Evaluasi work life film adhesive Z-15.429 terhadap kekuatan ikatan pada spesimen trailing edge pesawat CN-235 = Work life evaluation of Z-15.429 adhesive film for bonding strength on the trailing edge specimen of CN-235 aircraft

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Abstrak

Material film adhesive yang digunakan PT Dirgantara Indonesia untuk pembuatan pesawat memiliki batas waktu penyimpanan di suhu ruang yang disebut work life. Untuk mengevaluasi work life film adhesive Z-15.429 telah dilakukan penelitian dengan tiga variasi lama penyimpanan film adhesive di suhu ruang yaitu 97.5 jam, 173 jam, dan 270.25 jam yang selanjutnya masing-masing diuji mekanik berupa shear test, peel test, dan drum peel test. Selain itu dilakukan juga uji Fourier Transform Infra Red (FTIR) untuk mengamati proses polimerisasi di suhu ruang dan pengamatan kerusakan akibat uji mekanik menggunakan mikroskop optik.

Hasil penelitian menunjukkan bahwa hanya spesimen dengan film adhesive yang disimpan selama 97.5 jam di suhu ruang saja yang memenuhi standar PT Dirgantara Indonesia dengan nilai rata-rata kekuatan geser, nilai rata-rata beban pengelupasan hasil peel test, dan nilai rata-rata beban pengelupasan hasil drum peel test berturut-turut (38.06 ± 2.16) MPa, (355.62 ± 13.36) N, dan (648.17 ± 20.71) N serta mengalami 100% kerusakan kohesif.

<hr>Adhesive film materials that are used by PT Dirgantara Indonesia for aircraft manufacturing have a time limit in room temperature storage that is called work life. To evaluate the work life of Z-15.429 adhesive films, a study was conducted for this adhesive film that was stored at room temperature within three different durations, namely 97.50, 173, and 270.25 hours. Each sample for each duration was then mechanical tested, including shear, peel, and drum peel tests. Moreover, Fourier Transform Infra Red (FTIR) was applied to observe the polymerization process of the adhesive film and optical microscope observation was conducted to study the failure of the specimens after mechanical testing.

The results showed that only adhesive film specimen which was stored for 97.50 hours in room temperature have met the PT Dirgantara Indonesia standard with the average values of shear strength, peeling load of peel, and peeling load of drum peel were (38.06 ± 2.16) MPa, (355.62 ± 13.36) N, and (648.17 ± 20.71) N respectively, with 100% of cohesive failure.