Jiajing®
Bring Nature to Life

Introduction of A Novel Resilience Capped WPC

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ISBBB Conference, Guelph, Canada, 2018

Agenda

	Comparison among US WPC Products
	JIAJING 3rd Generation Capped WPC Products
	Properties of JIAJING 3G WPC Products
	Process Control of 3G WPC
	Application of JIAJING 3G WPC
	Summary

US WPC Products

Company A



Company B



Company C



Company D



Company E



Performance of Different Composite Decking Brands

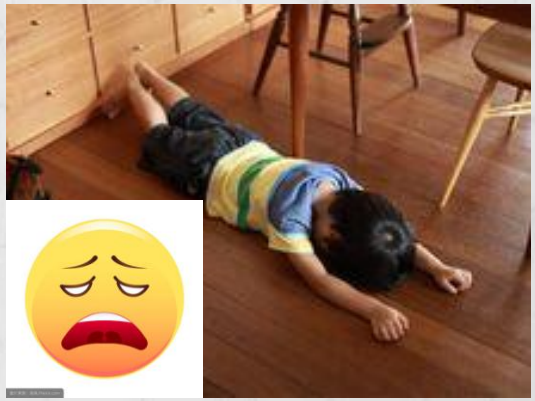
	Company A	Company B	Company C	Company D	Company E
Colour	Single and mixed	Mixed	Mixed	Single and mixed	Mixed
Cap layer	With and without	With and without	With	With	With
Glossiness	Low	Low	High	Low	Low
Side groove	With and without	Without	Without	With	With
Surface touched	Rigid	Rigid	Rigid	Rigid	Rigid

Problems

— —**COLOUR:** Most WPC products in the market come with light colours, and not many choices of bright colours like blue and pink, which are more popular among children.

— —**CAP LAYER**: Some of the US WPC products are half-capped which may lead to wider deformation on width, especially in the environment with high temperature and humidity.

— —**SURFACE**: People might easily get hurt when fell down on the rigid decking surface.



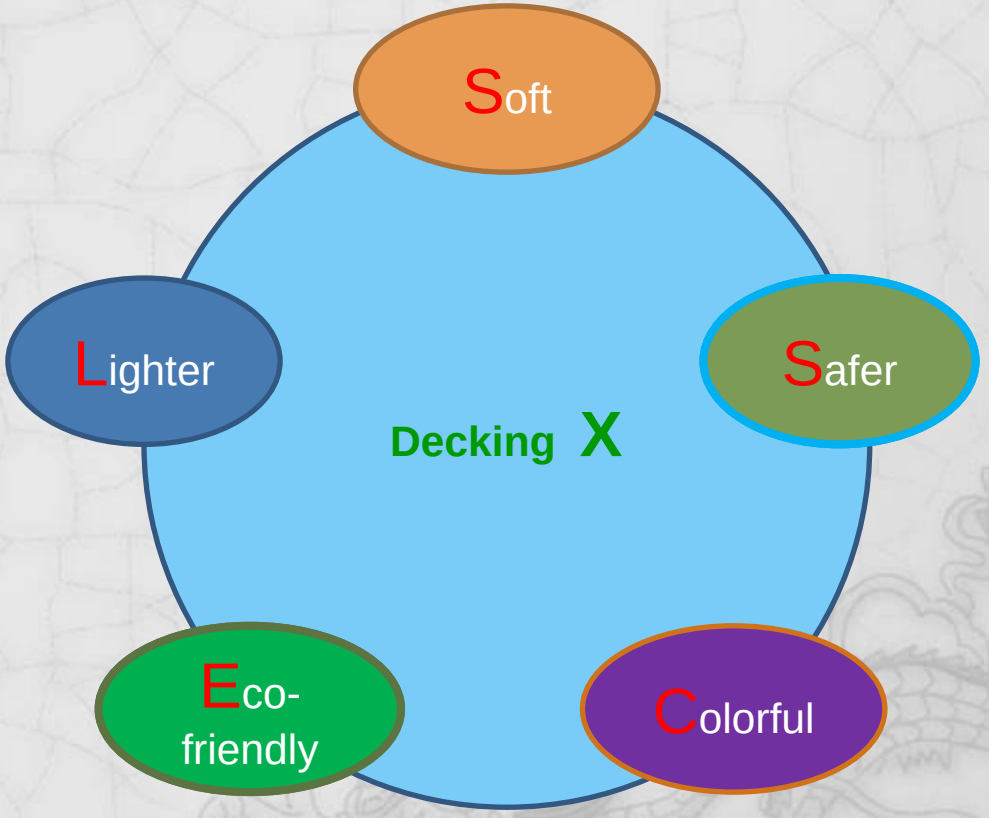


Can the Surface be More Comfortable?

