Supplier Quality Management: Bottles

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Quality parameters
The frequency of tests has been established by ASTM under Designation C-224-56 (Sampling of Glass Containers).

Tests specific to wine bottles
Annealing and cord - These tests measure composition and retained stresses in the glass.
Internal hydrostatic pressure - Test for burst pressure of the bottle.
Glass thickness - Measurement of base and sidewall glass thickness against minimum specification.
Impact test - Done as part of design evaluation
Stone counts - A count of unmelted inclusions in the glass production. These can be from contamination, batch or furnace.
Surface treatment - The tin substrate is measured but the polyethylene is only checked subjectively.
Physical parameters - Height, diameter, label panel, bore profile, weight and capacity.
Visual checks - Functional and visual faults.
Glass colour - Checked against specification for the particular glass colour.

Capacity
A general poor understanding exists on this basic parameter. The ACI specification is actually a value for cubic centimetres and not millilitres. The volume we specify is a volume of space, independent of temperature or pressure. The reason for this is based on using a standard method of calculating volume in the bottle design and mould gear design stage. We do not control what products are put in the bottles. This is the business of our customers and some are fairly exotic, e.g. sparkling Muscat.

The tolerance on capacity specified for each bottle design is stated on the bottle drawing. This tolerance is for individual bottles and does not apply to averages. The tolerance is to allow for factors of mould gear wear and control limits in the manufacturing process. The major limits on the process with regard to capacity are the glass pulling on mould opening (creating ovality) and glass movement during setting.

Currently we are instructing and encouraging our manufacturing operations to manufacture bottles to nominal specification, i.e. the average of a round of bottles should be nominal or corrected back to nominal.

Specifically with wine bottles, many of these bottles are stock bottles or the design is ‘owned’ by the Wine & Brandy Producers Association. These bottles have generally been designed around 38 mm corks. Our customers are now using a variety of cork lengths in these bottles. This generates problems with visually acceptable fill heights and vacuity.