Apéndice A

Tabla 1. Propiedades físicas y mecánicas de fibras de fique.

Referencia	Proveedor	Diámetro de la fibra (mm)	*v* (mm/min)	Norma	σ_u (MPa)	E (GPa)	ε_u (%)
Fibra							
(González-Estrada et al., 2018)	Coohilados del Fonce Ltda Colombia	0.016	-	-	780	22.06	-
(Luna et al., 2017)	Mercado local - Colombia	(SM)	1.5	ASTM 1557-14	61–110 $\bar{x}$=85	-	-
(Amoy Netto, 2016; Teles et al., 2015)	Colombia	0.09–0.30 $\bar{x}$=0.181 (OC)	1.2	-	-	5.06–1.99	-
(Castellanos et al., 2012)	Colombia	0.2214 (OM)	96	ASTM C1557-03	$\bar{x}$=204	-	7.5
(Gómez y Vázquez 2012)	Colombia	-	2	ASTM D3379	197±65	5.7±1.8	7.7±2.9
(Mina H, 2012)	Empaques del Cauca de Popayán - Colombia	$\bar{x}$=0.237 (SEM)	1	ASTM D3822-07	261.82±31.93	8.39±1.54	6.3±2
(Delvasto et al., 2010)	Colombia	0.16–0.42 $\bar{x}$=0.236	-	-	43–571	8.2–9.1	9.8
(Maranon et al., 2009)	Producción propia - Colombia	-	-	ASTM C1557	305.15±101.13	7.56±1.94	4.96±0.86
(Contreras et al., 2009)	Ecofibras Ltda - Colombia	-	-	-	200–625.2 $\bar{x}$=305.15	5.5–25.5 $\bar{x}$=7.52	3.2–5.7 $\bar{x}$=4.96
Hilo							
(Herrera et al. 2020)	Ecofibras Ltda - Colombia	0.08158±0.02312 (SEM; MM)	1	ASTM D3822-07	424.27±138.4	24.06±6.64	-
(Revelo et al., 2019)	Agricultores locales - Colombia	1.078 ± 0.05 (SM)	5	ASTM D3822-07	-	1.875	13
(Muñoz Vélez et al., 2014)	Compañía de empaques de Medellín S.A. Colombia	-	0.635–5	ASTM D3822-07	263.44	8.64	-
(Maranon et al., 2009)	Producción propia Colombia	-	-	ASTM C1557	41.4±9.8	-	8.8±1.3
(Gañán y Mondragon 2004)	Compañía de empaques S.A. Colombia	0.05–0.2	-	-	200	8–12	4–6
(Gañan y Mondragon 2002)	Compañía de empaques S.A Colombia.	$\bar{x}$ = 0.16	5	-	237±51	8.01±1.47	6.02±0.69
Malla							
(Puentes et al., 2019)	Coohilados del Fonce Ltda Colombia	-	300	ASTM D5034-09	621.25	18.17	4.5
(Sanabria 2008)	Ecofibras Ltda Colombia	-	300	ASTM D5035	-	-	Sencilla: 25.46 ± 5.72 Doble: 13.44 ± 2.96

SM: siglas en inglés para estereomicroscopio; OC: siglas en inglés para comparador óptico; OM: siglas en inglés para microscopio óptico; SEM: siglas en inglés para microscopía electrónica de barrido; MM: siglas en inglés para microscopio metalúrgico;

Tabla 2. Uso de CID para determinar las propiedades mecánicas a tensión de mallas y materiales compuestos reforzados con mallas.

