

**(DMA)**

MAPP

-

+

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// : // :

(*E*)

(Majurno1999)

(*E*)

*E* (*tan δ*)

*E*

(Rowell et al. 1997)

( )

( )

*MAPP*

)

(Gauthie et al. 1998) (

*MAPP* ( )

(*MAPP*)

George et al. 2001, Oksman et al. )

(1998, Rowell et al. 1997)

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<sup>۲</sup> -Storage Modulus  
<sup>۳</sup> - Loss Modulus  
<sup>۴</sup> - Mechanical Loss Factor  
<sup>۵</sup> - Neus Angles et al.  
<sup>۶</sup> - Feng et al.

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<sup>۷</sup> -Gauthier et al.

( )

(Mapp)

( )

( )

( )

ASTM

:

/

°C

:

DMA

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( )

( / kg °C) g/ min

<sup>۱</sup> - American Wood Fibers Inc.

<sup>۲</sup> -Aristech

<sup>۳</sup> -Yotayt RMP

<sup>۴</sup> -Teel Global Resources Inc.

<sup>۵</sup> -Cincinnati Milicorn

<sup>۶</sup> -Bridge Port

<sup>۱</sup> -Marcovich *et al.*

<sup>۲</sup> - Sanadi *et al.*

<sup>۳</sup> - Yin *et al.*

<sup>۴</sup> - Pro-fax PD 702

<sup>۵</sup> - Basell

\* \* DMA

			PP	
			PP-WF-25	
			PP-WF-50	
			PP-WF250	
			PP-WF50-0	

(Mm/s)	(Mpa)					(°C)	(°C)	
/	/	/				/	/	PP
/	/	/				/	/	PP-WF
/	/	/				/	/	pp-WF
/	/	/				/	/	PP-WF
/	/	/				/	/	PP-WF-Δ...

**M-I** **ASTM D638 M89**

/ mm/min

**MTS**

(E) °C/min (E)

(tan δ)

/ cm

**I** **ASTM D790-90**

\* / mm

mm

/ mm/min

**DMTA V**

⌞ - Rheometric Scientific  
 ⌘ - Dual Cantilever

⌞ -Instron

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( ) *(tan δ)*

Gpa

Gpa

Gpa

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(Oksman *et al.* 1998)

(Rowell *et al.* 1997)

1

( )

( )

1

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(

**MAPP**

(Sanadi *et al.* 2000)

(Oksman *et al.* 1998)

-

Rowell *et al.* )

(1997, Wu *et al.* 2000)

( )

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( )

( )

( )

( )

( )

(FPL)

**MAPP**

*tan δ*





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## Dynamic Mechanical Analysis of Compatibilizer Effect on Mechanical Properties of Wood Flour-Polypropylene Composites

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### Abstract

In the present study, the effect of MAPP as the compatibilizer on the mechanical properties of wood-flour polypropylene composites was investigated using Dynamic Mechanical Analysis (DMA). Composites were made at 25 and 50 percent (by weight) fiber contents and 1 and 2 percent compatibilizer. Controls were also made at the same fiber contents but without the compatibilizer. Static mechanical tests including tensile and bending tests were performed. Temperature scans in the range of -60° to +120°C was done.

Results indicated improvements in the mechanical properties as a result of adding comatibilizer. MAPP had negligible effects on the main transitions while the effect of fiber content on the intensity and temperature of alpha transition was almost proportional to the fiber content. Glass transition remained unchanged when adding MAPP while an increase in fiber content slightly shifted this transition to lower temperatures. Mechanical loss factor spectra showed that above +40°C energy loss became more pronounced when compatibilizer was absent.

**Keywords:** Composites, Wood flour, Polypropylene, Compatibilizer, Dynamic Mechanical Analysis.

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