

COLLISION SURVIVABLE BUOYS

FLOATATION DEVICES & MARINE FENDERING



Web Site: www.utibuoy.com

E-mail: uti@utibuoy.com

URETHANE TECHNOLOGIES, inc.

30150 Eden Church Road • Denham Springs, Louisiana 70726 • U. S. A.

Telephone: (225) 664- 9936 • Fax: (225) 664-9938



" We tame the tough ones "

INTRODUCTION

Urethane Technologies, Inc. primarily manufactures its surface floatation buoys using the following combination of materials:

A metallic frame or through rod is used with the body of the buoy made of a cross-linked, closed cell polyethylene foam protected by a tough Seathane[®] polyurethane skin. Crosslinked polyethylene foam has a much lower moisture vapor transmission rate than most other floatation foams and; as such, will not absorb a significant amount of water during long term immersion. Seathane[®] is our proprietary polyurethane with a 500% elongation and a 4,500 psi tensile strength. On larger buoys the Seathane[®] skin is woven fabric reinforced for added cut resistance. Where very rough physical abuse is anticipated; Spectra[®] woven is used for the reinforcement. Spectra[®] is a space age fiber with a 375,000 lb./sq. inch tensile strength.

We are not limited to manufacturing only the items depicted in this brochure. Approximately 35% of our production is in custom designed buoys that are not shown herein. Urethane Technologies also manufactures the following:

- Bridge camels
- Dredge pipe camels
- Push boat bow pads
- Equipment barges
- Floatation collars
- Custom cast polyurethane items
- Dive tank racks
- Steel buoys
- Polyurethane drilling deck pads
- Sport fishing teasers and large trolling lures
- Polyurethane casting resins

We also provide the following services:

- Seathane polyurethane coating of steel buoys
- In-place polyurethane casting
- Floatation device & fendering design
- Buoy mooring design

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CALL, FAX, E-MAIL, OR WRITE FOR OUR COMPLETE CATALOG

Seathane[®] is a trademark of Urethane Technologies, Inc.

Spectra[®] is a trademark of Allied-Signal Corp.

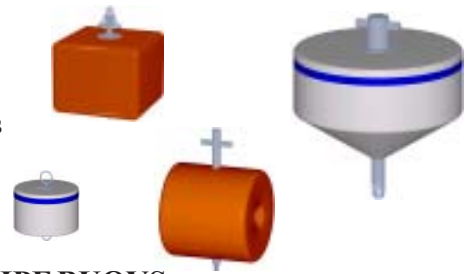
Surlyn[®] is a trademark of E. I. DuPont

Iotek[®] is a trademark of Exxon

MOORING BUOYS



- A. **PMBR** Series Small Mooring Buoys
- B. **MBP** Series Mooring Buoys
- C. **PCMB** Series Coned Top/ Peg Bottom Mooring Buoys
- D. **DBB** Drawback Buoys
- E. **PPMB** Flat Top/Peg Bottom Mooring Buoys
- F. **APB** Anchor Pendant Buoys



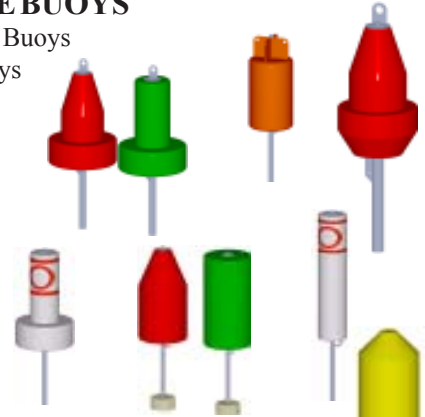
GENERAL PURPOSE & HAWSE PIPE BUOYS

- A. **PHP-G** Series General Purpose Buoys
- B. **PHP-H** Series Hawse Pipe Buoys

CHANNEL MARKERS, ETC. - UNLIGHTED



- A. **PCM** Series Channel Marker w/ Exposed Radar Reflector
- B. **PMX** Series Channel Marker
- C. **PCGX** Series U.S.C.G. Style Channel Marker
- D. **PDM** Series General Purpose Marker
- E. **PRMW** Series Regulatory/Warning Marker
- F. **POMX** Series Offshore Channel/Fairway Marker
- G. **PWVM** Series Spar Marker Buoy - Variable Water Level
- H. **PWFM** Series Spar Marker Buoy - Fixed Water Level



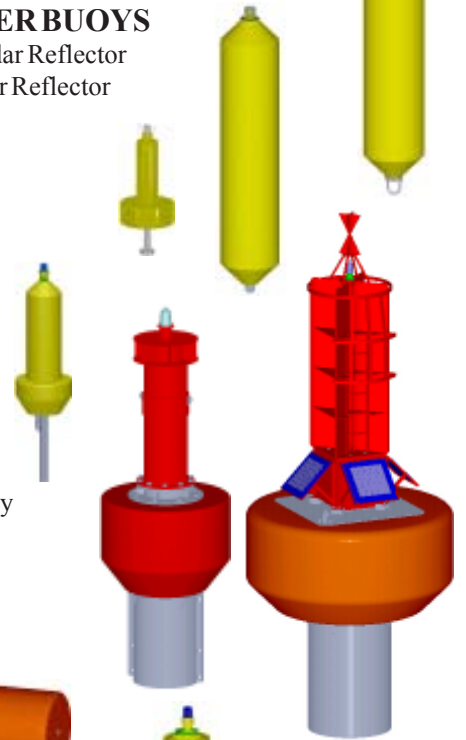
ARTIFICIAL REEF & WELLHEAD MARKER BUOYS

- A. **RMX** Series Spar Buoys w/ Internal Radar Reflector
- B. **RM** Series Spar Buoys w/ External Radar Reflector

