D732	psi	10000	Kg/cm <sup>2</sup>	703
IZOD Impact Strength, notched @ 1/8"	ASTM-D256	ft-lbs/inch	0.414	J/m	22.1
Rockwell Hardness (M Scale)	ASTM-D785	-	103	-	-
Deformation Under Load @ 4,000 psi @ 73°F	ASTM-D621	%	0.85	-	-

### OPTICAL

Light Transmittance (0.1" nominal thickness)	ASTM-D1003	%	92	-	-
Haze	-	%	< 1	-	-
Refractive Index @ 77°F	ASTM-D542	-	1.49	-	-

### THERMAL

Heat Deflection Temperature	ASTM-D648	°F	226	°C	108
Coefficient of Expansion @ 60°F	ASTM-D696	in/in/°F	4.0 x 10 <sup>-5</sup>	mm/mm/°C	7.2x10 <sup>-5</sup>

### MISCELLANEOUS

Water Absorption, Equilibrium, 24 hrs @ 73°F	ASTM-D570	%	0.2	-	-
Specific Gravity	ASTM-D792	-	1.19	-	-

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## Chemical Resistance

### R = Resistant

R-Cast™ Rods & Tubes withstand this substance for long periods and at temperatures up to 120 degrees F (49 degrees C).

### LR = Limited Resistance

R-Cast™ Rods & Tubes only resist the action of this substance for short periods at room temperature. The resistance for a particular application must be determined.

### N = Non Resistant

R-Cast™ Rods & Tubes are not resistant to this substance. It either swelled, was attacked, dissolved or was damaged in some manner.

Plastic materials can be attacked by chemicals in several ways. The methods of fabrication and/or conditions of exposure of R-Cast™ Rods & Tubes, as well as the manner in which the chemicals are applied, can influence final results even for "R" coded chemicals. Some of these factors are listed below.

Fabrication - Stress generated while sawing, sanding, machining, drilling, polishing, and/or forming.

Exposure - Length of exposure, stresses induced during the life of the product due to various loads, changes in temperatures, etc.

## Chemical

Acetic Acid (5%)	R
Acetic Acid (Glacial)	N
Acetic Anhydride	LR
Acetone	N
Acrylic Paints & Lacquers	LR
Ammonia (aqueous solution)	R
Ammonium chloride (Saturated)	R
Ammonium Hydroxide (10%)	R
Ammonium Hydroxide (Conc.)	R
Aniline	N
Battery Acid	R
Benzaldehyde	N
Benzene	N
Bituminous Emulsion	N
Bromine	N
Butanol	LR
Butyl Acetate	N
Calcium Chloride (Saturated)	R
Calcium Hypochlorite	R
Carbon Tetrachloride	N
Cement	R
Chlorine Water	LR
Chloroform	N
Chromic Acid (40%)	N
Citric Acid (10%)	R
Cottonseed Oil (Edible)	R
Detergent Solution	R
Diesel Oil	R
Diethyl Ether	N
Dimethyl Formamide	N
Diethyl Phthalate	N
Ethyl Acetate	N
Ethyl Alcohol (50%)	LR
Ethyl Alcohol (95%)	N
Ethylene Dichloride	N
Ethylene Glycol	R
2-Ethylhexyl Sebacate	R
Formaldehyde (40%)	R
Formic Acid (2%)	R
Formic Acid (40%)	LR
Gasoline (Regular, Leaded)	LR
Glycerine	R
Glycerol	R
Glycol	R
Heptane	R
Hexane	R
Hot Bitumen	LR

## Code

## Chemical

Hydrochloric Acid	R
Hydrofluoric Acid (40%)	N
Hydrogen Peroxide (3%)	R
Hydrogen Peroxide (28%)	N
Isocetane	R
Isopropyl Alcohol	LR
Kerosene	R
Lacquer Thinner	N
Lactic Acid (80%)	LR
Methane	R
Methyl Alcohol (50%)	LR
Methyl Alcohol (100%)	N
Methyl Ethyl Ketone (MEK)	N
Methylene Chloride	N
Mineral Oil	R
Mortar	R
Motor Fuel (benzene-free)	R
Motor Fuel (with benzene)	N
Muriatic Acid (20%)	R
Nitric Acid (10%)	R
Nitric Acid (40%)	LR
Nitric Acid (Conc.)	N
Oil Paints (pure)	R
Olive Oil	R
Oxygen	R
Ozone	R
Phenol Solution (5%)	N
Phosphoric Acid (10%)	R
Plaster of Paris	R
Soap Solution (Ivory)	R
Sodium Carbonate (2%)	R
Sodium Carbonate (20%)	R
Sodium Chloride (10%)	R
Sodium Hydroxide (1%)	R
Sodium Hydroxide (10%)	R
Sodium Hydroxide (60%)	R
Stearic Acid	R
Sulfuric Acid (3%)	R
Sulfuric Acid (30%)	R
Sulfuric Acid (Conc.)	N
Thinners (general)	N
Toluene	N
Trichloroethylene	N
Turpentine	LR
Urine	R
Water (Distilled)	R
Xylene	N

## Code



*Way Beyond Ordinary™*

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