Referencia	Material	*v* (mm/min)	Cámara (Pixeles en MP)	fps	Patrón	Tamaño de subconjunto (px^2)	Espaciamiento de subconjunto (px)	Software CID
(Sahoo et al., 2022)	FRP (Híbrido de mallas de carbonoo y vidrio con resina)	2	Point Grey GS3-U3-41C6M Lente Tokima AT-XPRO MACRO 100 F 2.8 D.	5	E	-	-	VIC-2D (C)
(Yoo et al., 2022)	FRP (Carbono)	2	-	-	E	-	-	INSTRA 4D (C)
(Lim et al., 2022)	FRP (Basalto y carbono)	2	Canon 600 D (18)	0.5	E	-	3, 5, 6, 8, 10	Código desarrollado internamente (AA)
(Cerbu et al., 2021)	FRP (Malla de carbono y aramida)	1	Nikon D7200 Lente AF-S NIKKOR18-105 mm f/3.5–5.6 ED VR	1	E	31 x 31	10	-
(O'Brien y Zaghi 2021)	FRP (Vidrio-acero)	2	Dos Grasshopper3 50S5M - C USB3 Sensor 2/3" (5)	2	E	-	-	Ncorr (AA)
(Sarasini et al., 2016)	FRP (Híbrido de Carbono y lino)	1	MegaPlus EC11000	-	E	-	-	RML-Image OpenDIC (AA)
(Ramaswamy et al., 2022)	CFRP	1	LAVISION	14	E	-	-	LAVISION Strainmaster (C)
(Sun et al., 2021)	CFRP	2	-	-	E	-	-	VIC-2D (C)
(Xu et al. 2020)	CFRP	6	-	-	E	25 x 25	-	ARAMISv6.3 (C)
(Merzkirch y Foecke 2020)	CFRP	1;1.5	(4.2; 9.2)	2	E	15 x 15	6	Commercial software (C)
(García-Martin et al., 2020)	CFRP	2	Canon EOS 700D (18)	100	E	20 x 20	7	Ncorr (AA)
(Tabrizi et al., 2019)	CFRP	2	Sistema de sensor 12M	-	E	25 x 25	19	ARAMIS (C)

Referencia	**Material**	***v*** **(mm/min)**	**Cámara (Pixeles en MP)**	**fps**	**Patrón**	**Tamaño de subconjunto (px^2)**	**Espaciamiento de subconjunto (px)**	**Software CID**
(J. Xu, Wang, Han, et al., 2020)	CFRP	6	-	1	-	-	-	ARAMISv6.3 (C)
(Choi et al., 2019)	CFRP	1.5	-	-	E	-	-	ARAMIS
(X. Zhang et al., 2019)	CFRP	1 - 200	Fastcam SA1.1	Video 50	E	r = 10 px	15	Ncorr v1.2 (AA)
(Mehdikhani et al., 2018)	CFRP	1	Cámaras LIMESS	1	E	17 x 17	2	VIC-2D 2009 (C)
(Kuhn et al., 2018)	CFRP	0.5; 0.75; 1	Cámara CCD (4)	2	E	-	-	GOM ARAMIS-4 M (C)
(Ou et al., 2016)	CFRP	(3,75 - 30) $x10^4$	Phantom v7.3 (256 x 256 px)	20000	E	-	-	VIC-2D 2009 (C)
(Terrasi et al., 2016)	CFRP	0.5	Canon 650d (18)	0.2	-	64 x 64	-	MATLAB código GeoPIV (AA)
(Habibi y Laperrière 2020)	FFRP	2	Dos cámaras con sensor CCD (5)	14	E	-	-	LAVISION (C)
(Javier et al., 2019)	CFRP y GFRP	-	Photron FastCam SA1	Video 25000	E	-	-	VIC-3D (C)
(Strohrmann y Hajek 2019)	FFRP	-	Dos cámaras (5)	4-8	E	-	-	ARAMIS (C)
(Sun et al., 2018)	FRP (Híbrido de carbono y basalto)	3	Lente telefotográfico	1	E	-	-	ARAMIS (C)
(Zhang et al. 2016b)	BFRP	2.5 y (2,8 – 20) $x10^4$	Phantom v7.3	-	E	-	-	VIC-2D 2009 (C)
(Jesus et al., 2022)	MFC/PLA compuesto	1	-	1	E	-	-	ImageJ (AA)
(da Silva et al., 2022)	PU/CF	2	DSLR (12)	0.2	-	-	-	Platform MATLAB Correli (AA)
(Y. Zhang et al., 2020)	CFRP	2	-	-	E	-	-	-
(Kwiecień et al., 2018)	CFRPU, SRPU, CFRP y SRP	0.3	-	-	E	-	-	CivEng-Vision (C)