Our Solution:

- **Soft layers**
- **Lighter than current products**
- **Eco-friendly**
- **Colorful**
- **Safer for children and elderlies**

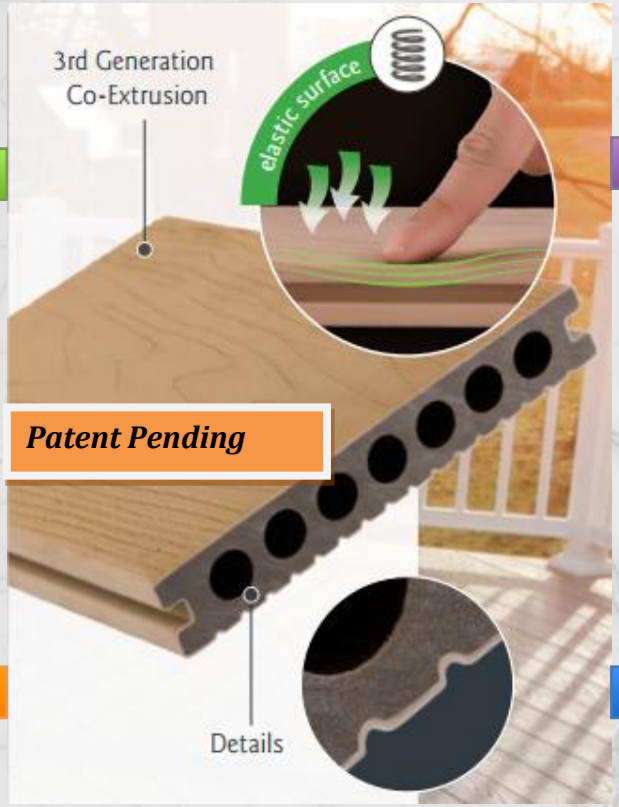
SLECS Decking



JIAJING 3rd Generation (3G) Capped WPC

SOFT SURFACES

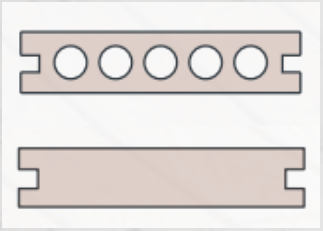




PATTERNS



PROFILES

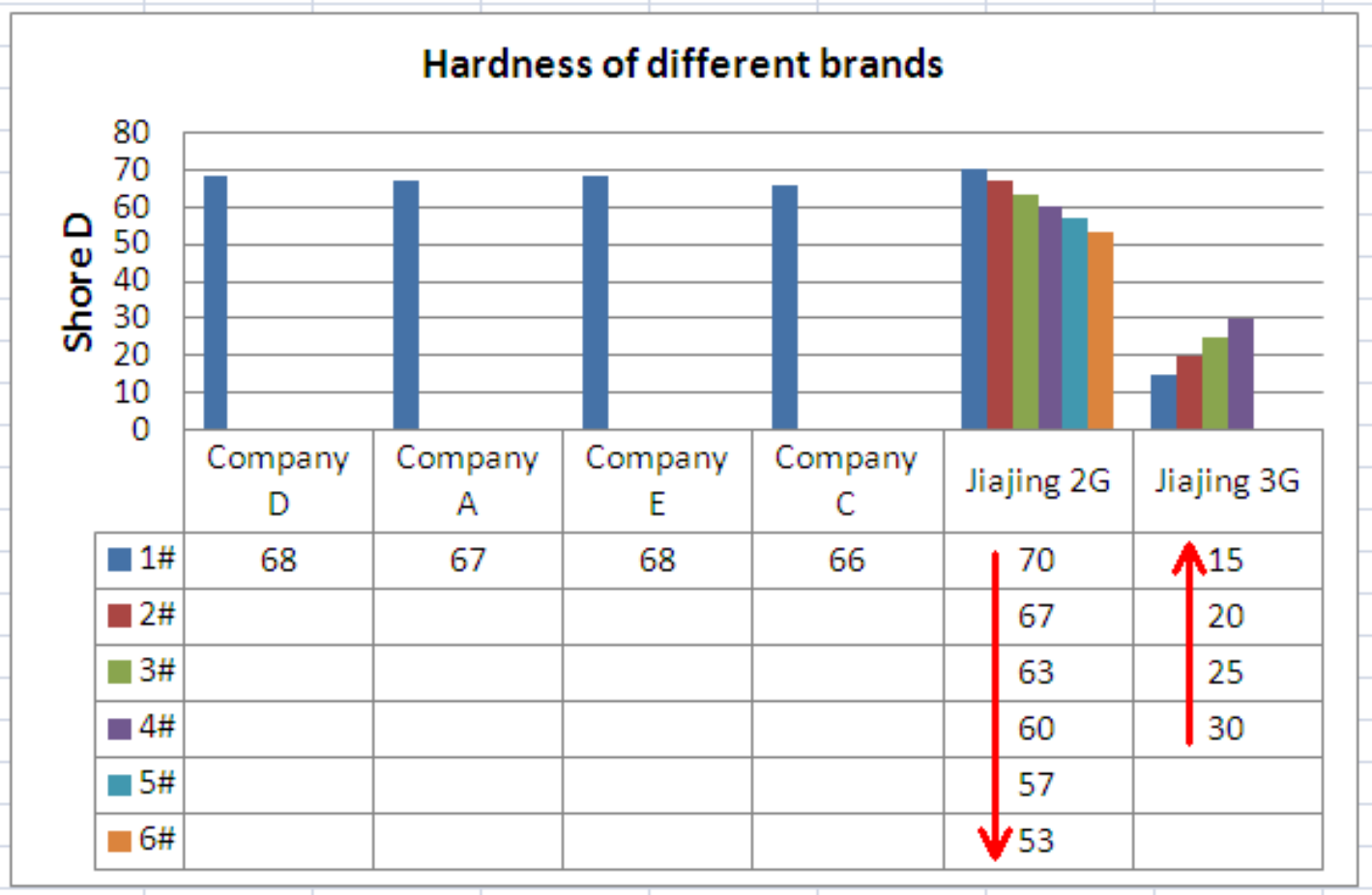




Properties of JIAJING 3G WPC Products

- **Hardness**
