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Manufacturers of low-volume customised polymers at the end of the supply chain

FEICA, the Association of the European Adhesive & Sealant Industry, is a multinational association representing the European adhesive and sealant industry. Today's membership stands at 15 National Association Members, 25 Direct Company Members and 19 Affiliate Company Members. The European market for adhesives and sealants is currently worth more than 17 billion euros. With the support of its national associations and several direct and affiliated members, FEICA coordinates, represents and advocates the common interests of our industry throughout Europe. In this regard, FEICA works with all relevant stakeholders to create a mutually beneficial economic and legislative environment.

Formulators at the end of supply chains such as adhesives and sealants manufacturers often customise polymers, which results in new polymer species.

Thus, those formulators, which are currently downstream users (DUs) under REACH legislation, may become potential polymer registrants in future if the new polymer would be subject to the obligation of registration.

Such customisation is required in order to fulfil technical feasibility and customer requirements as well as regulatory needs.

Without such customised polymers, end users would be left with products of higher hazard profile or insufficient performance.

Customising polymers may result in a huge number of new polymers to be potentially registered.

The total production volume of each individual polymer is comparatively low.

The life cycle of a single customised polymer is often less than three years depending on market developments and changes in regulatory requirements.

Costly and complex registration requirements would be a disproportionate economic, technical and organisational burden, especially for small and medium sized companies. This could destroy the established technology as adhesives and sealants widely used and their absence would be a problem for many final use sectors.

Practical examples to illustrate the topic are attached to this paper.

Background

Many formulators of adhesives and sealants (many of them SMEs), blend commercial raw materials to manufacture their products (mixtures). Therefore, under the current REACH regulation, they are acting in the role of DUs.

A considerable number of these formulators (e.g. manufacturers of adhesives and sealants), however, customise polymers from already REACH registered monomers or by reaction with other reactants resulting in new polymer species that are currently exempted from REACH

Customisation and continuous improvement of polymers is key to help customers stay competitive and flexible within a changing market and evolving regulatory requirements. As a result, many formulators produce a huge number of different polymers. A possible need to register such polymers would completely change the situation for these companies. They would no longer be just downstream users of substances but would become manufacturers of polymers.

Usually the customised polymers are used in mixtures which contain the respective monomers whose requirements for safe handling are taken over for polymer containing mixtures as a worst-case approach to ensure safe handling. Customisation leads to products with reduced hazard profile in comparison with the starting materials. Thus, without such modifications, end users would have to work with products with increased hazard profiles. Operating conditions for end uses are possibly less controlled than for industrial customisation and could give rise to significantly higher risk for workers.

Although there is a large number of customised polymers, the total production volume of an individual customised polymer is not very high, in comparison to the mass production of typical polymer manufacturers. Moreover, the life cycle of the finished good influences the life cycle of the customised polymers used. The life cycle of a single customised polymer is often less than three years, depending on market developments. A need to register these polymers 'customised downstream' would add a significant economic, technical and organisational burden on these SMEs and might also result in some products being withdrawn from the market. In that case, technology which has been established for many years in certain sectors would be seriously endangered.

It should be emphasised that the customisation of products (polymers) described here is indispensable, and costly and complex registration requirements would be a disproportionate burden for these sectors (especially SMEs).

To illustrate the range of polymers manufactured by typical formulators at the end of supply chains, some examples are listed below:

- Polyamide hot melts
- PU foams
- Thermoplastic PU (TPU)
- PUR hot melts
- PUR sealants
- PUR adhesives in liquid and pasty form
- Silicones (neutral)
- Silane-modified polymers
- Modified starch
- Modified cellulose
- Water-based polyacrylates
- Solvent-based polyacrylates
- Water-based polyurethanes
- Water-based vinylacetate homo- and copolymers
- Epoxy/amine polymers
- Polyesters (aliphatic, aromatic and of other nature) as intermediates or as adhesives itself
- Polyethers as intermediates

Three practical examples, attached to the present paper, illustrate how polymers are customised to market requirements and how big the number of affected polymers could be. See PowerPoint 'Polymers in the scope of PRR examples' [here](#).

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