



**BEDFORD**  
TECHNOLOGY

**BARFORCE®**  
**HTP PLASTIC LUMBER PRODUCTS**  
**TECHNICAL MANUAL**

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Updated 5/02/11



## **BARFORCE® PRODUCT OVERVIEW**

**BarForce®** recycled plastic lumber is a high strength structural product. BarForce® is made of HDPE (High Density Polyethylene) and fiberglass additive that encapsulates full length fiber reinforced polymer rebar. Color stabilizers and UV inhibitors are also added to protect color fade over time.

**BarForce®** is available in primarily larger profiles due to the strength characteristics. BarForce® is resistant to marine borers, termites, fungus, salt and oils so replacement due to these elements is nearly nonexistent.

**BarForce®** is proven for use in structural applications where a wider span, dimensional stability, increased strength or stiffness is required. Due to the increase strength and resistance to environmental elements, BarForce® is well suited for exterior applications where structural support or load bearing is required. Examples of applications are; support joints, marine fenders, and heavy retaining walls, bridge & pier systems, Wales and pile applications.

### **Chemical Resistance**













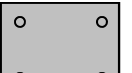



High-density polyethylene has a high resistance to most acids and chemicals. Bedford Plastic Lumber is not affected by exposure to most substances.

### **Ultraviolet Weathering**

An ultraviolet stabilizer is incorporated at the time of manufacture. It protects the plastic from ultraviolet light degradation and ensures that the outside of the product will not degrade in exterior applications.

# **BARFORCE® RECYCLED PLASTIC LUMBER**

## **SIZE CHART**

SHAPE	LUMBER SIZE	REBAR SIZE & QUANTITY	ACTUAL DIMENSIONS	LONGEST LENGTHS AVAILABLE FEET	WEIGHT LBS PER FOOT
	3"x10"	2-3/4"	2 1/2" X 9 3/8"	16	10
	3"x12"	2-3/4"	2 1/2" x 11 1/4"	16	12
	4"x4"	4-1/2"	3 1/2" x 3 1/2"	16	5
	4"x12"	2-3/4"	3 1/2" x 11 1/4"	20	16.5
	6"x6"	4-1/2"	5 1/2" x 5 1/2"	20	12.6
	10" Round	6-1"	9.9"	16	32
	10" Round	6-1.25"	9.9"	16	32
	8"x8"	4-1"	7.5" x 7.5"	16	24
	8"x8"	4-1.25"	7.5" x 11.375"	16	36
	8"x12"	4-1"	7.5" x 11.375"	16	36
	8"x12"	4-1.25"	7.5" x 11.375"	16	24
	10"x10"	4-1"	9.75" x 9.75"	16	42
	10"x10"	4-1.25"	9.75" x 9.75"	16	42
	10"x12"	4-1"	9.9" x 11.9"	24	50
	12"x12"	4-1"	11.9" x 11.9"	16	60
	12" x 12"	4-1.25"	11.9" x 11.9"	16	60

**BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER  
3X10 WITH 2 3/4" FIBERGLASS BARS**

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	4900	PSI
Flexural Modulus	D6109-97	540000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 12/14/09

Actual size of product is 9 3/8" x 2 1/2"  
Values are Calculated from tests of other size boards.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER 3X12 WITH 2 3/4” FIBERGLASS BARS**

## **TEST METHODS**

<b>TEST</b>	<b>ASTM TEST</b>	<b>VALUE</b>	<b>ENGLISH UNITS</b>
MOR	D6109-97	6400	PSI
Flexural Modulus	D6109-97	702000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER 4x4 WITH 4 1/2" FIBERGLASS BARS**

## **TEST METHODS**

<b>TEST</b>	<b>ASTM TEST</b>	<b>VALUE</b>	<b>ENGLISH UNITS</b>
MOR	D6109-97	9500	PSI
Flexural Modulus 1% strain	D6109-97	557000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 06/09

Actual size of product is 3 1/2" x 3 1/2"

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER 4x6 WITH 4 1/2" FIBERGLASS BARS**