- **Boiling Water Test (120hs)**
  - — Performance of Cap Layers
  - — Dimensional Changes
- **Slipperiness (Pendulum Test)**
- **Tensile Strength**
- **Mechanical Properties**

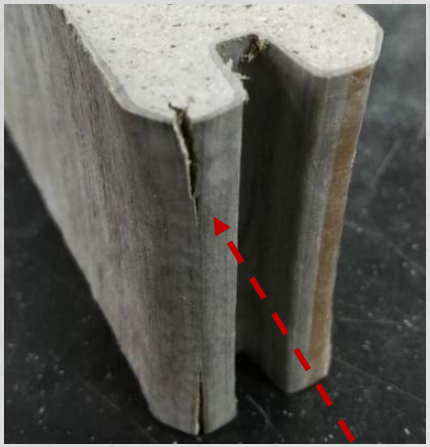
Hardness

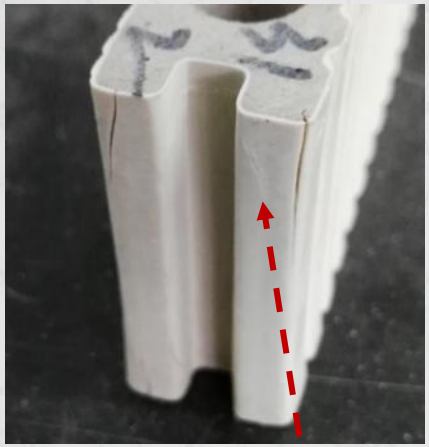


Note:

a) Hardness of Jiajing 2G (modified plastic) and 3G (modified rubber) WPC can be controlled to series.

Boiling Water Test (120hs)





