2 Raw materials for coatings

2.1 Film formers

Film formers, which are frequently also referred to imprecisely as binders (→1.3), are polymers or oligomers (prepolymers) that are generally organo-chemical in nature and which polymerise as the coating cures. The role of the film former is to form a cohesive coating or paint film on a given substrate and – where relevant – to hold together or to embed the other non-volatile components of the coating, particularly the pigments and fillers. The film former thus constitutes the basis for the coating material in question.

Depending on their origin, film formers can be categorised into

- natural substances
- modified natural substances
- synthetic substances.

The importance of the product types increases through the above sequence. Unmodified natural substances are used in very few coatings now and never as the sole film former. With the exception of "bio-coatings" or "natural coatings", natural film formers are now used primarily in certain printing inks. Before exploring the chemistry and properties of individual film formers, it is important to establish a grounding in polymer science, which is covered in the section below.

2.1.1 General polymer science

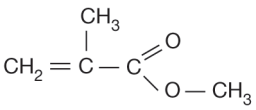
2.1.1.1 Basic concepts

The following section introduces the basic concepts of polymer chemistry that are relevant to the field of coating film formers.

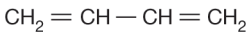
A **monomer**

is a substance consisting of small, reactive molecules that can be converted to a polymer through what is known as a polymerisation reaction (see below).

Examples:

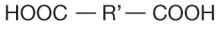


methyl methacrylate
(methacrylic acid methyl ester)



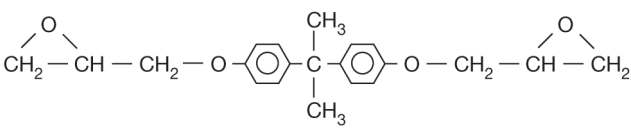
1,3-butadiene

a diol



a dicarboxylic acid

(R, R' = molecule skeleton, not otherwise specified)



bisphenol-A-diglycidyl ether (BADGE)

Brock, Groteklaes, Mischke: European Coatings Handbook
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