TEST METHODS		WEAK AXIS Y-Y	STRONG AXIS X-X	
TEST	ASTM TEST	VALUE	VALUE	ENGLISH UNITS
MOR	D6109-97	5900	8500	PSI
Flexural Modulus 1% strain	D6109-97	450000	650000	PSI
Specific Gravity	D6111-97	0.99	0.99	g/cc
Flash Point		340	340	Deg C
Moisture Absorption		0.06	0.06	% by Weight
Average Screw Pull Out	D6117	646	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Flame Spread	E84(03a)	62	62	
Flame Spread Classification	E84(03a)	60	60	
Smoke Developed	E84(03a)	230	230	
Smoke Developed Classification	E84(03a)	250	250	
Tensile Test (skin)	D638	3623	3623	PSI
Notched impact resistance method A	D256	2.77	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours

Test date 8/12/10

Actual size of product is 5 1/2" x 3 1/2"  
Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product



# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **4x10 WITH 2 3/4" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	4650	PSI
Flexural Modulus –Joist Mode	D6109-97	515000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

Values are calculated from tests of other size boards.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER** **4x12 WITH 2 3/4" FIBERGLASS BARS**

## **TEST METHODS**

<b>TEST</b>	<b>ASTM TEST</b>	<b>VALUE</b>	<b>ENGLISH UNITS</b>
MOR	D6109-97	5487	PSI
Flexural Modulus	D6109-97	603000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **6x6 WITH 4 1/2" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	8400	PSI
Flexural Modulus 1% strain	D6109-97	650000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 06/09

Actual size of products is 5 1/2" x 5 1/2"

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **6x10 WITH 4 3/4" FIBERGLASS BARS**

TEST METHODS		WEAK AXIS Y-Y	STRONG AXIS X-X	
TEST	ASTM TEST	VALUE	VALUE	ENGLISH UNITS
MOR	D6109-97	4900	3900	PSI
Flexural Modulus	D6109-97	380000	430000	PSI
Specific Gravity	D6111-97	0.99	0.99	g/cc
Flash Point		340	340	Deg C
Moisture Absorption		0.06	0.06	% by Weight
Average Screw Pull Out	D6117	646	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Flame Spread	E84(03a)	62	62	
Flame Spread Classification	E84(03a)	60	60	
Smoke Developed	E84(03a)	230	230	
Smoke Developed Classification	E84(03a)	250	250	
Tensile Test (skin)	D638	3623	3623	PSI
Notched impact resistance method A	D256	2.77	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours

Test date 9/7/10

Actual size of products is 9 3/8" x 5 3/8"  
 Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **6x12 WITH 4 1" FIBERGLASS BARS**

TEST METHODS		WEAK AXIS Y-Y	STRONG AXIS X-X	
TEST	ASTM TEST	VALUE	VALUE	ENGLISH UNITS
MOR	D6109-97	3640	5290	PSI
Flexural Modulus	D6109-97	271000	515000	PSI
Specific Gravity	D6111-97	0.99	0.99	g/cc
Flash Point		340	340	Deg C
Moisture Absorption		0.06	0.06	% by Weight
Average Screw Pull Out	D6117	646	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51	
Flame Spread	E84(03a)	62	62	
Flame Spread Classification	E84(03a)	60	60	
Smoke Developed	E84(03a)	230	230	
Smoke Developed Classification	E84(03a)	250	250	
Tensile Test (skin)	D638	3623	3623	PSI
Notched impact resistance method A	D256	2.77	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours

Test date 12/02/09

Actual size of products is 11 3/8" X 5 3/8"  
 Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER** **8 X 8 WITH 4 1” FIBERGLASS BARS**

## TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	3200	PSI
Flexural Modulus	D6109-97	350000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	2340	PSI
Compression Modulus– Parallel	D6108-97	140000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 3/06/09

Actual size of products is 7 3/8" X 7 3/8"

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER 8 X 8 WITH 4 1 1/4" FIBERGLASS BARS**

