

OSB protection against termites by active incorporation via glue line

Steffen Donath
Peter Spetmann
Thomas Jaetsch
Tobias Zahlmann



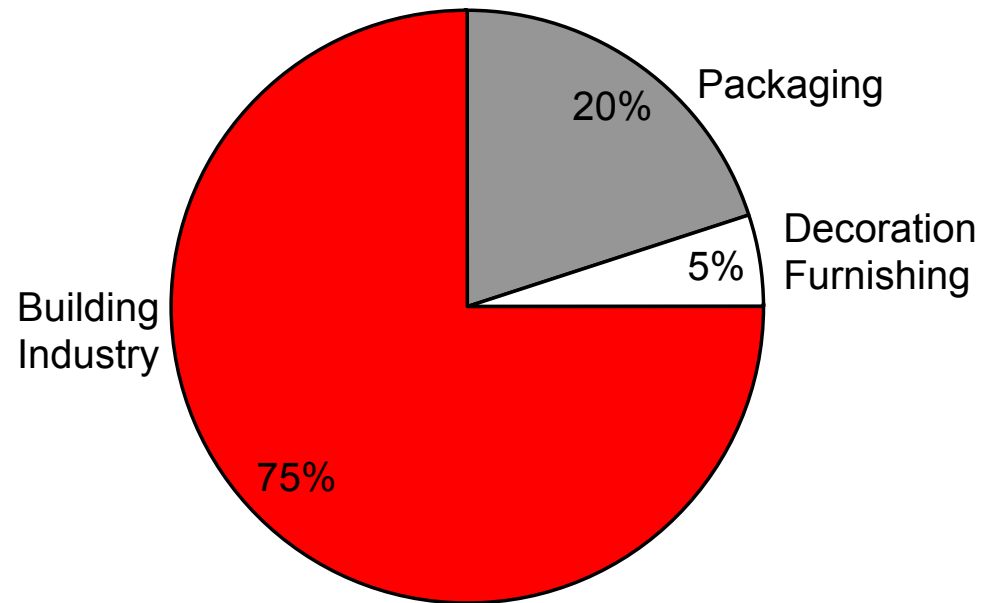
Need of termite protection for OSB

Main demand for OSB from construction sector

Large regions at risk of termite attack

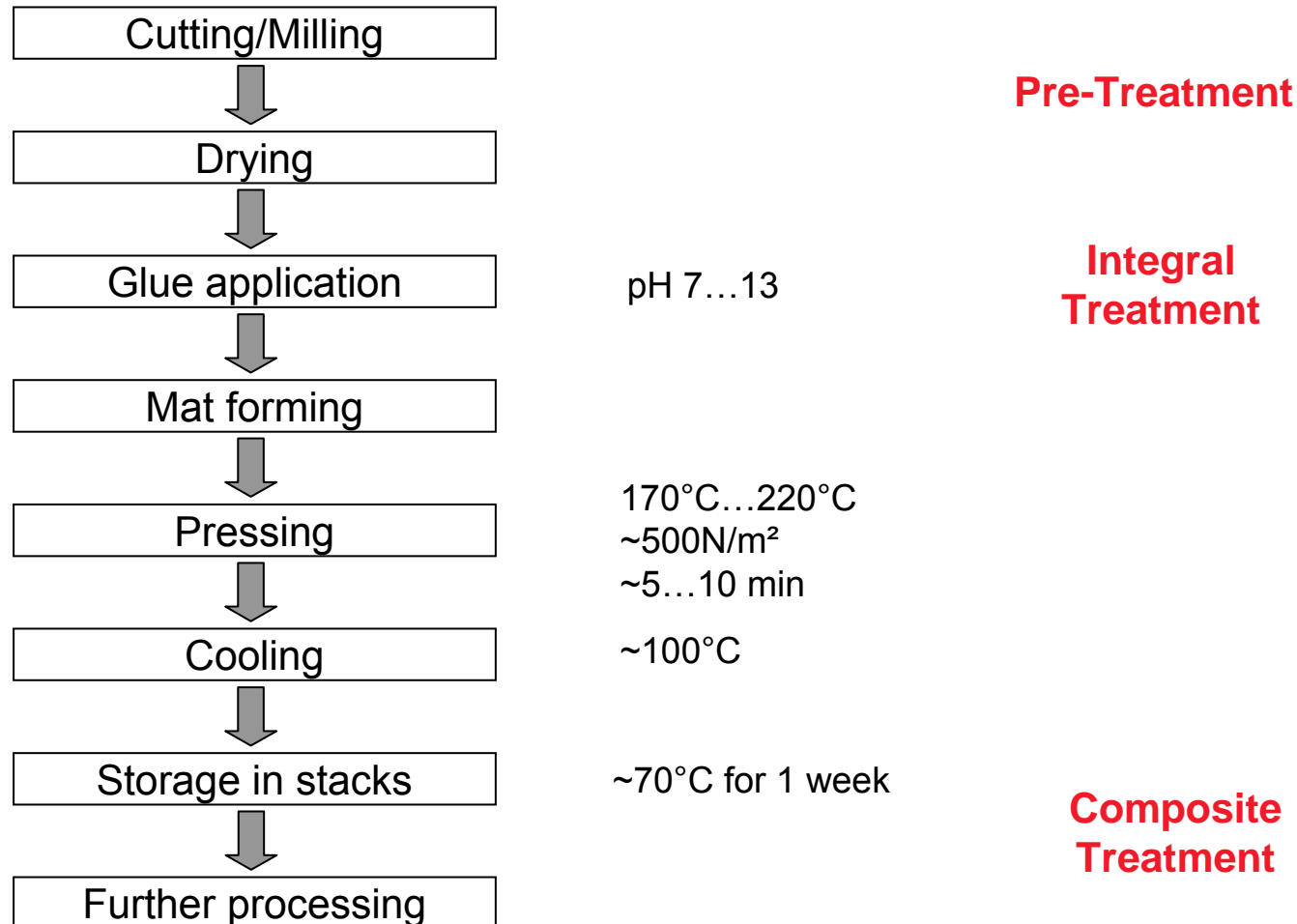
► To find environmentally friendly and effective protection measures

