



# M PLASTICS MARINE



Shenyang Win Star Plastic Co., Ltd.

## Product Series

### Composite Reinforced Plastic Fenders

Marine plastic fenders are made of recycled plastics, inserted fiberglass reinforced rods with superior properties to wood fenders, which makes the material ideal choice to build marine structures and for coastal protection without damaging environment.



### Composite Reinforced Plastic Piles

Plastic piles are advanced composite plastics with superior properties to wood, metal and concrete piles. It is a kind of best engineering material used as structural piles in marine, rivers, wet lands, shoals or salt lakes.



### 100% Recycled Plastic Lumber

Recycled plastic lumber is made of 100% recycled PE. It is widely used in construction field now and has been the first choice to replace wood and WPC. It could be used together with our plastic fender piles as walkways or bridges by the sea or river.

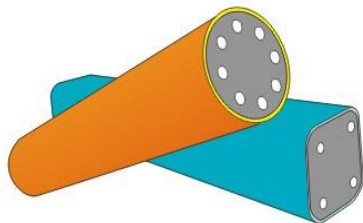


### Modification of Recycled Plastics

Customized modification of recycled plastics enhances performance of recycled plastics through advanced unique formula and technology, which could replace the new plastic materials, saving more costs and increasing market competitiveness for clients.

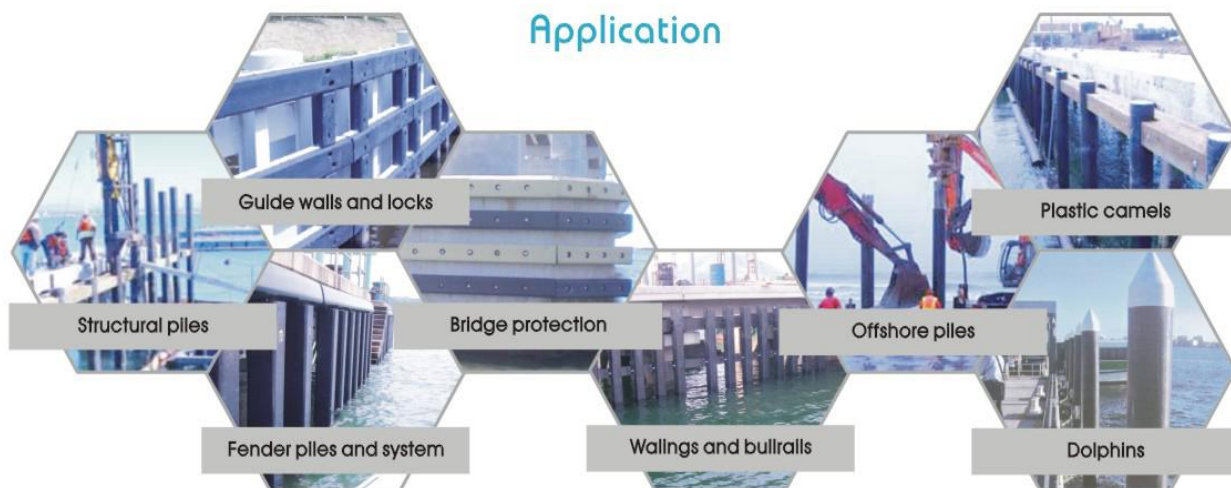


## Plastic Fender Piles



Composite reinforced recycled plastic fender piles are patented products developed by our company. It is made of recycled plastics, inserted fiberglass reinforced bars. They have very good performances, which could replace similar wood fenders, concrete, wood or metal piles. So it is a kind of best engineering material used in extreme environments, such as marine, rivers, wet lands, shoals or salt lakes.

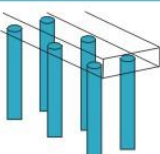
### Application



Dolphins are used near the piers, for ships mooring or separated from the piers. They could absorb much more impact energy.



Fender piles are used as vertical fenders at the front of shipping structure. They could absorb impact energy as a bumper to protect ships.

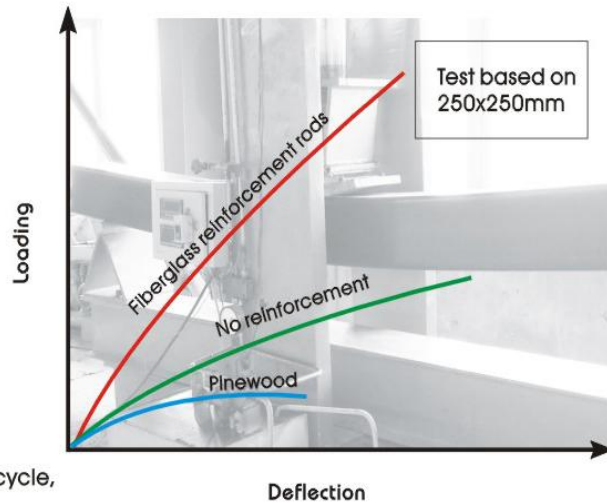


Structural piles are used to support the light piers or other loads at the area of offshore, soft land, wetland etc.