## **TEST METHODS**

<b>TEST</b>	<b>ASTM TEST</b>	<b>VALUE</b>	<b>ENGLISH UNITS</b>
MOR	D6109-97	3700	PSI
Flexural Modulus	D6109-97	390000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	2500	PSI
Compression Modulus– Parallel	D6108-97	190000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 3/06/09

Actual size of products is 7 3/8" X 7 3/8"

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER 8 X 12 WITH 4- 1" FIBERGLASS BARS**

## TEST METHODS

TEST	ASTM TEST	WEAK AXIS		STRONG AXIS		METRIC	
		ENGLISH VALUE	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC VALUE	METRIC UNITS
MOR	D6109-97	3450	3900	PSI	1931	MPa	MPa
Flexural Modulus	D6109-97	280000	400000	PSI	23.6	26.9	MPa
Moment of Inertia, I		385	914	Inch <sup>4</sup>	0.0001602	0.0003803	M <sup>4</sup>
Stiffness, EI		1.08E+08	3.65E+07	LB-IN <sup>2</sup>	309	105	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 7 3/8" X 11 3/8" Values are calculated from tests of other size bars.  
This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER** **8 X 12 WITH 4- 1 1/4" FIBERGLASS BARS**

## TEST METHODS

TEST	ASTM TEST	WEAK	STRONG	ENGLISH UNITS	WEAK	STRONG	METRIC UNITS
		AXIS	AXIS		AXIS	AXIS	
		ENGLISH VALUE	ENGLISH VALUE		METRIC VALUE	METRIC VALUE	
MOR	D6109-97	4300	5100	PSI	29.6	35.2	MPa
Flexural Modulus	D6109-97	300000	490000	PSI	207	3378	MPa
Moment of Inertia, I		385	914	Inch <sup>4</sup>	0.0001602	0.0003803	M <sup>4</sup>
Stiffness, EI		1.15E+07	4.48E+08	LB-IN <sup>2</sup>	33	1285	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 7 3/8" X 11 3/8" Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **8 X 12 WITH 4- 1 1/2" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	WEAK	STRONG	ENGLISH UNITS	WEAK	STRONG	METRIC UNITS
		AXIS	AXIS		AXIS	AXIS	
		ENGLISH VALUE	ENGLISH VALUE		METRIC VALUE	METRIC VALUE	
MOR	D6109-97	5600	6800	PSI	38.6	46.9	MPa
Flexural Modulus	D6109-97	390000	645000	PSI	2689	4447	MPa
Moment of Inertia, I		385	914	Inch <sup>4</sup>	0.0001602	0.0003803	M <sup>4</sup>
Stiffness, EI		1.50E+08	5.89E+08	LB-IN <sup>2</sup>	431	1691	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 7 3/8" X 11 3/8" Values are calculated from tests of other size bars.  
This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **8 X 12 WITH 4- 1 3/8" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	WEAK	STRONG	ENGLISH UNITS	WEAK	STRONG	METRIC UNITS
		AXIS	AXIS		AXIS	AXIS	
		ENGLISH VALUE	ENGLISH VALUE		METRIC VALUE	METRIC VALUE	
MOR	D6109-97	4892	5870	PSI	33.7	40.5	MPa
Flexural Modulus	D6109-97	341000	552000	PSI	2351	3805	MPa
Moment of Inertia, I		385	914	Inch <sup>4</sup>	0.0001602	0.0003803	M <sup>4</sup>
Stiffness, EI				LB-IN <sup>2</sup>			KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 7 3/8" X 11 3/8" Values are calculated from tests of other size bars.  
This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **8 X 12 WITH 4- 1 5/8" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	WEAK	STRONG	ENGLISH UNITS	WEAK	STRONG	METRIC UNITS
		AXIS	AXIS		AXIS	AXIS	
		ENGLISH VALUE	ENGLISH VALUE		METRIC VALUE	METRIC VALUE	
MOR	D6109-97	6200	7600	PSI	42.7	52.4	MPa
Flexural Modulus	D6109-97	430000	725000	PSI	2965	4999	MPa
Moment of Inertia, I		385	914	Inch <sup>4</sup>	0.0001602	0.0003803	M <sup>4</sup>
Stiffness, EI		1.66E+08	6.62E+08	LB-IN <sup>2</sup>	475	1901	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 7 3/8" X 11 3/8" Values are calculated from tests of other size bars.  
This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 X 10 WITH 4- 1” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	3704	PSI	25.5	MPa
Flexural Modulus	D6109-97	353105	PSI	2435	MPa
Moment of Inertia, I		753	Inch <sup>4</sup>	0.0003135	M <sup>4</sup>
Stiffness, EI		2.66E+08	LB-In <sup>2</sup>	763	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Modulus-Parallel	D6108-97	187000	PSI	1289	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 X 10 WITH 4- 1 1/4” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4872	PSI	33.6	MPa
Flexural Modulus	D6109-97	477170	PSI	3290	MPa
Moment of Inertia, I		753	Inch <sup>4</sup>	0.0003135	M <sup>4</sup>
Stiffness, EI		3.59E+08	LB-In <sup>2</sup>	1031	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Modulus-Parallel	D6108-97	253000	PSI	1744	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 X 10 WITH 4- 1 3/8” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	5140	PSI	35.4	MPa
Flexural Modulus	D6109-97	495000	PSI	3412	MPa
Moment of Inertia, I		753	Inch <sup>4</sup>	0.0003135	M <sup>4</sup>
Stiffness, EI		3.73E+08	LB-In <sup>2</sup>	1070	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Modulus-Parallel	D6108-97	253000	PSI	1744	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 X 10 WITH 4- 1 1/2” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	5400	PSI	37.2	MPa
Flexural Modulus	D6109-97	530000	PSI	3654	MPa
Moment of Inertia, I		753	Inch <sup>4</sup>	0.0003135	M <sup>4</sup>
Stiffness, EI		3.99E+08	LB-In <sup>2</sup>	1145	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Modulus-Parallel	D6108-97	253000	PSI	1744	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.



# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 X 10 WITH 4- 1 5/8” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	5400	PSI	37.2	MPa
Flexural Modulus	D6109-97	550000	PSI	3792	MPa
Moment of Inertia, I		753	Inch <sup>4</sup>	0.0003135	M <sup>4</sup>
Stiffness, EI		4.14E+08	LB-In <sup>2</sup>	1189	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Modulus-Parallel	D6108-97	253000	PSI	1744	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10" ROUND WITH 6 - 1" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	42500	PSI
Flexural Modulus	D6109-97	435000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	2340	PSI
Compression Modulus– Parallel	D6108-97	220000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

Actual size of product is 9.8" diameter.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10” ROUND WITH 6 - 1 1/4” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	5700	PSI
Flexural Modulus	D6109-97	595000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	2700	PSI
Compression Modulus– Parallel	D6108-97	298000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Static Coefficient of Friction –Dry	D2394-83(99)	.53	
Static Coefficient of Friction-Wet	D2394-83(99)	.51	
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

Actual size of product is 9.8” diameter.

This data represents average values NOT Minimums. Safety factors must be added in to the design.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 x 12 WITH 4 - 1" FIBERGLASS BARS**

TEST METHODS	ASTM TEST	WEAK	STRONG	ENGLISH UNITS	WEAK	STRONG	METRIC UNITS
		AXIS	AXIS		AXIS	AXIS	
MOR	D6109-97	3500	3400	PSI	24.1	23.4	MPa
Flexural Modulus	D6109-97	340000	330000	PSI	2344	2275	MPa
Moment of Inertia, I		962	1390	Inch <sup>4</sup>	0.0004005	0.0005787	M <sup>4</sup>
Stiffness, EI		3.27E+08	4.59E+08	LB-IN <sup>2</sup>	939	1317	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Compressive Strength- Parallel	D6108-97	3700	3700	PSI	25.5	25.5	MPa
Compressive Modulus-Parallel	D6108-97	190000	190000	PSI	1309	1309	MPa
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Actual size of products is 9 7/8" x 11 7/8" Values are calculated from tests of other size bars.

