

Tugas mandiri 1.

TABLE 2.2

Typical Values of Lamina Engineering Constants for Several Composites Having Fiber Volume Fraction  $v_f$

| Material                            | $E_1$ [Msi (GPa)] | $E_2$ [Msi (GPa)] | $G_{12}$ [Msi (GPa)] | $\nu_{12}$ | $\nu_f$ |                       |
|-------------------------------------|-------------------|-------------------|----------------------|------------|---------|-----------------------|
| T300/934 carbon/epoxy               | 19.0 (131)        | 1.5 (10.3)        | 1.0 (6.9)            | 0.22       | 0.65    |                       |
| AS/3501 carbon/epoxy                | 20.0 (138)        | 1.3 (9.0)         | 1.0 (6.9)            | 0.3        | 0.65    | — Awang Surya HM      |
| P-100/ERL 1962 pitch/carbon/epoxy   | 68.0 (468.9)      | 0.9 (6.2)         | 0.81 (5.58)          | 0.31       | 0.62    | — Ade Putra NB        |
| IM7/8551-7 carbon/toughened epoxy   | 23.5 (162)        | 1.21 (8.34)       | 0.3 (2.07)           | 0.34       | 0.6     | — Agung Pramono       |
| AS4/APC2 carbon/PEEK                | 19.1 (131)        | 1.26 (8.7)        | 0.73 (5.0)           | 0.28       | 0.58    | — Aldhithiyo Saputro  |
| Boron/6061 boron/aluminum           | 34.1 (235)        | 19.9 (137)        | 6.8 (47.0)           | 0.3        | 0.5     | — Bagus Pribadi Utomo |
| Kevlar™ 49/934 aramid/epoxy         | 11.0 (75.8)       | 0.8 (5.5)         | 0.33 (2.3)           | 0.34       | 0.65    | — Hafidh Rawi Mufti   |
| Scotchply™ 1002 E-glass/epoxy       | 5.6 (38.6)        | 1.2 (8.27)        | 0.6 (4.14)           | 0.26       | 0.45    | — Ilam Muhammad Mufid |
| Boron/5505 boron/epoxy              | 29.6 (204.0)      | 2.68 (18.5)       | 0.81 (5.59)          | 0.23       | 0.5     | — Ivani Akmal Dahlan  |
| Spectra™ 900/826 polyethylene/epoxy | 4.45 (30.7)       | 0.51 (3.52)       | 0.21 (1.45)          | 0.32       | 0.65    | — Rafi Muhammad       |
| E-glass/470-36 E-glass/vinylester   | 3.54 (24.4)       | 1.0 (6.87)        | 0.42 (2.89)          | 0.32       | 0.30    |                       |

Note: Kevlar™ is a registered trademark of DuPont Company, Wilmington, Delaware; Scotchply™ is a registered trademark of 3M Company, St. Paul, Minnesota; and Spectra™

Setiap mahasiswa harus menghitung

1. Elastic modulus arah x dan y
  2. Shear modulus
  3. Poisson ratio
  4. Shear Coupling Ratio
- Untuk sudut  $0^\circ, 15^\circ, 30^\circ, 45^\circ, 60^\circ, 75^\circ, 90^\circ$ , sesuai dengan material yang sudah dipilhkan di table 2.2.

Gambarkan grafik nya untuk

$$\frac{E_x}{E_2}, \frac{G_{xy}}{E_2}, \nu_{xy} \text{ dan } \eta_{x,xy}$$

Jawaban dikumpulkan hari ini senin 16 maret 2020, jam 14.00, silahkan di kumpulkan via WA ke no 0817255225

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