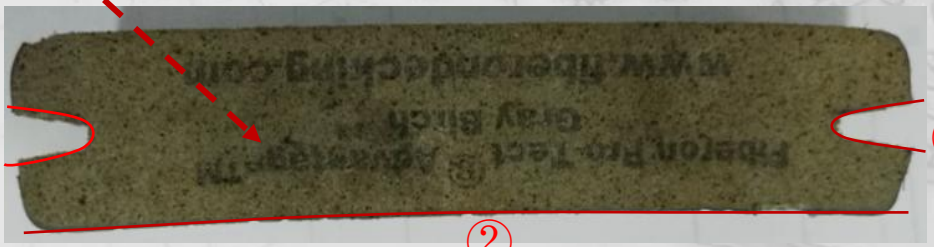
- Performance of Cap Layers

EN 15534-1:2014 5hs

OK



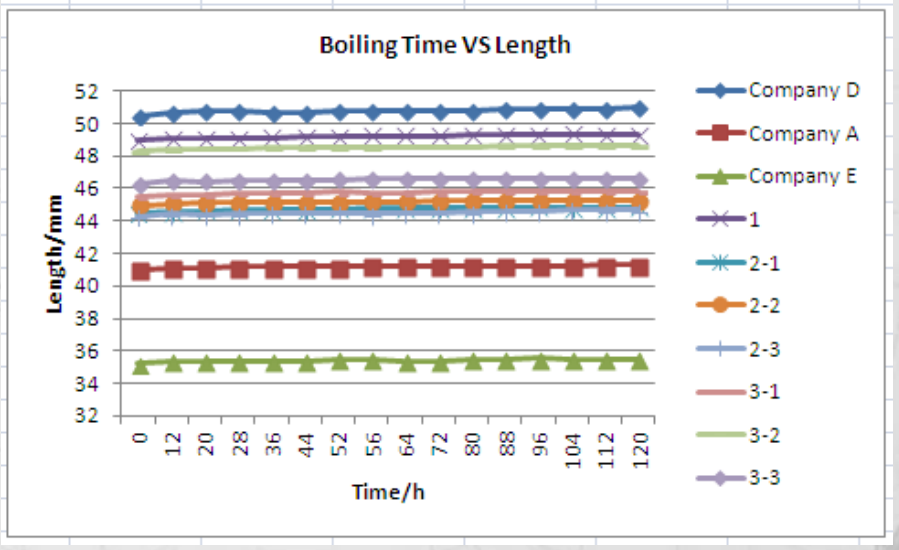


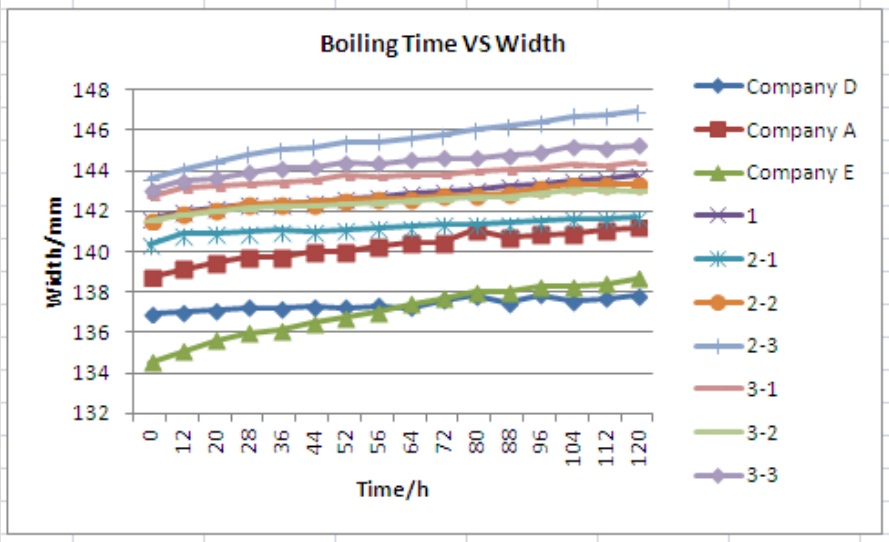


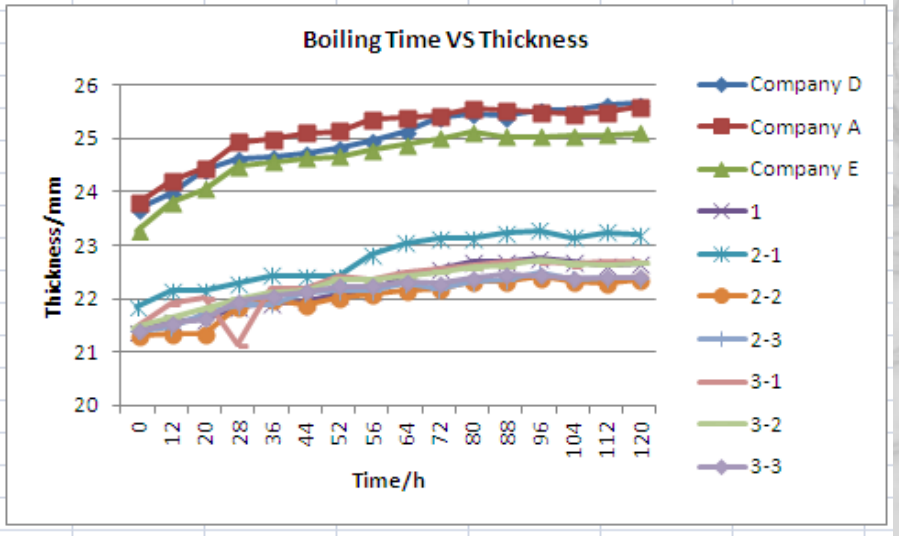
Boiling Water Test (120hs)

Dimensional Changes

— Changes on the length of all samples are similar.
— Company E samples showed the biggest swelling in width(3.05%) among all.
— Company D samples showed the biggest swelling in thickness(8.4%) among all.