OSB user industries in Europe



Source: VHI

Principle process of OSB production



Choice of actives

Class	Active	Target retention in OSB g/m³
Pyrethroids	Bifenthrin	10
	Deltamethrin	10
	Permethrin	100
Neonicotinoids	Thiacloprid	10
Pyrazoles	Chlorphenapyr	10
Inorganic salts	Zinc borate	6700

Production of OSB samples

Southern yellow pine strands

60% surface layer with 4.5% PF glue

40% middle layer with 2.5% PMDI glue

- Blending:
1. Glue
 2. Spray water containing active
 3. Wax emulsion

OSB moulding in laboratory ContiRoll press (Siempelkamp)

190-200°C 500N/cm² 12sec/mm

► 12mm thick OSB samples, density 650-690 kg/m³

Results (analytics)

Active	Density of OSB kg/m ³	Target retention in OSB		Retention* mg/kg	Recovery rate %
		g/m ³	mg/kg		
Bifenthrin	690	10	14.5	9.7	67
Deltamethrin	650	10	15.4	9.8	64
Permethrin	664	100	150.6	123	82
Thiacloprid	676	10	14.8	6.7	45
Chlorphenapyr	668	10	15.0	8.8	59
Zinc borate	674	6700	9940	5170	52

*Retention found by chemical analysis: HPLC-MS for organic actives
ICP-OES for zinc borate

Termite testing acc. to EN 117

Exposure to *Reticulitermes
santonensis*

Vermiculite bed to provide
moisture

Evaluation of surface
degradation after 8 weeks



Photographs provided by
MPA Eberswalde

Results (termite attack grading)

Signs of attack	Grading
No attack	0
Traces of gnawing	1
Slight attack	2
Medium attack	3
Severe attack	4

Evaluation acc. to EN 117



Results (termite protection)

4	XX							
3	X	XX	XXX	XXX	X	X		
2		X			XX			X
1						XX	XXX	XX
0								
Rating	Control	Zinc borate 6700 g/m ³	Bifenthrin 10 g/m ³	Deltamethrin 10 g/m ³	Chlorphenapyr 10 g/m ³	Permethrin 100 g/m ³	Thiacloprid 10 g/m ³	EN 599 requirement

Severe attack
 Medium attack
 Slight attack
 Traces of gnawing
 No attack

Conclusions

Exceptional good protection by Thiacloprid

Good protection by Permethrin

Low performance of other tested insecticides

Thanks to: Siempelkamp Krefeld

MPA Eberswalde

LANXESS

Energizing Chemistry