

Penelitian sifat termal dan mekanik komposit serat karbon = Study of thermal and mechanical properties of carbon fiber composite

Fadhil, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20386676&lokasi=lokal>

Abstrak

[ABSTRAK

Dewasa ini penggunaan material komposit serat karbon mulai banyak digunakan dalam berbagai sektor industri karena memiliki sifat-sifat yang mampu memenuhi tuntutan teknologi, seperti ringan, tahan fatik, dan tahan terhadap temperatur tinggi. Penelitian terhadap performa komposit serat karbon baik termal dan mekanik masih jarang dilakukan. Oleh karena itu dilakukanlah pengujian untuk mengetahui hal tersebut. Komposit serat karbon yang digunakan memiliki variasi densitas berbeda yaitu 200 dan 240 gr/m². Metode yang digunakan dalam penelitian ini berbasis pada kalorimeter kerucut. Pembakaran dilakukan pada nilai fluks kalor maksimum 23,61 kW/m² dan minimum 14,15 kW/m². Pada penelitian ini juga dilakukan pengujian tarik dan SEM untuk mengetahui sifat mekanik dari komposit serat karbon. Hasil dari penelitian ini menunjukkan semakin tinggi fluks kalor, maka laju produksi kalor dari pembakaran komposit serat karbon juga meningkat dimana laju produksi maksimum yang dicapai bernilai 160-170 kW/m². Sementara itu dari pengujian mekanik didapatkan bahwa material komposit serat karbon memiliki sifat diantara ulet dan getas.

<hr>

ABSTRACT

In this present days, the use of carbon fiber composite material used widely in various industrial sectors. This happens because carbon fiber composite have good properties that can fulfill the demands of technology requirements, such as lightweight, fatigue resistant, and withstand to high temperatures. Studies on carbon fiber composites performance, especially regarding its thermal and mechanical performance, are still not observed widely. Carbon fiber composites used in this study has density of 200 and 240 gr/m². The method used in this study based on cone calorimeter. Combustion was performed onthe maximum heat flux of 23.61 kW/m² and a minimum heat flux of 14.15 kW/m². This study also used the tensile test and SEM analysis to determine the mechanical properties of carbon fiber composites. The results of this study showed that at the higher heat flux, the heat release rate (HRR) carbon fiber composites was increased withthe maximum valueof 160-170 kW/m². Meanwhile, analysis of mechanical properties showed that the carbon fiber composite material has a characteristic between ductile and brittle.;In this present days, the use of carbon fiber composite material used widely in various industrial sectors. This happens because carbon fiber composite have good properties that can fulfill the demands of technology requirements, such as lightweight, fatigue resistant, and withstand to high temperatures. Studies on carbon fiber composites performance, especially regarding its thermal and mechanical performance, are still not observed widely. Carbon fiber composites used in this study has density of 200 and 240 gr/m². The method used in this study based on cone calorimeter. Combustion was performed onthe maximum heat flux of 23.61 kW/m² and a minimum heat flux of 14.15 kW/m². This study also used the tensile test and

SEM analysis to determine the mechanical properties of carbon fiber composites. The results of this study showed that at the higher heat flux, the heat release rate (HRR) carbon fiber composites was increased with the maximum value of 160-170 kW/m². Meanwhile, analysis of mechanical properties showed that the carbon fiber composite material has a characteristic between ductile and brittle.; In this present days, the use of carbon fiber composite material used widely in various industrial sectors. This happens because carbon fiber composite have good properties that can fulfill the demands of technology requirements, such as lightweight, fatigue resistant, and withstand to high temperatures. Studies on carbon fiber composites performance, especially regarding its thermal and mechanical performance, are still not observed widely. Carbon fiber composites used in this study has density of 200 and 240 gr/m².

The method used in this study based on cone calorimeter. Combustion was performed on the maximum heat flux of 23.61 kW/m² and a minimum heat flux of 14.15 kW/m². This study also used the tensile test and SEM analysis to determine the mechanical properties of carbon fiber composites. The results of this study showed that at the higher heat flux, the heat release rate (HRR) carbon fiber composites was increased with the maximum value of 160-170 kW/m². Meanwhile, analysis of mechanical properties showed that the carbon fiber composite material has a characteristic between ductile and brittle., In this present days, the use of carbon fiber composite material used widely in various industrial sectors. This happens because carbon fiber composite have good properties that can fulfill the demands of technology requirements, such as lightweight, fatigue resistant, and withstand to high temperatures. Studies on carbon fiber composites performance, especially regarding its thermal and mechanical performance, are still not observed widely. Carbon fiber composites used in this study has density of 200 and 240 gr/m².

The method used in this study based on cone calorimeter. Combustion was performed on the maximum heat flux of 23.61 kW/m² and a minimum heat flux of 14.15 kW/m². This study also used the tensile test and SEM analysis to determine the mechanical properties of carbon fiber composites. The results of this study showed that at the higher heat flux, the heat release rate (HRR) carbon fiber composites was increased with the maximum value of 160-170 kW/m². Meanwhile, analysis of mechanical properties showed that the carbon fiber composite material has a characteristic between ductile and brittle.]