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Formaldehyde emissions get EWPA tick for safety

ON-GOING testing of formaldehyde emissions from EWPA / PAA branded engineered wood products has shown that emissions from the majority of these products are effectively zero, according to Simon Dorries, general manager of the Engineered Wood Products Association of Australasia.

When the International Agency for Research on Cancer, a division of the World Health Organisation, reclassified formaldehyde from a suspected carcinogen to a known carcinogen, concerns were raised that engineered wood products such as plywood and laminated veneer lumber that used formaldehyde based adhesives in their manufacture could be unsafe. However, these concerns are unfounded as the cancer-causing properties of formaldehyde are only evident at very high concentrations, hundreds of times greater than levels emitted from these products.

Mr Dorries believes that some of the confusion may be a result of the popular misconception that formaldehyde is an artificial man-made compound which is foreign to the environment. He stresses that nothing could be further from the truth.

“Formaldehyde is a colourless gas occurring naturally in the environment, emitted by processes such as combustion and decay,” Mr Dorries said.

“It occurs naturally in many foods we eat, is present in the air we breathe and even occurs naturally in the human body at relatively high concentrations. It is present in exhaust fumes, wood smoke, and tobacco smoke and is produced by domestic appliances such as combustion heaters.”

Mr Dorries said formaldehyde was also used widely as an ingredient in synthetic resins, industrial chemicals, preservatives and in the production of paper, textiles, cosmetics, disinfectants, medicines, paints, varnishes and lubricants. It was even present in beer.

Plywood and LVL products are manufactured using two basic adhesive types – phenol formaldehyde (Type A bond) and amino plastic (Type B, C and D) – which have quite different chemistry components.

Phenol formaldehyde bonded products, identified through their black adhesive colour and used in 90% of Australian production for structural, marine and exterior (Type A) plywood and LVL products, do not emit formaldehyde after any residual formaldehyde from the manufacturing process has flashed off

within a few days of manufacture. In the US and Europe, products bonded with phenol formaldehyde adhesives are classified as non-emitting and are exempt from formaldehyde emission regulations.

Amino plastic, including melamine urea formaldehyde and urea formaldehyde, bonded products, which are used on some difficult to glue species or in applications where the black phenolic adhesive would be disfiguring, tend to have higher residual free formaldehyde levels and can emit low levels of formaldehyde, but nevertheless still meet the world's most stringent emission limits.

Mr Dorries said testing on newly manufactured plywood and LVL from PAA certified producers showed the average formaldehyde emissions from phenol formaldehyde bonded products to be only 0.006 parts per million, with about 50% of this extremely low emission emitted naturally by the wood itself.

“Testing on aged phenolic bonded products show that emissions reduce to zero within a short time,” Mr Dorries said. He also indicated that testing on modern low emission amino plastic adhesives now in use in Australia and New Zealand had shown similar emission levels.

By contrast, the naturally occurring background concentration of formaldehyde in the air we breathe is often 0.03 ppm, which is about five times the average emission from engineered wood products, with recent studies showing formaldehyde concentrations often up to 0.08 ppm in outdoor urban air adjacent to busy roads, and measurements of passive smoke in a typical room with two smokers showing formaldehyde concentrations of up to 0.4 ppm.

Furthermore, the human body actually manufactures and metabolises formaldehyde in significant quantities each day such that formaldehyde is present in the blood stream and cells of a healthy human body at a concentration of 2 to 3 ppm,

Mr Dorries points out that although there are no legislative requirements for indoor air quality under which formaldehyde emissions from products are regulated in Australia and New Zealand, the EWPAA has introduced requirements for formaldehyde emissions into the Australian/New Zealand plywood and LVL product standards.

“As a result of these recent changes, the plywood and LVL standards now require the monitoring, certification and labelling of formaldehyde emissions to the most stringent benchmark level for products used indoors or in unventilated applications,” Mr Dorries said.

He said the industry shared the public's concerns over excessive formaldehyde in the built environment and it would continue to strive towards products with ever-reducing formaldehyde emissions.

“To this end, the industry is working closely with resin suppliers to produce and commercialise adhesive systems with even lower formaldehyde emissions and, where possible, to move to non-emitting adhesives,” Mr Dorries added.

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