

Rational behind selecting the applicable life cycle stages for the Melamine Uses Overview

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1 Background

Under the umbrella of the Reach consortium and EMPA (European Melamine producers Association), the Reach consortium has developed a rationale for selecting the applicable life cycle stages in the Melamine Uses Overview depending on the end use of melamine.

2 Introduction

According to REACH, Registrants are required to provide a “brief general description of the identified use(s)” in the technical dossier for all substances for which registration is required (Article 10(a)(iii) and Annex VI, point 3.5 REACH). The description of uses as reported in the registration dossier should therefore provide an appropriate level of information to allow understanding of what is done with the substance, in particular to support a meaningful exposure assessment of the uses. The use description includes therefore any use of the substance as such and in mixtures and any subsequent service life in articles resulting from a use. Although manufacture is not a use, it should also be described. The waste stage is not part of the use description, see figure 1.

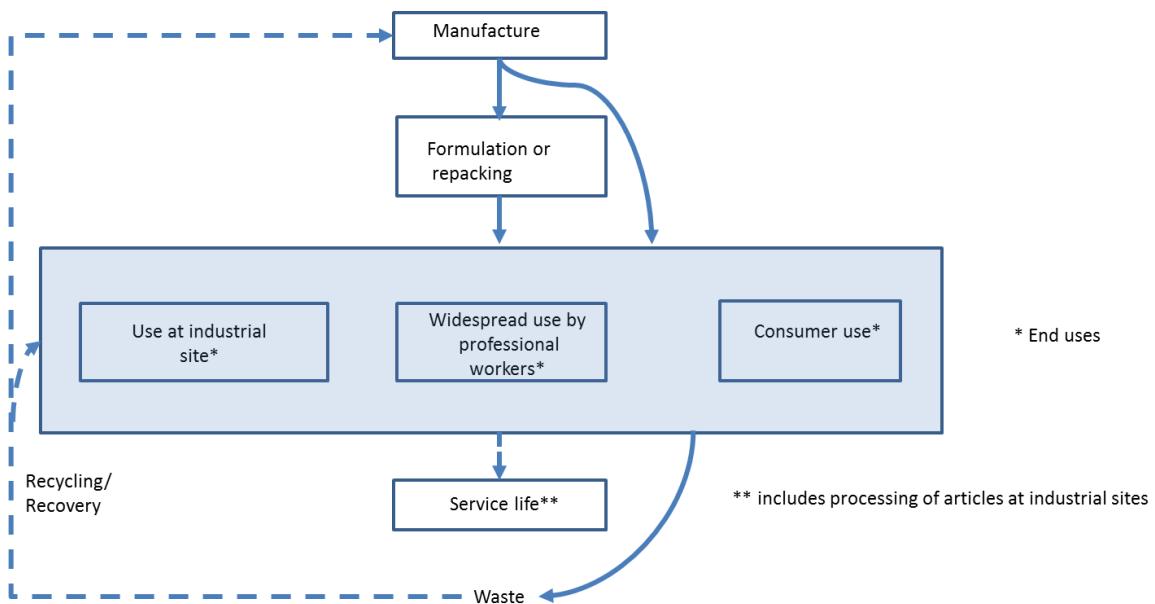


Figure 1 Illustration of life cycle concept

3 Melamine : reacted versus unreacted melamine

In order to understand which life cycle categories are applicable for melamine one has to distinguish in what way melamine ends up in the final mixture/product/article. For melamine ending up in articles, 2 categories are distinguished:

3.1 Reacted melamine (95% of the usage of melamine)

Melamine in this application is a reactant (chemical intermediate, monomer under REACH) to be transferred into a new substance. The most widely used application for reacted melamine is the formation of melamine formaldehyde resins.

Other limited volume applications for reacted melamine involves e.g. the production of melamine salts.

3.2 Unreacted melamine (5% of the usage of melamine)

Melamine in this application is not a reactant but is mixed with substances, considered as an additive, forming either an article (PU foams) or a mixture (intumescent coatings).

4 Life cycle stages

4.1 Manufacture

The life cycle stage manufacture describes the production process of melamine.

4.2 Formulation

According to the ECHA guidelines, the formulation stage corresponds to specific activities meant to produce a mixture to be put on the market. Mixing activities during end use are not to be reported under this formulation stage.

The formulation life cycle stage is not applicable for uses where melamine is used as a reactant.

The formulation stage can be applicable for unreacted melamine. In both PU foam and intumescent coating applications mixtures can be produced ending up on the market.

4.3 End use - Industrial site

Reacted melamine:

Synthesis of substances based on melamine is carried out at industrial sites:

- MF resin synthesis
- MUF resin synthesis
- Methylated/butylated resins
- Sulfonated resins
- Other

For melamine used as a reactant, the end use at the industrial site is the final life cycle stage. It is an end use for melamine since it has reacted and it does not exist anymore in its original form. The unreacted melamine (monomer) still being present in the new formed substances is considered as an impurity. The presence of unreacted melamine is unintended.

Unreacted melamine

- The production of Polyurethane foam containing unreacted melamine used as flame retardant is carried out at industrial sites.
- The production of intumescent coating containing unreacted melamine used as blowing agent is carried out at industrial sites.
- other

4.4 End use - Professional Use

This is applicable for the use of melamine as blowing agent in intumescent coatings since the coating is still a mixture and not an article.

4.5 Consumer Use

Not applicable for Melamine.

4.6 Service life

While the service life stage is not applicable for reacted melamine, service life is applicable for articles with intended use of contained unreacted melamine:

- PU foam based articles
 - Mattresses
 - Pillows,
 - Couch
- Intumescent coating based articles
 - Steel structures

4.7 Overview life cycle stages

Life cycle stage	Reacted melamine	Melamine	
	M-resins	PU foams	Intumescent coatings
Unreacted Melamine	Impurity unintended use	Additive intended use	Additive Intended use
Manufacturing	applicable	applicable	applicable
Mixing/Formulation	n.a.*	applicable	applicable
Use at industrial site	applicable	applicable	applicable
Use by Professional Workers	n.a	n.a	applicable
Consumers use	n.a	n.a	n.a
Service Life	n.a	applicable	applicable