Lamination Adhesive Breakthrough Technologies

Diisocyanates such as toluene diisocyanate and methylene diphenyl diisocyanate are respiratory and dermal sensitisers. To ensure that employees working with diisocyanates are safe, in August 2020 training and labelling requirements were implemented as part of REACH, for industrial or professional users of diisocyanates with a monomeric concentration (individually or in combinations) greater than 0.1 % by weight.

Overview

Products containing diisocyanates are normally used in large quantity in the converting industry as laminating adhesives. The potential exists for an invisible aerosol formation in some parts of the process due to the rotating coating system. For solvent-free adhesives the risk can be greater as it is common for the adhesive to be applied at an elevated temperature resulting in evaporation of diisocyanate monomer corresponding to the vapour pressure of that monomer. This creates potential risk for the operators as they are exposed to the atmosphere surrounding the coating process.

REACH / Regulatory

Responding to the REACH requirements for training and labelling requirements for industrial or professional users of diisocyanates the European adhesive trade association FEICA has launched a PU training platform, which FEICA members can use to meet the REACH obligations. From November 2021, the training will be available in English. By the middle of 2022, the training will be available in all major European languages. The platform is accessible across the EU via the website: www.safeusediisocyanates.eu. The FEICA European Executive Board made the decision to financially support the training of professional and industrial users of polyurethane (PU) adhesives and sealants.

Health and Safety

Whilst the main goal of this innovation was to ensure the health and safety of the operators using lamination adhesives, a secondary benefit is that the ULM technology results in almost zero migration of primary aromatic amines (PAA's). The specific migration limits of PAA's have been reviewed by the EU Commission and in the 15th amendment to the Plastics Regulation a number of PAA's had their migration limits reduced. The much lower migration levels of PAA's for the ULM technology have a positive benefit for consumer safety.

Additionally, ULM technology offers processing benefits such as longer pot life, viscosity stability, easier clean up, more tolerance in case of machine stops, which all contribute to the improvement of productivity (eg. adhesive waste, down time, etc).

The combination of the lower levels of PAA migration, along with the fast curing, allows converters to release packaging laminates faster to their customers without compromising on consumer safety or on pack forming integrity.

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Products

Understanding converters and consumers wish to be safe and sustainable, Sun Chemical and SAPICI have cooperated in creating a proprietary solvent-free laminating adhesive range which, thanks to its Ultra-Low Monomer (ULM) content less than 0.1%, is exempt from the needs for mandatory training. This ULM product family was designed to replace all of the applications in which solvent-free adhesive technology is currently used.

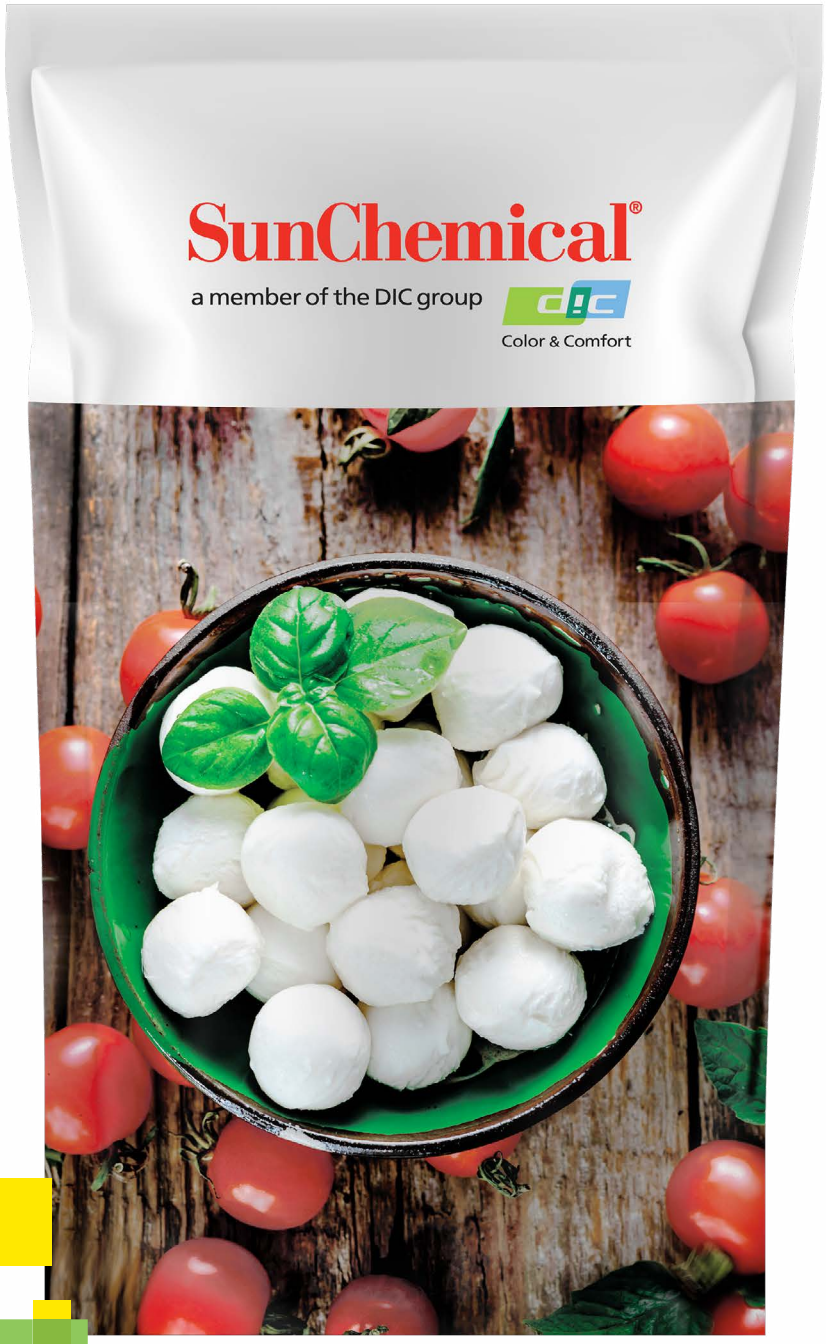
Summary

Sun Chemical and SAPICI have developed a comprehensive product portfolio of ULM family which includes:

- Full solvent-based range for multiple market application
- Full solvent free range up to low retort film-film
- Compostable SF adhesive

Continuing developments are in the R&D pipeline to further extend the product range.

In case of interest please visit our website or review with your local Sun Chemical representative.



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