Test date 02/17/11

This data represents average values NOT Minimums. Safety factors must be added in to the design. Data is not from actual tests it is calculated from 10x10 actual tests.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

RR 7

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 x 12 WITH 4 - 1 1/4" FIBERGLASS BARS**

TEST METHODS		WEAK AXIS	STRONG AXIS		WEAK AXIS	STRONG AXIS	
TEST	ASTM TEST	ENGLISH VALUE	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4141	3900	PSI	28.6	26.9	MPa
Flexural Modulus	D6109-97	405500	380000	PSI	2796	2620	MPa
Moment of Inertia, I		962	1390	Inch <sup>4</sup>	0.0004005	0.0005787	M <sup>4</sup>
Stiffness, EI		3.90e+08	5.28e+08	LB-IN <sup>2</sup>	1120	1516	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Compressive Strength– Parallel	D6108-97	4185	4185	PSI	28.8	28.8	MPa
Compressive Modulus-Parallel	D6108-97	210833	210833	PSI	1453	1453	MPa
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction- Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Actual size of products is 9 7/8" x 11 7/8" Values are calculated from tests of other size bars.

Test date 02/17/11

This data represents average values NOT Minimums. Safety factors must be added in to the design. Data is not from actual tests it is calculated from 10x10 actual tests.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **10 x 12 WITH 4 - 1 5/8" FIBERGLASS BARS**

TEST	ASTM TEST	TEST METHODS			TEST METHODS		
		WEAK AXIS	STRONG AXIS	WEAK AXIS	STRONG AXIS	WEAK AXIS	STRONG AXIS
TEST	ASTM TEST	ENGLISH VALUE	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4900	4500	PSI	33.8	31.0	MPa
Flexural Modulus	D6109-97	490000	460000	PSI	3378	3172	MPa
Moment of Inertia, I		962	1390	Inch <sup>4</sup>	0.0004005	0.0005787	M <sup>4</sup>
Stiffness, EI		4.71e+08	6.40E+08	LB-IN <sup>2</sup>	1353	1835	KN-M <sup>25</sup>
Specific Gravity	D6111-97	0.99	0.99				g/cc
Compressive Strength– Parallel	D6108-97	4900	4900	PSI	33.7	33.7	MPa
Compressive Modulus-Parallel	D6108-97	245000	245000	PSI	1689	1689	MPa
Flash Point		340	340				Deg/C
Moisture Absorption		0.06	0.06				% by Weight
Average Screw Pull Out	D6117	646	646	Lbs	293	293	Kg
Static Coefficient of Friction—Dry	D2394-83(99)	.53	.53				
Static Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23	.23				
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51	.51				
Flame Spread	E84(03a)	62	62				
Flame Spread Classification	E84(03a)	60	60				
Smoke Developed	E84(03a)	230	230				
Smoke Developed Classification	E84(03a)	250	250				
Tensile test (skin)	D638	3623	3623	PSI	24.9	24.9	MPa
Notched impact resistance Method A	D256	2.77	2.77	Ft*LB/IN	15.1	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	<0.02	Oz-with 2.2lb sample			
Ultraviolet (skin)	D4329	<10	<10	% Change in Type D durometer at 500 hours			

Test date 02/17/11

Actual size of products is 9 7/8" x 11 7/8" Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. Data is not from actual tests it is calculated from 10x10 actual tests.

- For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

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# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **12 x 12 WITH 4 - 1" FIBERGLASS BARS**