Referencia	Material	*v* (mm/min)	Cámara (Pixeles en MP)	fps	Patrón	Tamaño de subconjunto (px^2)	Espaciamiento de subconjunto (px)	Software CID
(Sharma et al., 2017)	FML/GFRP	1	Cámara CCD (2)	-	E	29 x 29	5	VIC-2D (C)
(Napoli et al., 2016)	SRP	0.6	-	-	E	-	-	-
(Sun et al., 2020)	BFRP y CFRP	2	-	3	E	-	-	ARAMIS v6.3.1 (C) VIC-2D (C)
(D'Antino y Poggi 2019)	Vidrio-FRP y Vidrio-FRCM	Epoxy = 0.504 Mortar = 0.204	(20.9)	0.2	E	1.6 x 1.6 mm	0.4 mm	VIC-2D (C)
(Estevan et al., 2022)	TRM (Vidrio, basalto y carbono)	0.2	- (16)	-	E		-	GOM Correlate (C)
(Ferrara et al., 2021)	TRM (Lino)	0.3	-	0.0625	E	-	-	-
(Trochoutsou et al., 2021)	TRM	2	Canon EOS 1100D	-	E	25 x 25	5	GOM Correlate (C)
(D'Antino y Papanicolaou 2018)	TRM (Carbono, vidrio y acero unidireccional)	0.5	(2)	1	E	-	-	-
(Grabi et al., 2022)	NFRC	2	Dos cámaras M-lite CCD (5)	14	E	-	-	LAVISION (C)
(D. Xu et al., 2019)	NFRC	1	Nikon D5100 (16)	1	E	41 x 41	9	VIC-2D (C)
(Perrier et al., 2016)	NFRC	-	-	-	E	-	-	OpenDIC (AA)
(Perrier et al., 2015)	NFRC	0.5	Lente focal 80mm (4004 x 2670 px)	-	E	100 x 100	-	Granu (selfdeveloped) (C)
(Reboul et al., 2021)	TRC	0.1	- (18)	-	E	30 x 30	20	GOM Correlate 2019 (AA)
(Saidi et al., 2021)	TRC	-	Kramer electronics VP 211 K	-	E	-	-	GOM Correlate (C)
(Li et al., 2021)	AR-vidrio TRC	2.5	Giganetix GC3851M Lente Basler (C125-1620-5M-Pf16mm)	2	E	29 x 29	5	VIC-2D (C)

Referencia	**Material**	***v*** **(mm/min)**	**Cámara (Pixeles en MP)**	**fps**	**Patrón**	**Tamaño de subconjunto (px^2)**	**Espaciamiento de subconjunto (px)**	**Software CID**
(de Souza et al., 2021)	TRC	0.1	Dos cámaras Point Grey GRAS-50S5M (5)	-	E	29 x 29	7	VIC-3D (C)
(Saidi y Gabor 2020)	TRC	0.1	Kramer electronics VP 211 K Lente KOWA LM25HC: f=25mm; F 1.8-16 Apertura entre f/6 y f/9	22	E	30 x 30	20	GOM Correlate 2018 (C)
(de Munck et al., 2019)	TRC	-	Cámara CCD Lente 8mm	-	-	21 x 21	7	-
(de Munck et al., 2018)	TRC	1	CCD Lente 17mm (2546 x 2048 px)	0.5	E	21 x 21	5	VIC-3D (C)
(Thermou et al., 2018)	Acero TRC	0.6	-	0.2	E	-	-	-
(Zhu et al., 2019)	BTRC	0.5	Cámara CCD	3	E	-	-	ImageJ (AA)
(Bilotta et al., 2017)	Vidrio, basalto y acero TRC	1	Nikon D810 lente focal 50mm Apertura f/5, ISO80 (36.3)	0.2 – 0.33	E	28 x 28	-	MATLAB (C)
(Rambo et al., 2017)	BTRC	0.4	-	-	E	-	-	VIC-2D 2009 (C)
(Sprince et al., 2021)	OPC/PVA	0.3	DSLR Apertura F/16, Exposición 1/25 s ISO-100	-	E	-	-	GOM Correlate (C)
(Homoro et al., 2020)	Vidrio FRCM	1	(2560 x 2048 px)	2	E	-	-	GOM Correlate
(Donnini et al., 2019)	Vidrio FRCM	0.5	Pixelink B371F Lente 16mm (1280 x 1024 px)	2	E	24 x 24	-	Software desarrollado internamente (C)
(D'Anna et al., 2019)	BFRCM	0.2	-	2	E	-	-	GOM Correlate (C)