Slipperiness (Pendulum Test)

2G

Test Method	Test Results	Test requirements	V
EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007 EN 15534-4: 2014 Section 4.4	Longitudinal direction: Mean: 76 Min.: 74 Horizontal direction: Mean: 79 Min.: 78	Pendulum value≥36	I



3G

Test Method	Test Results	Test requirements	V
EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007 EN 15534-4: 2014 Section 4.4	Longitudinal direction: Mean: 98 Min.: 96 Horizontal direction: Mean: 92 Min.: 90	Pendulum value≥36	F



Tensile Strength

EN 319

Condition:	96 hours at a temperature of 23±2°C and relative humidity of 50±5%
Test Specimen:	50 mm(length) × 50 mm(width) × 22 mm(thickness)
Test speed:	2 mm/min

2G



1.49 N/mm²

3G



1.26 N/mm²

Mechanical Properties of JIAJING WPC products

Property [a]		Uncapped WPC	2nd Generation Capped WPC	3rd Generation Capped WPC
Flexural Strength		≥ 20 MPa	≥ 30 MPa	≥ 35 MPa
Flexural Stiffness		≥ 2500 MPa	≥ 3000 MPa	≥ 3200 MPa
Hardness		≥ 55 HD	≥ 65 HD	≤ 30 HD
Screw Holding Capacity	surface	≥ 2200 N	≥ 2800 N	≥ 3200 N
	side	≥ 2000 N	≥ 2500 N	≥ 3000 N
Falling Mass Impact Resistance (-20℃)		no crack	no crack	no crack
Abrasion Resistance		≤ 0.08 g/100r	≤ 0.04 g/100r	≤ 0.03 g/100r
Slipperiness(Pendulum Test)		≥ 36	≥ 75	≥ 95
Moisture		≤1.0 %	≤0.4 %	≤0.3 %
Water Absorption (24 h)		≤1.0 %	≤0.3 %[b]	≤0.2 %[b]
Dimensional Changes [c]	Length	≤0.3 %	≤0.3 %	≤0.2 %
	Width	≤0.4 %	≤0.3 %	≤0.2 %
	Thickness	≤0.5 %	≤0.3 %	≤0.2 %
Moisture Resistance Under Cyclic Test Conditions		≥ 80%	≥ 90%	≥ 90%
Resistance to Artificial Weathering (2000 h)		△E≤5 (1000h)	△E≤2	△E≤3
Boiling Water Resistance	80 h	—	no crack	no crack
	120 h	—	small crack	no crack

Notes:

a) The values were obtained from certain LOT products. There are little differences between batches.
b) Water absorption of cap layer was nearly zero.
c) Immersed in RT water for 24 h.