LIGHTED BUOYS



- A. **RMX-L** Series Lighted Spar Buoys
- B. **PCLM** Series Lighted General Purpose Markers
- C. **PPLM** Series Lighted Pipeline Marker Buoys
- D. **PPLT** Series Lighted Pipeline Marker Buoys
- E. **POLM** Series Lighted Offshore Marker Buoys
- F. **POLT** Series Lighted Offshore Marker Buoys
- G. **4 X 11** Lighted Channel Marker Buoy
- H. **5 X 12** Lighted Channel Marker Buoy
- I. **6 X 15** Lighted Modular Offshore Marker Buoy
- J. **8 X 26** Lighted Modular Offshore Marker Buoy
- K. **10 X 25** Lighted Modular Offshore Marker Buoy



TENSION BUOYS

- A. **TN-223 & TN-330** Lighted Tension Buoys
- B. **TN-440 & TN-550** Lighted Tension Buoys

FLOATS



- A. **PHC** Series Horizontal Floats
- B. **PVC** Series Vertical Floats

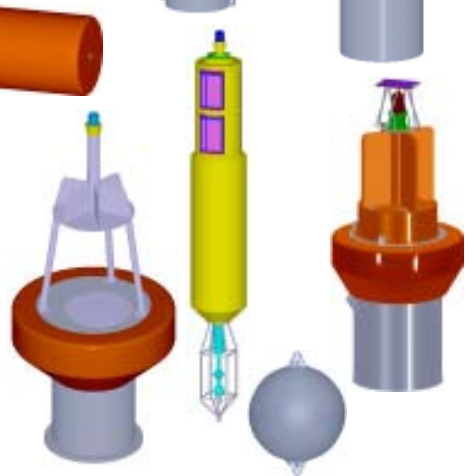
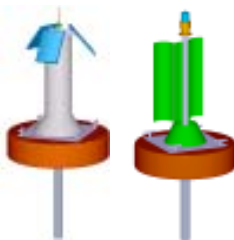
FENDERING

- A. Dock Fendering
- B. Ship Fendering



ISCELLANEOUS

- A. Pontoons
- B. Castings - Polyurethane
- C. Instrument Buoys
- D. Sub-sea Riser Buoys
- E. Anchors & Moorings



HANDY CONSTANTS AND FORMULAS

WEIGHT OF DISTILLED WATER:

@ 0° C.	(32° F)	-	62.4201 lbs./cu. ft.	(0.9999 kg./liter)
@ 3.98° C.	(39.16° F)	-	62.4280 lbs./cu. ft.	(1.0000 kg./liter)
@ 15.56° C.	(60° F)	-	62.3718 lbs./cu. ft.	(0.9991 kg./liter)
@ 50° C.	(122° F)	-	61.6953 lbs./cu. ft.	(0.9883 kg./liter)
@ 100° C.	(212° F)	-	59.8476 lbs./cu. ft.	(0.9587 kg./liter)

One cubic foot contains 7.4805195 gallons; thus a gallon of distilled water weighs 8.33 lbs.

For most practical purposes a liter equals a cubic decimeter; however a more exact figure is 1.000028 cubic decimeters.

One cubic foot of water @ 0° C. will make 1.11 cubic feet of ice @ 0° C.

The specific gravity of seawater in the Gulf of Mexico varies with salinity, but usually runs from 1.020 to 1.028. The generally accepted norm is a specific gravity of 1.024 (i.e. 63.87 lbs./cu. ft.).

DENSITY OF WATER

CENTIGRADE TEMPERATURE	VOLUME OF 1 KILOGRAM OF WATER IN LITERS*
0.0	1.000126
3.98	1.000000
10.0	1.000257
20.0	1.001732
30.0	1.004234
40.0	1.007627
50.0	1.011877
60.0	1.016954
70.0	1.022384
80.0	1.029003
90.0	1.035829
100.0	1.043116

* Atmospheric pressure of 14.696 lbs./sq. in. (1.0333 kilograms/square centimeter)

WEIGHTS ABOVE AND UNDER WATER

(in lbs./ cubic foot)

MATERIAL	ABOVE WATER	UNDER FRESH WATER <i>(62.37 lbs/cu.ft)</i>	UNDER SEAWATER <i>(63.87 lbs/cu.ft)</i>
Carbon Steel	489.60	427.23	425.73
Stainless Steel - 304	510.98	448.61	447.11
Concrete (Normal Density)	144.00	81.63	80.13
Aluminum (1100 or 6061)	169.32	106.95	105.45
Aluminum (5052)	167.42	105.05	103.55
Brass (Naval Cold Rolled)	528.77	466.40	464.90
Copper (Cold Rolled)	556.44	494.07	492.57
Bronze (SAE-660)	564.36	501.99	500.49
Lead	708.00	645.60	644.10
Spectra® 900 & 1000	60.49	- 1.88	- 3.38
Aramid (Kevlar®)	89.81	27.50	26.00
Nylon	71.10	8.73	7.23

LINE OF SIGHT RANGE FORMULAS

D = Range in Nautical Miles

RADAR:	$D = 2.23 (\sqrt{hm1} + \sqrt{hm2})$ <p style="text-align: center;">or</p> $D = 1.23 (\sqrt{hf1} + \sqrt{hf2})$	Where:	hm1 = height of radar scanner in meters hm2 = height of target in meters hf1 = height of radar scanner in feet hf2 = height of target in feet
VISUAL:	$D = 2.06 (\sqrt{hm3} + \sqrt{hm4})$ <p style="text-align: center;">or</p> $D = 1.14 (\sqrt{hf3} + \sqrt{hf4})$		hm3 = height of eye in meters hm4 = height of object in meters hf3 = height of eye in feet hf4 = height of object in feet