

Poster Presentation

Topic Area: Composites

Formaldehyde emission test methods for wood-based panels – evaluation and comparison for low formaldehyde resins Poster # 11

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Formaldehyde is a common organic compound very used as raw-material in several industrial applications, namely in urea-formaldehyde (UF), melamine-urea-formaldehyde (MUF) and phenol-formaldehyde resins (PF) production. These resins are used in the manufacture of wood-based panels for decades, playing a central role within their production and properties. In 2004, the IARC has classified formaldehyde as “carcinogenic to humans”, which forced regulation authorities from several countries and the market itself, to increase the restrictions on formaldehyde emission from wood-based panels.

The evaluation and classification of formaldehyde emissions from wood-based panels is not uniform in all producing countries. Europe, USA and Japan were pioneers in the development of test methods and defined their own standards and methods to determine the formaldehyde release using different principles and equipments. The chambers and cells methods determine the formaldehyde emission, but are very time consuming. Other derived methods, as the perforator developed for pretesting and production control, evaluate the formaldehyde content (emittable potential). There is doubt of which is more appropriate and the validity of the correlations between the different methods.

Formaldehyde emission depends on internal factors (wood furnish, resin type and composition, production process parameters, panels age, etc.) and external factors (air temperature, relative humidity and exchange rate, etc.). In this paper, we present a review on several formaldehyde test methods and release classes, as well as a comparison of results obtained at our laboratory (chamber, gas analysis, desiccator and perforator methods) for particleboard produced with low formaldehyde emission (UF and MUF) resins.