### **TEST METHODS**

<b>TEST</b>	<b>ASTM TEST</b>	<b>ENGLISH VALUE</b>	<b>ENGLISH UNITS</b>	<b>METRIC VALUE</b>	<b>METRIC UNITS</b>
MOR	D6109-97	2815	PSI	19.4	MPa
Flexural Modulus	D6109-97	274000	PSI	1889	MPa
Moment of Inertia, I		1671	Inch <sup>4</sup>	0.0006956	M <sup>4</sup>
Stiffness, EI		4.58E+08	LB-In <sup>2</sup>	1314	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Strength-Parallel	D6108-97	2880	PSI	19.8	MPa
Compression Modulus-Parallel	D6108-97	146600	PSI	1010	MPa
Compression Strength-Perpendicular	D6108-97	702	PSI	4.8	MPa
Compression Modulus-Perpendicular	D6108-97	100000	PSI	689	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **12 x 12 WITH 4 - 1 1/4" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	3702	PSI	25.5	MPa
Flexural Modulus	D6109-97	360450	PSI	2485	MPa
Moment of Inertia, I		1671	Inch <sup>4</sup>	0.0006956	M <sup>4</sup>
Stiffness, EI		6.02E+08	LB-In <sup>2</sup>	1729	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Strength-Parallel	D6108-97	3800	PSI	26.1	MPa
Compression Modulus-Parallel	D6108-97	193100	PSI	1331	MPa
Compression Strength-Perpendicular	D6108-97	908	PSI	6.2	MPa
Compression Modulus-Perpendicular	D6108-97	110000	PSI	758	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.



# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **12 x 12 WITH 4 - 1 3/8" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4100	PSI	28.3	MPa
Flexural Modulus	D6109-97	375000	PSI	2586	MPa
Moment of Inertia, I		1671	Inch <sup>4</sup>	0.0006956	M <sup>4</sup>
Stiffness, EI		6.27E+08	LB-In <sup>2</sup>	1789	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Strength-Parallel	D6108-97	3800	PSI	26.1	MPa
Compression Modulus-Parallel	D6108-97	193100	PSI	1331	MPa
Compression Strength-Perpendicular	D6108-97	908	PSI	6.2	MPa
Compression Modulus-Perpendicular	D6108-97	110000	PSI	758	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **12 x 12 WITH 4 - 1 1/2" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4400	PSI	30.3	MPa
Flexural Modulus	D6109-97	405000	PSI	2792	MPa
Moment of Inertia, I		1671	Inch <sup>4</sup>	0.0006956	M <sup>4</sup>
Stiffness, EI		6.77E+08	LB-In <sup>2</sup>	1942	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.99	g/cc		
Compression Strength-Parallel	D6108-97	3800	PSI	26.1	MPa
Compression Modulus-Parallel	D6108-97	180000	PSI	1241	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **12 x 12 WITH 4 - 1 5/8" FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	ENGLISH VALUE	ENGLISH UNITS	METRIC VALUE	METRIC UNITS
MOR	D6109-97	4900	PSI	33.8	MPa
Flexural Modulus	D6109-97	450000	PSI	3103	MPa
Moment of Inertia, I		1671	Inch <sup>4</sup>	0.0006956	M <sup>4</sup>
Stiffness, EI		7.52E+08	LB-In <sup>2</sup>	2158	KN-M <sup>2</sup>
Specific Gravity	D6111-97	0.80-0.99	g/cc		
Compression Strength-Parallel	D6108-97	4000	PSI	27.5	MPa
Compression Modulus-Parallel	D6108-97	200000	PSI	1378	MPa
Compression Strength- Perpendicular	D6108-97	908	PSI	6.2	MPa
Compression Modulus- Perpendicular	D6108-97	110000	PSI	758	MPa
Flash Point		340	Deg C		
Moisture Absorption		0.06	% by Weight		
Average Screw Pull Out	D6117	646	Lbs	293	Kg
Static Coefficient of Friction –Dry	D2394-83(99)	.53			
Static Coefficient of Friction-Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction-Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction-Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03a)	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Tensile Test (skin)	D638	3623	PSI	24.9	MPa
Notched impact resistance method A	D256	2.77	Ft*LB/IN	15.1	Kg-cm/cm
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample		
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours		

Test date 02/17/11

Values are calculated from tests of other size bars.

This data represents average values NOT Minimums. Safety factors must be added in to the design. For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **13” ROUND WITH 6 - 1” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	2700	PSI
Flexural Modulus	D6109-97	350000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	1963	PSI
Compression Modulus— Parallel	D6108-97	186000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

Actual size of product is 12.8” diameter. Values are calculated from tests of other size bars. This data represents average values NOT Minimums. Safety factors must be added in to the design.

For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce® product overview on page 2.

