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ODOUR ANALYSES IN THE ADHESIVE INDUSTRY

Odour plays an important role in the adhesive industry. The mixture of chemical compounds emitted by adhesives often contains multiple odorants. When these compounds are present in quantities above their odour threshold, the smell becomes perceivable.

The odour from a product depends on the context in which it is sniffed. A product such as a diaper can be smelled in a normal, ventilated room by putting the nose directly above the diaper. The emitted chemical compounds reach the nose and result in a perceived smell. If the diaper is smelled in the same room from a certain distance, the emitted compounds might then be diluted quickly by the surrounding air before reaching the nose. This result in a lower perception. The odour can also become more concentrated in certain situations, for example when multiple diapers are packed together in an airtight package for several weeks and even longer. This kind of scenarios also occur in other industries, for example when a car is parked in the sun and the emitted volatile organic compounds (VOCs) from all used materials concentrate inside the vehicle. If we think about these products, together with other consumer goods, many of them are manufactured with adhesives. These materials can belong to the main contributors to the odour of finished products. Therefore, during the product development of adhesives, manufacturers aim to lower their odour emissions.

Eastman continues to work to achieve and exceed consumer requirements through investments in Regalite™ UltraPure. Regalite™ UltraPure hydrocarbon resins are innovative products with low odour, low trace chemicals, and low VOCs that still retain excellent performance properties. They give formulators the freedom to formulate with styrene block copolymers or polyolefinic polymers while fulfilling industry requirements for odour and safety.

The efficacy of odour reduction methods can be measured by means of instrumental and sensory analysis. There are many parameters to choose from, and which parameters are the best depends on the research objective. If you are looking to remove a specific odour, GC-Sniffing could be used to identify the culprit and, after improvement of the product, trained panelists can let you know if you were successful in removing the odour or if it is still perceivable. When investigating at the overall odour, the most commonly used parameters are the odour intensity and hedonic tone (the pleasantness of the odour). These parameters are frequently used in sensory analysis, to compare new products to prior versions, or to competitors.

The scenario in which the products are evaluated plays an important role. As explained above, the perceived odour can be more or less intense depending on the opportunity of the VOCs to concentrate inside a confined space. During odour analyses, one can choose to test the consumers' preferences or to simulate a worst-case scenario, in which high temperatures and confined spaces are used. To test these effects, the odour of the Regalite™ S5100 and Regalite™ UltraPure 5100 products has been analyzed on odour intensity and hedonic tone, at various moments during two heating cycles.