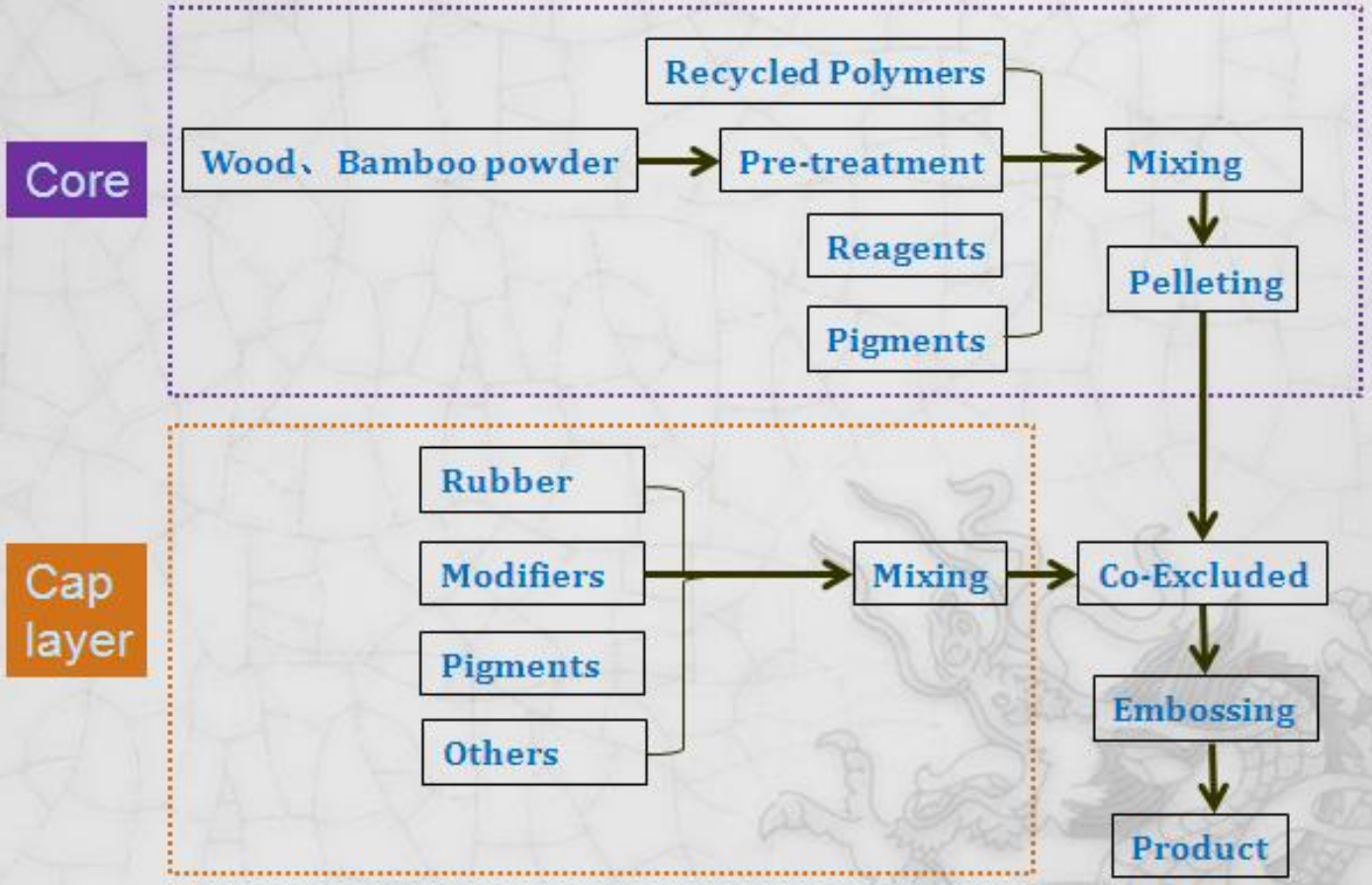
Comparison among JIAJING WPC products

Item	Uncapped WPC	2nd Generation Capped WPC	3rd Generation Capped WPC
Colour	single	multivariate, mixed	multivariate, mixed
Performance	brightness or sanded	brightness	dull
Sense of Touch	wooden like surface	smooth and rigid	softness
Hardness	55~65 HD	65~70 HD	15~30 HD
Moisture	★★	★	★
Water Absorption	★★	★	★
Flexural Strength	★★	★★★	★★★
Slipperiness Resistance	★	★★	★★★
Abrasion Resistance	★	★★	★★
Boiling Water Resistance	★	★★	★★★
Freeze-Thaw Resistance	★	★★	★★
Resistance to Artificial Weathering	★	★★★	★★★