## Product Features

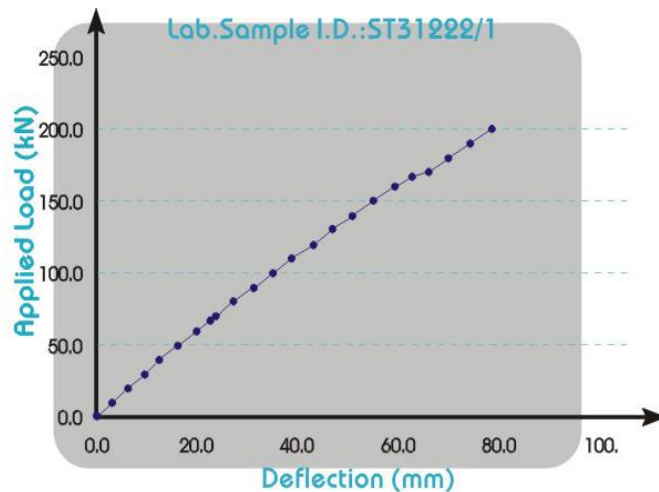
- ◆ Ultra long life and low maintenance
- ◆ High strength, good impact resistance
- ◆ Will not rot, corrode, rust or decay
- ◆ Unaffected by marine borers
- ◆ UV and ozone resistance
- ◆ Smooth surface, low friction coefficient  
(Or customized skip resistance product)
- ◆ No ocean current blocking, no stagnant water,  
no marine pollution
- ◆ Customized special product
- ◆ Can be pile driven, sawn and drilled
- ◆ Simple construction and short period with low cost
- ◆ Recycled plastic material and recycled again after lifecycle,  
environmental friendly



Applied Load (kN)	Average Deflection (mm)	Civil Engineering Department Requirement
0	0	
10	3.26	
20	6.46	
30	9.67	
40	12.96	
50	16.48	
60	19.99	
<b>67</b>	<b>22.58</b>	The applied test load prior to rupture of sample shall not be less than 167kN.
70	19.99	
80	27.32	
90	31.12	
100	34.81	
110	39.67	
120	42.89	
130	46.38	
140	50.59	
150	54.67	
160	58.83	
167	62.40	
170	65.45	
180	69.30	
190	73.59	
200	78.28	

The mid-span deflection of sample at 67kN shall not be greater than 35mm.

## Based on ASTM standard



## Materials constructed at the same time

- ◆ Lumber: cracking and wearing.
- ◆ Metal: rust.
- ◆ Plastic fender: not rot or rust, still very well.









## Product Advantages

Items	Wood products	Metal products	Rubber products	Win Star products
20 years long life				✓✓
Corrosion resistance	✓	✓		✓✓
Marine bores resistance		✓	✓	✓✓
Not rust	✓		✓	✓✓
Nontoxic				✓✓
No maintenance				✓✓
Not crack		✓	✓	✓✓
100% Recycled materials		✓	✓	✓✓
Recyclable	✓		✓	✓✓
Cost effective	✓			✓✓

✓: Normal. ✓✓: Excellent

# Product specification sheet

Dimension (mm)	Qty. of reinforcement bars (pcs)	Diameter of bars (mm)	Yield strength X-X (MPa)	Yield strength Y-Y (MPa)	Weight (Kg/m)
 300x300 (12In x 12In)	4		5.90	5.90	57-69
		25	18.86	18.86	60-72
		32	24.63	24.63	61-73
		34	28.12	28.12	62-74
		38	31.72	31.72	63-76
		40	35.53	35.53	63-77
 200x300 (8In x 12In)	4		5.90	5.90	37-45
		25	27.58	23.87	39-47
		32	37.28	31.17	41-49
		34	43.16	35.53	41-51
		38	49.26	40.22	42-52
		40	55.81	45.23	43-53
 250x250 (10In x 10In)	4		5.90	5.90	40-48
		25	24.31	24.31	42-52
		32	32.37	32.37	43-54
		34	37.28	37.28	45-54
		38	43.00	43.00	46-55
		40	47.96	47.96	47-55

Dimension (mm)	Qty. of reinforcement bars (pcs)	Diameter of bars (mm)	Yield strength (MPa)	Weight (Kg/m)
	8	25	39.46	37-45
		32	54.93	39-48
		34	64.31	39-49
		38	74.20	42-50
		40	84.69	44-52
	8	25	28.80	59-73
		32	39.13	61-75
		34	45.34	62-76
		38	48.35	64-78
		40	54.89	66-80
	16	25	36.00	91-111
		32	50.17	96-116
		34	58.42	99-119
		38	67.10	102-122
		40	76.21	106-126





