

Guidance on requirements for substances in articles

June 2017
Version 4.0



Example 18: Polymer processing

In the polymer processing industry, the transition point from mixture to article is defined after the conversion of polymer pellets. The conversion process is what transforms the mixture into an article. The figure shows one example product / process which can be regarded as typical for the polymer processing industry and therefore represents also other processes like calendaring, injection moulding, etc.

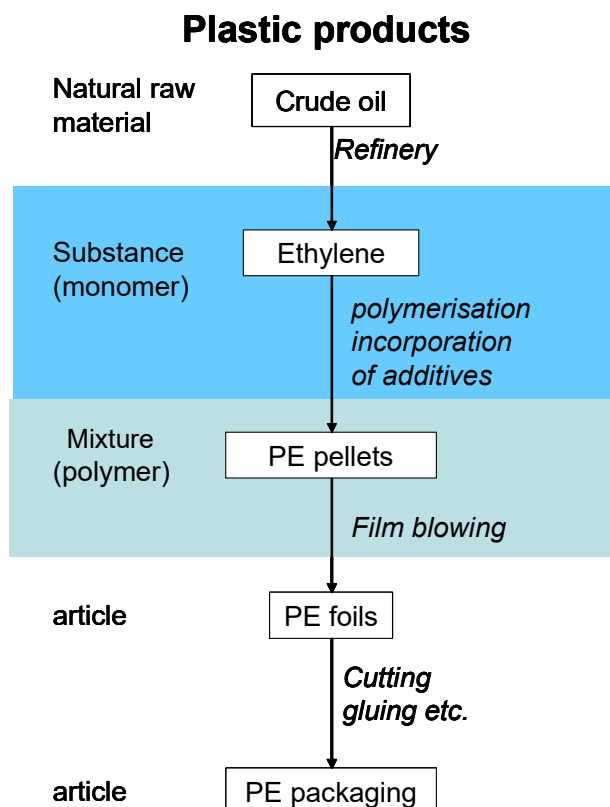


Figure 8: Transition from crude oil to plastic products

Table 16: Applying indicative questions to different stages of polymer processing

Object	Polymer pellet	PE-foils	PE packaging
Question 6a: Does the object have a function other than being further processed?	NO.	YES , direct application as packaging possible, also without further processing.	YES , packaging.
Question 6b: Does the seller place the object on the market and/or is the customer mainly interested in acquiring the object because of its shape/surface/design (and less because of its chemical composition)?	NO , the converter selects polymer pellets according to their chemical composition. The shape is not relevant.	YES , the buyer of foils is most interested in its shape. For many functions foils of different chemical composition can be used.	YES.
Question 6c: When further processed, does the object undergo only "light processing", i.e. no gross changes in shape?	NO , the conversion unit causes the deliberate formation of a shape of the polymer material, which determines its function.	YES , further processing doesn't change the design but only modifies it.	Not further processed.
Question 6d: When further processed, does the chemical composition of the object remain the same?	NO , before extrusion, additives are mixed into the raw material to obtain certain functionalities.	YES , the chemical composition of the foil itself does not change in the further processing steps, but it could be printed onto.	Not further processed.
Conclusion	substance/mixture	article	article

Whereas the polymer pellets do not have an end use function yet, the converted materials are likely to have one. In the example, the PE foil can directly be used for packaging and can also be used and modified in further processing.

In the conversion unit, the structure and design of the polymer compounds is changed. In the resulting material the design and structure is kept during further processing.

For the polymer sector, this means that processes including for example, but not limited to, pipe extrusion, film blowing, blow moulding, sheet forming, rotomoulding, foaming, compression moulding, fibre spinning or tape slitting calendaring, coating or injection moulding mark the "red line" between mixture and article.