

Article title: Investigation of the mechanical response of laminated composites reinforced with different type wire mesh

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Table 1. Mesh details of the specimens.

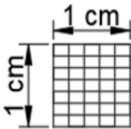
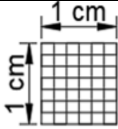
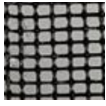
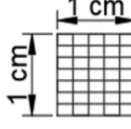
Specimen	Material	Mesh number per cm ²	Dimensions	Picture
GW35	Glass fiber	35		
GW42	Glass fiber	42		
AW35	Aluminum	35		

Table 2. Mechanical and damage properties of glass fiber/epoxy composite [15].

Parameter	Property	Values
E_1 and E_2 (MPa)	Elastic module for 1 and 2 directions	20817
E_3 (MPa)	Elastic modulus for 3 directions	6000
X_T and Y_T (MPa)	Tensile strengths for 1 and 2 direction	459
X_C and Y_C (MPa)	Compressive strengths for 1 and 2 direction	224
G_{12} (MPa)	Shear modulus for 1 – 2 plane	5001
G_{13} and G_{23} (MPa)	Shear module for 1 – 3 and 2 – 3 plane	3653
S_{12} (MPa)	Matrix mode shear strength for plane 1 – 2	83
S_{13} and S_{23} (MPa)	Matrix mode shear strengths for plane 1 – 3 and 2 – 3	90
ν_{12} , ν_{23} and ν_{31}	Poisson's ratios for 1 – 2, 2 – 3 and 3 – 1 plane	0.16

Table 3. Dimensions of DCB specimens.

Specimen	Specimen detail	Mesh number per cm ²	Specimen length (mm)	Specimen thickness (mm)	Specimen width (mm)
NW	Non-wire	-	180.00	3.00	25.50±0.10
GW35	Reinforced with glass wire mesh	35	180.00	3.50	27.25±0.95
GW42	Reinforced with glass wire mesh	42	180.00	3.40	25.30±0.30
AW35	Reinforced with aluminum wire mesh	35	180.00	3.63±0.75	26.46±0.50

Table 4. Dimensions of ENF specimens.

Specimen	Specimen detail	Mesh number per cm ²	Specimen length (mm)	Specimen thickness (mm)	Specimen width (mm)
NW	Non-wire	-	130.00	3.00	25.00±0.50
GW35	Reinforced with glass wire mesh	35	130.00	3.50	25.80±1.50
GW42	Reinforced with glass wire mesh	42	130.00	3.40	25.00±0.40
AW35	Reinforced with aluminum wire mesh	35	130.00	3.63±0.75	25.25±0.40

Table 5. Experimental and numerical critical load and Mod-I fracture energy values after DCB test.

Specimen	Critical load (N) Experimental	Critical displacement (mm) Experimental	Critical load (N) Numerical	G_{IC} (N/mm) Numerical	MBT (N/mm)	CC (N/mm)	MCC (N/mm)
NW	38.60±6.40	21.20±3.30	34.80±5.20	0.83±0.24	0.72±0.19	0.89±0.25	0.85±0.23
GW35	54.60±1.80	29.00±1.00	51.50±0.50	1.64±0.10	1.36±0.03	1.50±0.01	1.42±0.01
GW42	19.80±4.60	14.70±2.40	25.60±4.10	0.39±0.10	0.33±0.10	0.25±0.10	0.13±0.04
AW35	30.63±1.40	14.10±1.10	31.30±2.20	0.47±0.07	0.41±0.08	0.35±0.08	0.19±0.05

Table 6. Experimental and numerical critical load and Mod-II fracture energy values after ENF test.

Specimen	Critical load (N) Experimental	Critical displacement (mm) Experimental	Critical load (N) Numerical	G_{IIc} (N/mm) Numerical	G_{IIc} -BT (N/mm)
NW	897.80±7.65	9.52±0.39	883.20±48.30	0.21±0.01	0.19±0.01
GW35	1455.90±51.60	10.56±0.14	1569.00±117.70	0.39±0.01	0.33±0.07
GW42	1202.50±35.20	10.36±0.50	1063.00±42.90	0.27±0.02	0.28±0.02
AW35	967.00±8.60	7.60±0.04	1030.00±12.15	0.21±0.01	0.16±0.02