

Pengaruh susunan lamina terhadap kuat tarik komposit laminat karbon/epoksi = The effect of lamina stacking sequence on tensile strength of carbon epoxy laminate composites

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Abstrak

ABSTRAK

Interaksi yang kompleks antar lamina pada suatu laminat saat mengalami beban tarik menyebabkan perbedaan kuat tarik dan jenis kerusakan pada komposit laminat karbon/epoksi dengan susunan lamina yang berbeda. Untuk mengetahui pengaruh susunan lamina terhadap kuat tarik dan jenis kerusakan komposit laminat, 5 komposit laminat dibuat dengan metode hand lay up dengan susunan (0)5, (0/0/90)s, (0/45/-45/901/2)s, (0/45/-45/90)s dan (0/90/-45/45)s. Hasil uji tarik menunjukkan kuat tarik dari komposit laminat (0)5, (0/0/90)s, (0/45/-45/901/2)s, (0/45/-45/90)s dan (0/90/-45/45)s secara berturut-turut adalah (1988,97 ± 156,69) MPa, (1745,47 ± 19,53) MPa, (929,70 ± 32,79) MPa, (992,82 ± 26,63) MPa dan (941,86 ± 24,21) MPa. Hasil pengamatan dengan mikroskop optik pada bagian pinggir komposit laminat menunjukkan bahwa kerusakan yang terjadi pada setiap komposit laminat adalah delaminasi, retak mikro matriks dan perpatahan serat.

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ABSTRAK

A complex interaction between lamina in laminate composites when receive an applied load causes different tensile strength values and types of damage on the carbon/epoxy laminate composites with different lamina stacking sequence. To know the effect of lamina stacking sequence on tensile strength value and the types of damage, five types of laminate composites were made by hand lay up method where the stacking sequence were (0)5, (0/0/90)s, (0/45/-45/901/2)s, (0/45/-45/90)s dan (0/90/-45/45)s. The test results showed that the tensile strength value of the (0)5, (0/0/90)s, (0/45/-45/901/2)s, (0/45/-45/90)s and (0/90/-45/45)s laminates are (1988,97 ± 156,69) MPa, (1745,47 ± 19,53) MPa, (929,70 ± 32,79) MPa, (992,82 ± 26,63) MPa and (941,86 ± 24,21) MPa respectively. An observation with optical micrograph at the edge of laminate composites showed that the type of damages that occurred on that laminates were delamination, matrix microcracking and fiber breakag