Referencia	Material	*v* (mm/min)	Cámara (Pixeles en MP)	fps	Patrón	Tamaño de subconjunto (px^2)	Espaciamiento de subconjunto (px)	Software CID
(Cascardi et al., 2018)	FRCM	-	-	-	D	-	-	MATLAB (C)
(Caggegi et al., 2017)	BFRCM	0.3	Cámara CCD (5)	-	E	-	-	-
(Mezrea et al., 2017)	BFRCM	-	Blaster piA2400–17 gm=gc (5)	17	D	-	-	-
(D'Antino y Poggi 2019)	Vidrio-FRP y Vidrio-FRCM	Epóxico = 0.504 Mortero = 0.204	(20.9)	0.2	E	1.6 x 1.6 mm	0.4 mm	VIC-2D (C)
(D'anna et al., 2020)	Malla de basalto	1; 2; 3; 4	VideoXtens	3	-	-	-	-
(C. Wang et al., 2020)	Malla de acero inoxidable	1	Video extensómetro "DVE-101" (2)	Video	-	r = 40 px	1	Ncorr 1.2 (AA)
(Tekieli et al., 2017)	Mallas de carbono y vidrio	-	-	0.2	E	50 x 50	-	CivEng Vision (C) y Ncorr (AA)
(G. Wang et al., 2012)	Malla de ramina	-	Pike F032B lente focal 12-36 mm (0.3)	202	E	-	-	-
(Huether et al., 2018)	Fibra de vidrio	-	Olumpus E-M5 Mark II f/8.0, ISO200	-	E	9 x 9	-	GOM ARAMIS Professional 2016 (C)

BFRCM: siglas en inglés para cemento reforzado con fibra de basalto; BFRP: siglas en inglés para polímero reforzado con fibras de basalto; BTRC: siglas en inglés para concreto reforzado con mallas de basalto; CFRP: siglas en inglés para polímero reforzado con fibras de carbono; CFRPU: siglas en inglés para poliuretano reforzado con fibras de carbono; FFRP: siglas en inglés para plástico reforzado con fibras de lino; FML: siglas en inglés para láminas de fibras de metal; FRCM: siglas en inglés para cemento reforzado con mallas; FRP: siglas en inglés para polímero reforzado con fibras; GFRP: siglas en inglés para plástico reforzado con fibras de vidrio; LGFRPPs: siglas en inglés para polipropileno reforzado con fibras largas de vidrio; MFC/ PLA: siglas en inglés para ácido poliláctico reforzado con celulosa micro fibrilada; NFRC: siglas en inglés para compuesto reforzado con fibras naturales; OPC/PVA: siglas en inglés para mortero de cemento poroso ordinario con fibras de alcohol polivinílico al 1%; PU/CF: siglas en inglés para poliuretano reforzado con fibras de algodón; SRP: siglas en inglés para polímero reforzado con acero; SRPU: siglas en inglés para poliuretano reforzado con acero; TRC: siglas en inglés para material cementicio reforzado con textil; TRM: siglas en inglés para mortero reforzado con textil; C: comercial; AA: acceso abierto; E: estocástico; D: discreto.

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