

CLAIMS

1. A method of controlling a preform for stretch blow-moulding a container with an integrally formed handle; the preform comprising a body portion and the integrally formed handle; the preform transferred from a preform supply source to a blow moulding die for blowing the container; the method including the steps of
 - passing the preform through a preform handle orientating apparatus,
 - transferring the preform to a preform transportation system,
 - maintaining orientation of the preform handle imposed by the preform handle orientating apparatus during transfer to the preform transportation system and transfer to the blow moulding die,
 - rotating the preforms during transport along the transportation system past an array of preform heating elements while shielding the integrally formed handle from excessive exposure to the heating elements,
 - transferring the preform from the transportation system to the blow moulding die, and wherein the handle comprises a loop of orientable material extending between an upper connection region and a lower connection region on the body portion of the preform; characterised in that the handle has a generally uniform cross section from proximate the lower connection region to a gradually widening cross section approaching the upper connection region; the cross section reaching and maintaining a maximum width proximate the upper connection region.
2. The method of claim 1 wherein the cross section of the handle extends from opposing outer edges towards a central line; the cross section increasing in thickness progressively from the outer edges to a maximum thickness at the central line.
3. The method of claim 1 or 2 wherein the handle includes a straight section angling downwardly from the lower connection region and an arcuate section extending from an end of the straight section to the upper connection region.
4. The method of claim 3 wherein integrally moulded first, second and third strengthening elements are provided respectively at each of the upper connection region and the lower connection region and at the junction between the straight section and the arcuate section.
5. The method of claim 4 wherein the first strengthening element at the upper connection region comprises a first curved element conforming generally in width and in cross section to the width and cross section of the handle proximate the upper connection region; the first

curved element extending from a first separate connection region below the upper connection region to merge with the handle proximate to a first end of the maximum width of the handle.

6. The method of claim 4 or 5 wherein the second strengthening element at the lower connection region comprises a straight element conforming generally in width and cross section with the width and cross section of the straight section of the handle; the straight element extending from a second separate connection region above the lower connection region to a merge with the straight section of the handle proximate the lower connection region.

7. The method of any one of claims 4 to 6 wherein the third strengthening element at the junction of the straight and arcuate sections of the handle comprises a further curved element conforming generally in width and cross section with the width and cross section of the handle adjacent the junction of the straight and arcuate sections of the handle; respective outer ends of the curved element merging with the straight and arcuate sections of the handle.

8. The method of any one of claims 4 to 7 wherein each strengthening element includes a web of orientable material within boundaries formed respectively between the body of the preform and the first and second strengthening elements, and between the third strengthening element and the straight and arcuate sections; each web of orientable material aligned with and extending equally in both directions from the central line.

9. A method of reducing strain on a supporting finger of a hand lifting a blow-moulded container; the container provided with an integral handle; the method including:

- stretch blow-moulding the container from a preform which includes an integral loop of orientable material forming the handle; the loop of orientable material extending between an upper connection region and a lower connection region,
- forming the handle with an arcuate section extending from a lower section to the upper connection region,
- widening a cross section profile of the arcuate section proximate the upper connection region to a maximum width of the handle,
- providing a strengthening element proximate the upper connection region; the strengthening element comprises a first curved element conforming generally in width and in cross section to a width and cross section of the handle

proximate the upper connection region; the first curved element extending from a first separate connection region below the upper connection region to merge with the handle proximate to a first end of a maximum width of the handle.

10. The method of claim 9 wherein curvature of the strengthening element is selected for fitting an average index finger of a human hand.
11. A handle of a stretch blow moulded container; the container blown from a preform including the handle as an integral loop of orientable material extending from an upper connection region to a lower connection region; the handle including a straight lower section and an arcuate section extending from an end of the straight lower section to the upper connection region; the handle having a generally uniform cross section from proximate the lower connection region to a gradually widening cross section approaching the upper connection region; the cross section reaching and maintaining a maximum width proximate the upper connection region.
12. A blown container formed according to the method of any one of claims 1 to 10.
13. A blown container incorporating the handle of claim 11.
14. A preform having a handle: the preform being formed in a first production step of a stretch blow moulded container; the container blown from the preform including the handle as an integral loop of orientable material extending from an upper connection region to a lower connection region; the handle including a straight lower section and an arcuate section extending from an end of the straight lower section to the upper connection region; the handle of the preform having a generally uniform cross section from proximate the lower connection region to a gradually widening cross section approaching the upper connection region; the cross section reaching and maintaining a maximum width proximate the upper connection region.