# P Project Cases



# Project



- ◆ Central Star Ferry Pier
- ◆ Central Pier No. 1
- ◆ Tuen Mun Pier
- ◆ Tsing Yi Pier
- ◆ Hung Hom Ferry Pier
- ◆ Wong Shek Public Pier
- ◆ Sai Wan Ho Marine Police Base Pier
- ◆ Sha Lo Wan Pier
- ◆ Yau Kam Tan Pier
- ◆ Tung Chung Public Pier
- ◆ Yung Shue Wan Public Pier
- ◆ Waglan Pier
- ◆ Ap Chau Public Pier
- ◆ Cheung Sha Wan Vegetable & Poultry Market Pier No. 1 / No.2
- ◆ Aberdeen AFD & MD Licensing Station Pier
- ◆ Shek Pik Pier
- ◆ Shek Kwu Chau Pier
- ◆ Ko Lau Wan Public Pier
- ◆ Clear Water Bay Pier
- ◆ Discovery Bay Pier
- More.....









## 100% Recycled Plastic Lumber

100% recycled plastic lumber is our new developed construction material, which could replace wood lumber and wood plastic composite lumber. It used 100% recycled polyethylene (PE) materials, compared with the WPC popular in the market, the performances are much better, and it is widely used in construction field. It has been the first choice to replace wood and WPC in developed countries. It could be used together with our plastic fender piles as walkways or bridges by the sea or river, more significant comprehensive advantages.



### Product Specification Sheet

Density: 800kg/m<sup>3</sup>; Flexural modulus: >1000N/mm<sup>2</sup>; Coefficient of expansion: <1.5mm/m/10°C

Section	Dimension (mm)	Section	Dimension (mm)
<b>Round</b> 	∅ 75	<b>Square</b> 	50x50
	∅ 100		100x100
	∅ 125		150x150
	∅ 150		200x200
	∅ 250		250x250
	∅ 300		300x300
<b>Rectangle</b> 	50x75	<b>Rectangle</b> 	30x125
	50x100		30x250
	50x150		100x150
	50x200		100x200
	50x250		100x250
	50x300		100x300
	70x170		150x200
	75x100		150x250
	75x150		150x300
	75x200		200x250
	75x250		200x300
	75x300		Customized other sizes

Product

- ◆ 100% recycled PE materials
- ◆ Durable, 30 years long life
- ◆ Will not rot, corrode, crack
- ◆ No painting or dyeing
- ◆ Available in multiple dimensions and colors
- ◆ Ultra low maintenance
- ◆ Easy machining and installation
- ◆ Recyclable, environmentally friendly
- ◆ UV, sea water and weather resistant

## Wood Lumber

Wood lumber is vulnerable to environmental erosion, less service life, and environmental pollution due to chemical anti-corrosion treatment. It is easy to crack, split or chip, bored, and decay by fungi or bacteria.



## Wood Plastic Composite Lumber

Wood plastic composite lumber is made by doping wood powder in the plastics, which could overcome the defects of natural wood, but it is low strength, non wear-resistance, easy to fade and crack.



## 100% Recycled Plastic lumber

Plastic lumber is made from recycled polyethylene, and can be reinforced by inserting glass fiber. It is high strength, not decay, non-toxic, not cracking or splitting, and long-term waterproof with long service life.



## Product Advantages

Items	Wood lumber	WPC lumber	Plastic lumber
30 years long life			✓ ✓
Corrosion resistance	✓	✓	✓ ✓
Marine borers resistance			✓ ✓
Nontoxic		✓	✓ ✓
Not crack			✓ ✓
Bearing and structural	✓ ✓	✓	✓ ✓
Stable and durable color			✓ ✓
No maintenance			✓ ✓
100% recycled materials			✓ ✓
Recyclable		✓	✓ ✓
Beautiful and durable			✓ ✓

✓: Normal. ✓ ✓: Excellent





## Application

Walkways

Trestle

Bridge

Plastic fencing

Wall panels

Outdoor furniture

Plastic posts

Park facilities



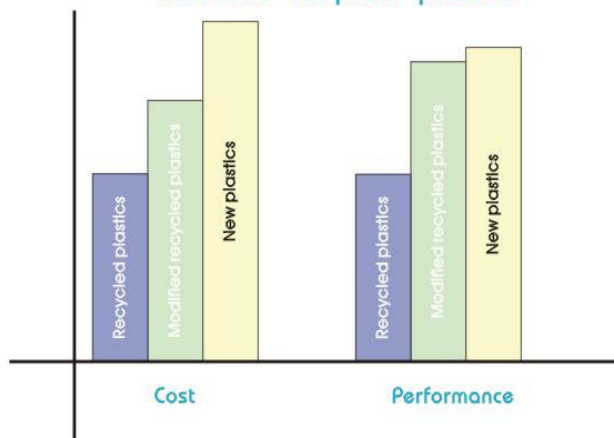
## Modification of Recycled Plastics

Win Star devotes to study customized modification of recycled plastic materials. It uses recycled plastic materials enhancing performance of recycled plastics through advanced unique formula and technology, which could guarantee the materials performance and completely satisfy the normal plastic product technical data requirement. So they could replace the new plastic materials, saving more costs and increasing market competitiveness for clients.