Low：★
Middle：★★
High：★★★

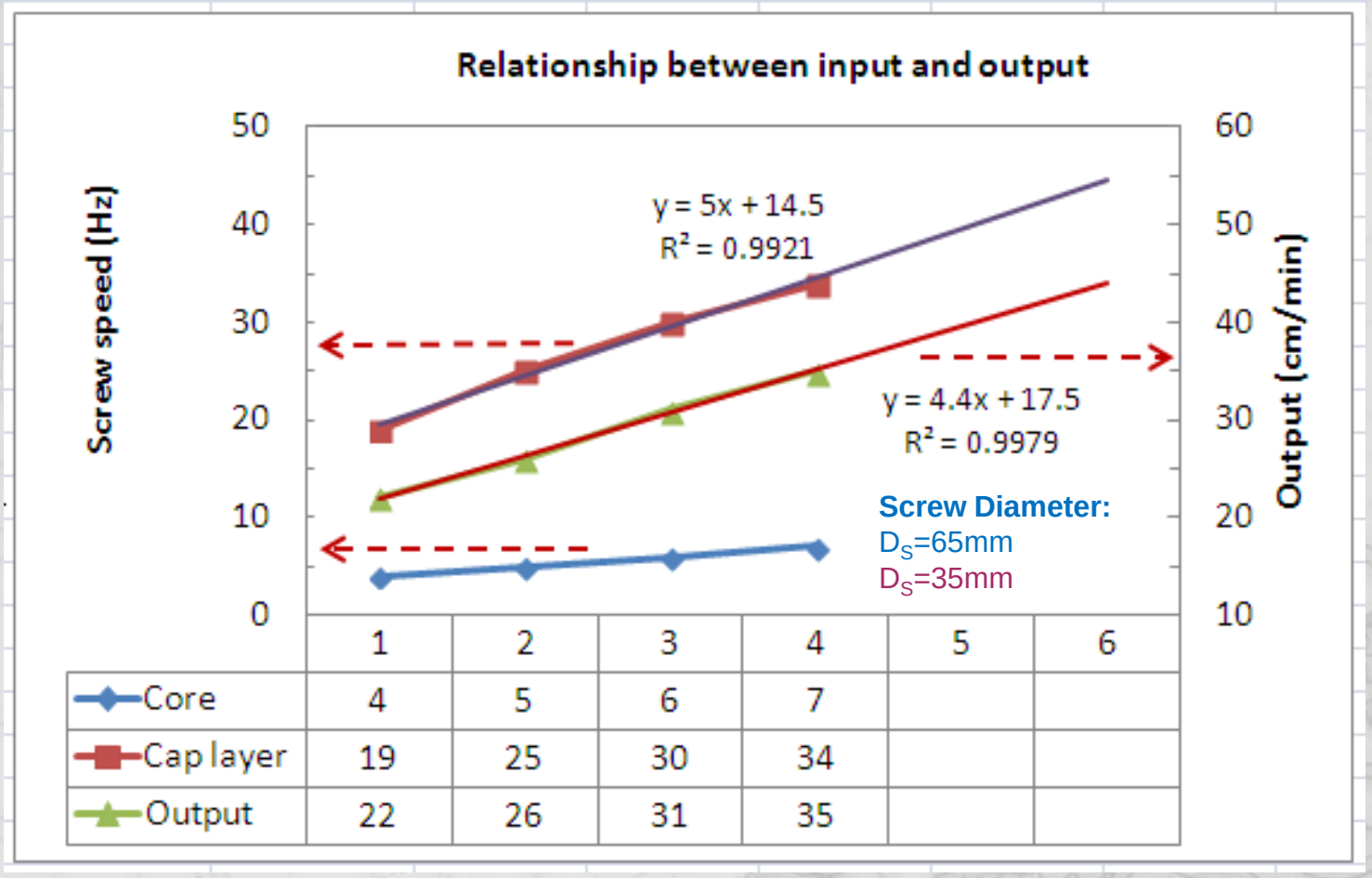
Process Control of 3G Capped WPC

——Flow chart of 3G Capped WPC



Process Control of 3G Capped WPC

——Screw Speed Control of Extruders



	1	2	3	4	5	6
Core	4	5	6	7		
Cap layer	19	25	30	34		
Output	22	26	31	35		

Application of JIAJING 3G Capped WPC

— —Outdoor Fitness Equipment





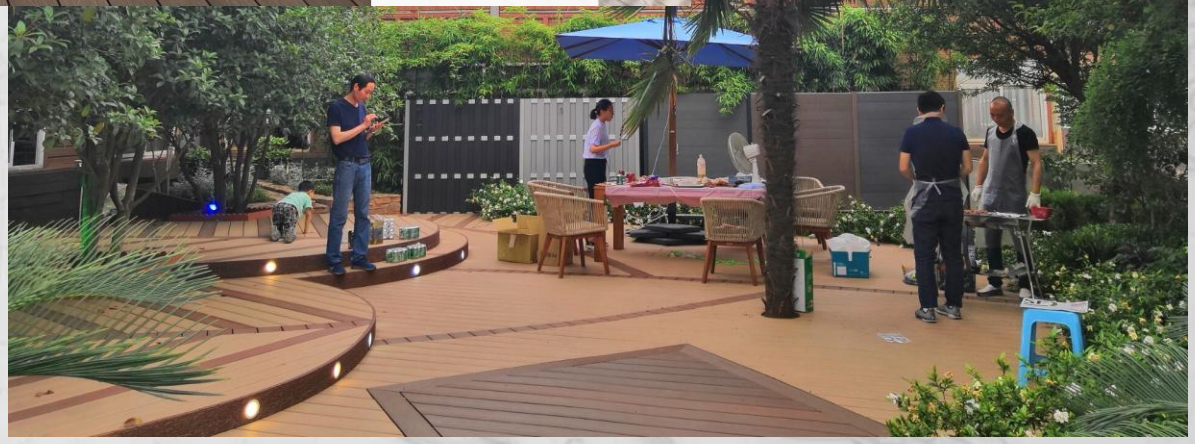
Application of JIAJING 3G Capped WPC



— —Our Company







Application of JIAJING 3G Capped WPC

— —Kindergarten, school, retirement house, gym and etc.









