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Introduction

There are many excellent monographs dealing with additives for polymers. The most famous is that of Gächter and Müller, recently edited by Hans Zweifel (1, 2). Other books include the book of Murphy and others (3–7).

News and forthcoming events with regard to both additives and the techniques of incorporating them can be found in journals entitled *Plastics, Additives and Compounding* and *Additives for Polymers*.

1.1 Classification

Additives can be classified according to several criteria, i.e.:

- Field of Application,
- Chemical structure,
- Molecular weight,
- Mode of action,
- Polymer type to be used,
- Reactiveness,
- Effectiveness,
- Side effects (multipurpose action), or
- Commercial importance.

The most comprehensive classification is the classification with respect to its field of application. This kind of classification is summarized in Table 1.1.

Additives can be subdivided into chemically inert additives and chemically reactive additives. For example, plasticizers, or lubricants are not chemically reactive. On the other hand, antioxidants

Table 1.1: Classification of Additives for Polymers

Type	Usage for
Antioxidant	Service time
Light stabilizer	Service time
Acid scavenger	PVC
Lubricant	Processing aid
Processing aid	Unspecific
Antiblocking	Packaging
Slip additive	Packaging
Antifogging additive	Greenhouse
Antistatic additive	General Purpose
Antimicrobial agent	Amides, esters, urethanes
Flame retardant	Safety
Blowing agent	Foams
Modifier	Unspecific term
Controlled degradation additive	Reactive molding
Crosslinker	Reactive molding
Colorant	Beauty
Filler	Mechanical
Reinforcement	Mechanical
Optical whitener	Beauty
Coupling agent	Filler matrix coupling
Nucleating agent	Mechanical
Recycling aid	Environmental
Doping agent	Optoelectronics

are not or should not be chemically reactive when incorporated into the polymeric matrix, but they will become chemically reactive when they are starting with their protective action. The same is mostly true for a flame retardant, but this not a general rule.

In addition, there is a basic difference between additives for thermoplastic material and additives for thermosetting resins. Likewise, a curing agent and an accelerator may be considered as an additive. However, these types of additives are not usually considered as additives in the common sense, so they are not taken up into this book.

Moreover, there are additives that can be rarely found in general texts on additives. For example, additives that are used in organic light emitting diodes are usually omitted in the discussion.

Thus, the definition of what is an additive and what is not an additive is somewhat blurry. Furthermore, it does not make sense to search for an airtight definition because such a definition would be highly complicated to build and would be very difficult to understand.

References

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