

# Durability of Maderon<sup>®</sup>, a non-wood composite, against wood decay organisms



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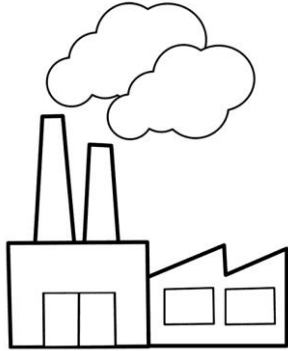


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# Introduction



Many industries  
produce residues



Not easily  
Degradable



Nut Husks

# Introduction



Political legislation



Technologies

# Maderón®

# What is this material?

Maderón® is a material employed as an ecological substitute and a modern alternative to certain uses of wood.



Up to now is commercialized in the funeral sector in the production of ecological coffins.

# Composition

Mixture of micronized almond shells and a resin generated from a mixture of isocyanate and vegetable polyols.



Almond shell flour and resin are combined into the mix at 50%



# Benefits

Would prevent the felling of trees



Reduce the environmental impact of waste



Possible to obtain different products



# Possibilities

New applications on the building sector; carpentry...



Then is necessary...

# Study of the durability

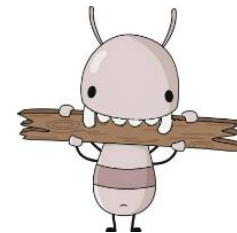
Against brown and white rot fungi



Against house longhorn beetle



Against termites





# Study of the durability

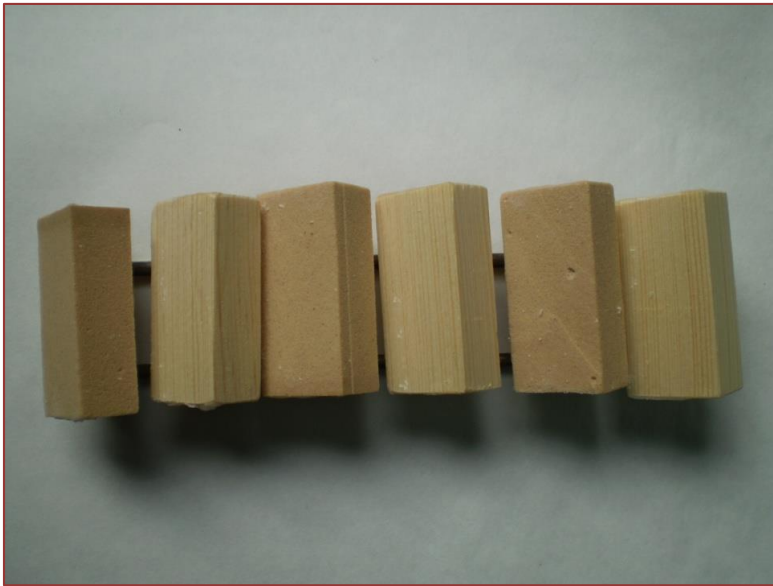


Against brown and white rot fungi following the EN-15083



Substrate	Weight loss (%)			
	<i>C. puteana</i>	<i>P. placenta</i>	<i>G. trabeum</i>	<i>T. versicolor</i>
Maderon®	0,376	0,413	0,362	0,350
<i>P. silvestris</i>	53,487	42,733	50,702	-
<i>F. sylvatica</i>	-	-	-	63,167

# Study of the durability



Against *Hylotrupes bajulus*  
following the EN-46

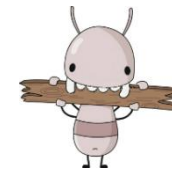


Substrate	Attack	Larvae recovered			Larvae not recovered
		<i>Dead</i>		<i>Live after tunneling</i>	
		Not having tunneled	Having tunneled		
Maderon®	0	8	0	0	2
<i>P. silvestris</i>	3	0	0	8	2

# Study of the durability



Against termites following  
the EN-117



Substrate	Degree of attack	Survival termites		
		Workers (%)	Living soldiers	Living nymphs
Maderon®	0	0	0	0
<i>P. silvestris</i>	4	92,5	2	2

# Conclusions

Maderón® is durable against attack from all the wood decay organisms studied



This material can be used as an alternative to wood furnishings and decorative structures

The use of Maderón® would contribute to the recycling of agricultural waste products by giving them a new added value



grazie dakujem gracies merci thanks gracias ありがとう спасибо  
hvala obrigado mochchakkeram spas ありがとう спасибо  
díky obrigado mochchakkeram bedankt danke pakka pēr شَكَراً  
ευχαριστιες thank you gracias grazas Arigatō ačiū.  
감사합니다 Tak gracies eskerrik asko grazie  
aitäh asante köszönöm dziękę kīitos ngiyabonga terima kasih tack merci obrigado  
dankon kōszönöm dank kīitos ngiyabonga terima kasih tack merci Salamat dankie



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