### Improved performance index through modification:

- ◆ Strength
- ◆ Hardness
- ◆ Impact resistance
- ◆ Fire resistance
- ◆ Weather resistance
- ◆ Inoxidizability
- ◆ High temperature resistance

### Comparative advantages of modified recycled plastics



### Application

- ◆ Safety helmet
- ◆ Automotive trim and plastic bumper
- ◆ Switch shell and shell of electric tool
- ◆ Plastic tubes
- ◆ Components of small household appliances
- ◆ Components of industrial products and commodity



### Product Series

PP, PE (HDPE, LDPE, LLDPE), ABS, PET, PC, PA toughening modification

PP/PE, PP/PA, PC/ABS, PVC/ABS

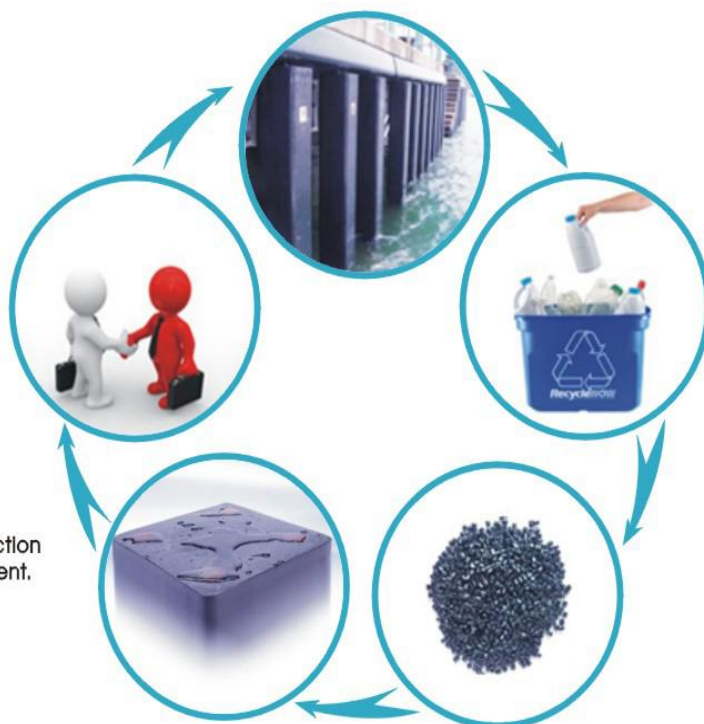
Glass fiber reinforced PP, ABS, PA, PC/ABS, PP/PA



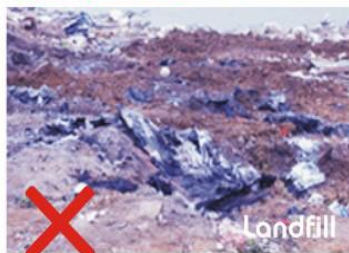
# Sustainability



1. Replacement of traditional wood products, saving more natural resources.
2. The most typical of recycling, using recycled plastic materials and recycled again after service life.
3. Water can flow and pass through, simple construction method, protecting marine ecological environment.
4. Waste plastic recycling, the best solution of white pollution



- ◆ Serious secondary pollution
- ◆ Produce a lot of black smoke and toxic substances, destroy the atmosphere
- ◆ The toxic substances in the soil could break down gradually in 15 months
- ◆ Harming plants and crops



- ◆ Take up a lot of space, reduce garbage disposal ability
- ◆ More than 100 years for plastic natural degradation
- ◆ Soil and groundwater pollution, resulting in the loss of soil
- ◆ Destroy the ecological environment



**The waste plastic recycling is the best way to solve the white pollution problem.**

# Qualification Certificate

◆ ISO9001:2008

◆ Approval on plastic fender piles of CEDD Hong Kong



## Customer Feedback



Patent certificates



# PLASTICS



SHENYANG WIN STAR PLASTIC CO., LTD.

No.4-2 Yejin 4 Street, Shenyang Economic & Technology Development  
Zone, Shenyang, Liaoning Province, China

Website: [www.winstarplastic.com](http://www.winstarplastic.com) [www.superfender.com.cn](http://www.superfender.com.cn)

E-mail: [sales@winstarplastic.com](mailto:sales@winstarplastic.com)

Tel.: 86-24-25175396

Win Star Plastic Co., Ltd.  
**SHENYANG**