







Fig.8 DMA test results of not-cured sample that reinforced with vinyl ester resin (T<sub>g</sub>O)

According to HDT values, fiber supplement reduced vitrified transition temperature (T<sub>g</sub>) of epoxy. This reduction increased as fiber ratio increased even at lower proportions. However, variations in size of fiber did not affect T<sub>g</sub>. Also, glass fiber addition increased thermal strength of the epoxy material and this increased as the fiber ratio increased. However, it was not affected by variations in size of fiber. The temperature at which the composite samples to decompose is 84.5 °C for orthophthalic resin and 109.6 °C for vinyl ester

resin. Assuming operation temperatures of tractors range between 40 and 45 °C, both of the resins are suitable for tractors. However, considering operation conditions, it was observed that, vinyl ester resin is more suitable matrix for tractor hood parts due to its higher thermal resistance compared with orthophthalic resin.

#### REFERENCES

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TABLE I  
HDT AND T<sub>g</sub> TEST VALUES

	Ortophthalic – not cured		Ortophthalic –cured		Vinil ester- not cured		Vinil ester- cured	
P (MPa.)	1.8	-	1.8	-	1.8	-	1.8	-
T ( mm.)	2	2.1	2.07	2.07	2.05	1.9	2.02	1.98
W ( mm.)	13.2	12.6	13.15	13.1	13.21	12.9	13.01	13.0
F ( Pre-Load ) (N)	1.26	-	1.36	-	1.33	-	1.27	-
D ( mm.)	0.2	-	0.2	-	0.2	-	0.2	-
HDT ( )	57.8	-	77	-	78.16	-	100	-
T <sub>g</sub> ( )	-	84.5	-	91.9	-	105.3	-	109.6



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