Summary

3G CAPPED WPC:

— — The hardness of JIAJING 3G capped WPC can be controlled from 15 to 30 shore D.

— — The boiling water test showed that cap layer of 3G WPC kept better without damage than others.

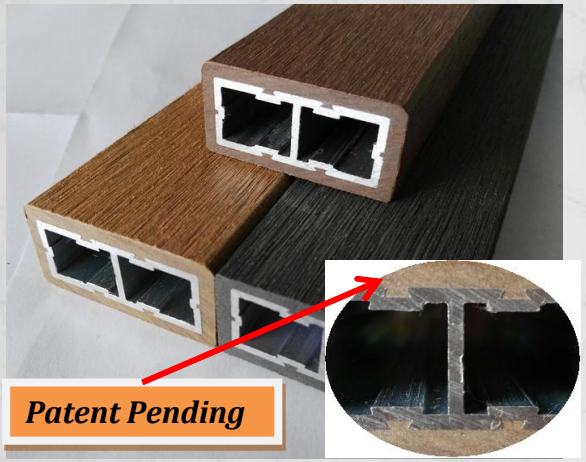
— — 3G capped WPC indicates better slipperiness resistance.

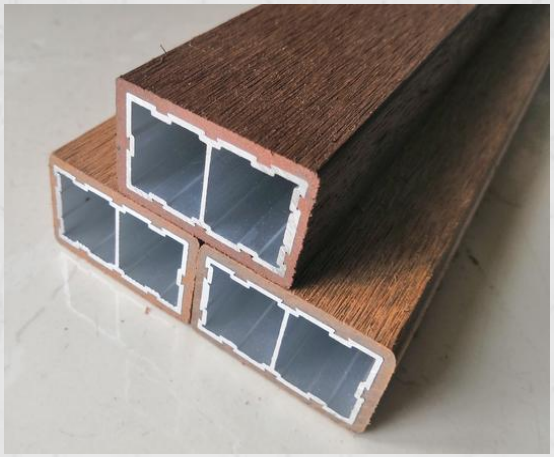
— — The tensile strength of 3G capped WPC is similar to 2G capped WPC.

JIAJING 3rd Generation decking board is one of a kind on the market provides both the solution to the rigid surface with higher sliding resistance, and alternative choice of decking colours and applications.

What is New in JIAJING ?

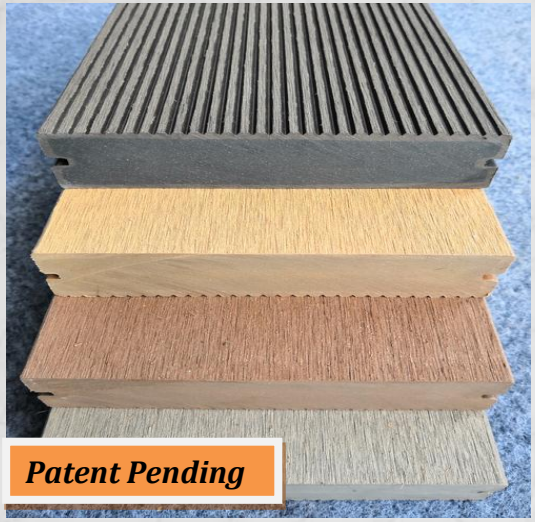
— —Aluminum Alloy Enhanced WPC (AAE)





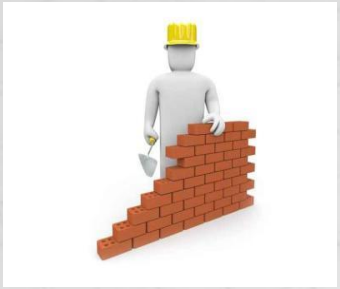


— —WPC Capped WPC (WCW)





JIAJING



Established
in 2004

Passed since 2005

Drafted
5 standards

Covers
20,000 m²
10000 t

Agencies in
Taiwan, UK,
Canada

Being supplier
for over
10 years

Questions?

Thank You!

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