# **BARFORCE ® REBAR REINFORCED STRUCTURAL PLASTIC LUMBER**

## **13” ROUND WITH 6 - 1 1/4” FIBERGLASS BARS**

### TEST METHODS

TEST	ASTM TEST	VALUE	ENGLISH UNITS
MOR	D6109-97	3500	PSI
Flexural Modulus	D6109-97	460000	PSI
Specific Gravity	D6111-97	0.99	g/cc
Compression Strength—Parallel	D6108-97	1963	PSI
Compression Modulus– Parallel	D6108-97	186000	PSI
Flash Point		340	Deg C
Moisture Absorption		0.06	% by Weight
Average Screw Pull Out	D6117	646	Lbs
Flame Spread	E84(03a)	62	
Flame Spread Classification	E84(03a)	60	
Smoke Developed	E84(03a)	230	
Smoke Developed Classification	E84(03a)	250	
Tensile Test (skin)	D638	3623	PSI
Notched impact resistance method A	D256	2.77	Ft*LB/IN
Abrasion resistance	D4060	<0.02	Oz-with 2.2lb sample
Ultraviolet (skin)	D4329	<10	% Change in Type D durometer at 500 hours

Test date 03/06/09

Actual size of product is 12.8” diameter. Values are calculated from tests of other size bars. This data represents average values NOT Minimums. Safety factors must be added in to the design.

For information regarding Chemical Resistance & Ultraviolet Weathering please see BarForce ® product overview on page 2.

**BARFORCE®**  
**120 DEGREE SPAN TABLES**  
**JOIST MODE**

MASTER DAT	370000 24 0.05	TEMPERATURE ADJUSTED MODULUS PSI INCH CENTER DISTANCE FOR JOIST DEFLECTION—IN./FT.
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SIZE	REBAR	ACTUAL SIZE		MAXIMUM SPAN		LIVE LOAD LBS / SQ FOOT
	QTY/ SIZE	WIDTH	HEIGHT	INCHES	FEET	
3 X 12	2—3/4"	2.4	11.3	141.5	11.8	60
3 X 12	2—3/4"	2.4	11.3	122.2	10.2	100
3 X 12	2—3/4"	2.4	11.3	108.1	9.0	150
3 X 12	2—3/4"	2.4	11.3	98.8	8.2	200

**Notes:**

1. Designers are to understand table limitations and apply them appropriately.
2. Loads are assumed to be uniformly applied to a simple span condition.
3. Table includes the weight of the beam and 2 x FiberForce® decking in the allowable load values.
4. Table is based on adjusted modulus of elasticity for and temperature.
5. All designs should be reviewed by a professional engineer.
6. Tables are generated from uniform loaded beam formula  $y=5WL^4/384EI$

Revised 7/19/07

RRT- 120 3 x 12

**BARFORCE®**  
**120 DEGREE SPAN TABLES**  
**JOIST MODE**

MASTER DATA	330000 24 0.05	TEMPERATURE ADJUSTED MODULUS PSI INCH CENTER DISTANCE FOR JOIST DEFLECTION—IN./FT.
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SIZE	REBAR	ACTUAL SIZE		MAXIMUM SPAN		LIVE LOAD LBS / SQ FOOT
	QTY/ SIZE	WIDTH	HEIGHT	INCHES	FEET	
4 X 12	2—3/4"	3.4	11.3	151.6	12.6	60
4 X 12	2—3/4"	3.4	11.3	131.3	10.9	100
4 X 12	2—3/4"	3.4	11.3	116.4	9.7	150
4 X 12	2—3/4"	3.4	11.3	106.5	8.9	200

**Notes:**

1. Designers are to understand table limitations and apply them appropriately.
2. Loads are assumed to be uniformly applied to a simple span condition.
3. Table includes the weight of the beam and 2 x FiberForce® decking in the allowable load values.
4. Table is based on adjusted modulus of elasticity for and temperature.
5. All designs should be reviewed by a professional engineer.
6. Tables are generated from uniform loaded beam formula  $y=5WL^4/384EI$

Revised 11/02/07

RRT- 120 4 x 12



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