

Air Baffles Used to Minimize Air Current Influence during Cargo Liner Testing

The purpose of the initial cargo liner airflow study was to reduce the test result disparities among labs by measuring localized air velocities around the test sample, and standardizing an air velocity range, which could improve test result repeatability and reproducibility. Since the previous meeting in Atlantic City of 2017, a 6-point anemometer rig was developed and constructed that could be mounted on the cargo liner sample test rig and used to measure air velocities at multiple exhaust fan speeds under two different exhaust hood IAMFTWG Minutes 15 March 6-7, 2018 configurations. Liner samples were tested under both hoods using the same fan settings used for air velocity measurements. An analysis of the data showed the erratic air velocities measured under hood #2 caused liner sample test results to have greater peaks and valleys in the test temperature data plots.

A “shroud” device was developed and attached to the sample frame to reduce the influence of the airflow disruptions during sample testing and data results. The shroud was successfully able to reduce the variations in both air velocities around the sample and created a smoother test sample temperature data plot. One drawback of the initial shroud design was a small increase in the peak temperatures measured above the test samples as compared to test data collected without the use of the shroud. The task group members were concerned that the shroud may cause some passing materials to experience failures because of this. Additionally, the shroud obscures the visibility of the liner sample and flame penetration of the liner material and/or backside flare-up of the sample.

A new shroud design fabricated from perforated aluminum sheet metal was successfully able to reduce peak temperatures on the backside of the cargo liner sample and allow for adequate visibility of the test sample. An interlab study involving ten different test labs has been ongoing to prove the effectiveness of the shroud and if it should be added to the test method.