

Special quality and testing regulations

Preform manufacturing

2-1 Scope

These special quality and testing regulations specify the contents and the extent of the requirement profile associated with preform manufacturing, with regard to 'Wertstoffkette PET Getränkeverpackungen'.

Unless specified otherwise, these special quality and testing regulations are only applicable in connection with the general quality and testing regulations, and they also apply in connection with the 'recyclate manufacturing' and 'bottle-blowing/filling' modules.

2-2 Process description - Preform manufacturing procedure

The preform manufacturing processes primarily follow the sequence given below:

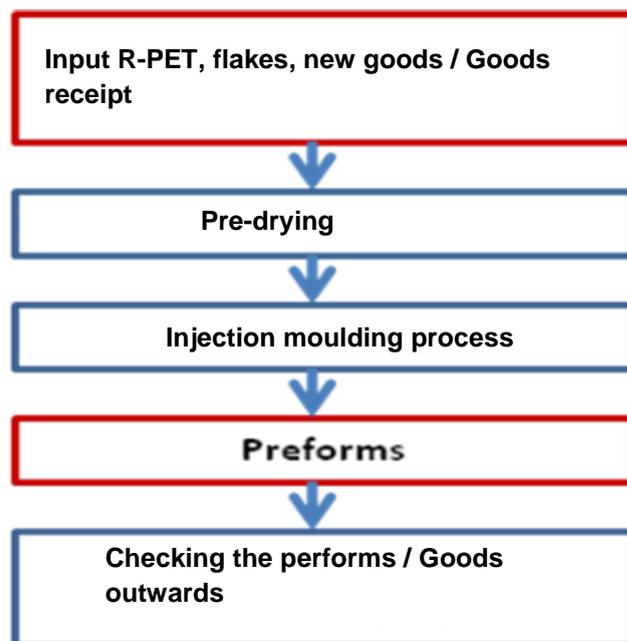


Figure 2-1: Preform manufacturing process

The actual process is preceded by the goods receipt stage, which involves the specified requirements associated with the origin and quality of the raw material (in this case, recyclates, flakes and new goods made of PET).

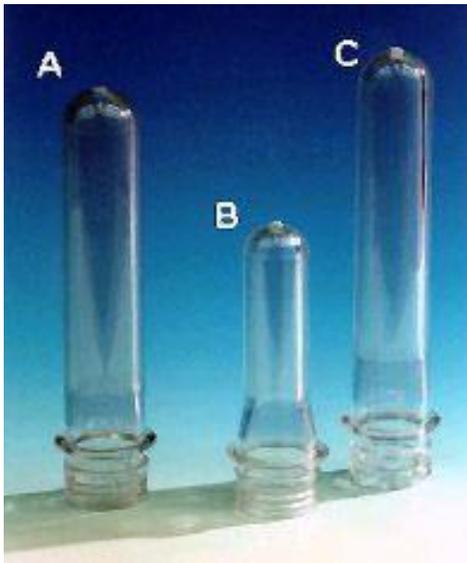
For the production of PET bottles, injection moulding machines are used to mould preforms of various sizes and weights. However, the neck and the thread section are already of the final size. These preforms are usually transported directly to the beverage filler (so that disposable bottles may be created) and inflated until the final size of the bottle is reached.

- The input materials, which may be R-PET, flakes or virgin PET, are pre-dried.

- The pre-dried material is supplied to the injection moulding machine, where it is melted.
- The melted material is injected into the tool cavities.
- The preforms that emerge from the tool mould are cooled, after which they are delivered to the bottle-filling machine in lattice boxes, cardboard packages or big bags.

A goods output point is defined at the end of the overall process.

There are various preform sizes and shapes, depending on the bottle design, the type of blowing machine, the filling material and whether the bottles are disposable or returnable bottles. Preforms are classified through the specification of their weight.



Examples	A	B	C
Weight:	47,0 g	28,0 g	40,4 g
Wall thickness:	3,7 mm	4,12 mm	3,0 mm
Length:	148,0 mm	101,4 mm	146,3 mm
Process time:	ca. 15,5 s	15,0 - 15,5 s	ca. 11,5 - 12,0 s

Figure 2-2: Preforms - Examples of preform sizes

2-3 Quality regulations

Preforms are manufactured with R-PET or, as the case may be, flakes and virgin material. The partially-used recyclates are assembled in accordance with the requirement profiles and specifications of the bottle manufacturers or beverage bottlers, which put the finished goods into commercial circulation as per the specifications. In the described process stages, the following requirement criteria should be complied with:

Control / Measuring	Quality criterion	Test method	Criterion for passing	Inspection interval
Goods receipt	Specific test report of the delivered product	Control	Alignment with product specification	Each batch
	Visual inspection of the granules	Test as per quality manual	Alignment with product specification	Each delivery
	Intrinsic viscosity IV	DIN EN ISO 1628-3	Alignment with product specification	Spot samples as per quality manual
Outgoing goods	AA content	On the basis of: ASTM D 4509:1996 ASTM D 4710:2002	Average value: ≤ 7 ppm ¹⁾	Each batch when filling is water
	Colour	DIN 5033 T 1-9; DIN EN ISO 11644, sample preparation on the basis of DIN	Alignment with product specification (preform)	Each batch
	Recyclate amount	Comparison - Parts list / Formulation	> 25%	Each batch
	Compliance with the law on articles of daily use	Migration tests on the end product	Adherence to threshold values	Test in case of modification of the formulation (inclusion of new components) - At least 1x every 2 years

1) if the recyclate amount is significantly higher than 25%, the criterion for passing changes

Table 2-1: Requirement criteria associated with preform manufacturing

2-4 Monitoring

When it comes to the monitoring regulations, Section 3 of the general quality and testing regulations applies.

2-5 Labelling

When it comes to the labelling-related modalities, section 3.7 of the general quality and testing regulations applies.

As shown in the following image, quality-certified products/services are tagged with the certification mark of the quality association, along with an additional service-related phrase:



2-6 Changes

Section 4 of the general quality and testing regulations applies to changes made to these special quality and testing regulations.