

## **Glass composition**

### **1 White flint (clear glass)**

Colorless glass, known as white flint, is derived from soda, lime and silica. This composition also forms the basis for all other glass colors. A typical composition would be: silica ( $\text{SiO}_2$ ) 72%, from high purity sand; lime ( $\text{CaO}$ ) 12%, from limestone (calcium carbonate); soda ( $\text{Na}_2\text{O}$ ) 12%, from soda ash; alumina ( $\text{Al}_2\text{O}_3$ ), present in some of the other raw materials or in feldspar-type aluminous material; magnesia ( $\text{MgO}$ ) and potash ( $\text{K}_2\text{O}$ ), ingredients not normally added but present in the other materials. Cullet, recycled broken glass, when added to the batch reduces the use of these materials.

### **2 Pale green (half white)**

Where slightly less pure materials are used, the iron content ( $\text{Fe}_2\text{O}_3$ ) rises and a pale green glass is produced. Chromium oxide ( $\text{Cr}_2\text{O}_3$ ) can be added to produce a slightly denser blue green color.

### **3 Dark green**

This color is also obtained by the addition of chromium oxide and iron oxide.

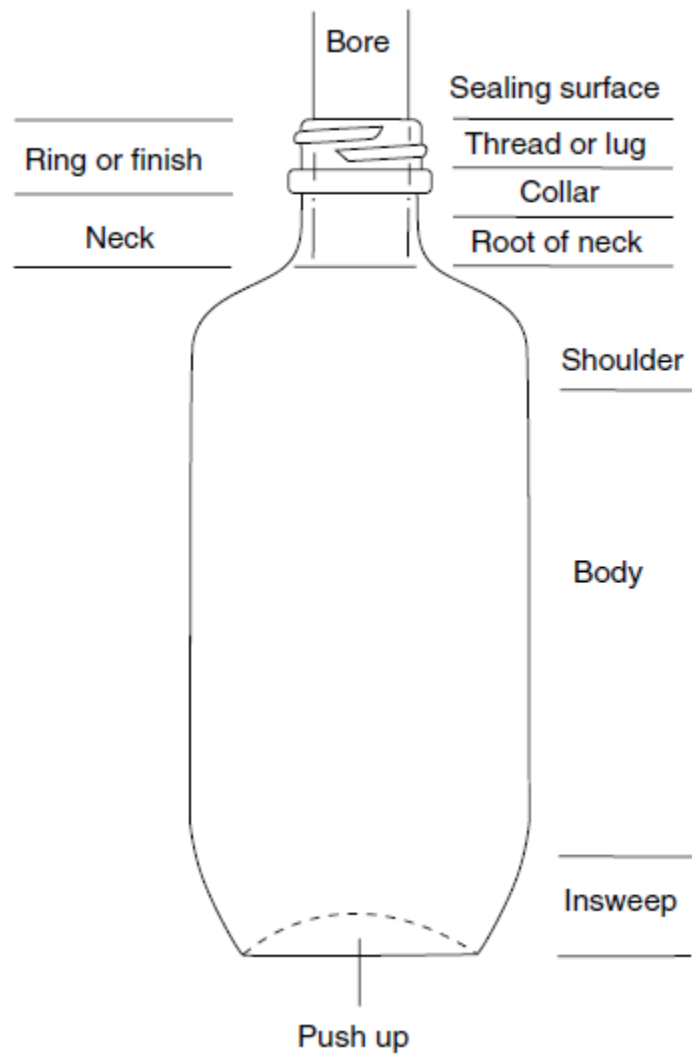
### **4 Amber (brown in various color densities)**

Amber is usually obtained by melting a composition containing iron oxide under strongly reduced conditions. Carbon is also added. Amber glass has UV protection properties and could well be suited for use with light-sensitive products.

### **5 Blue**

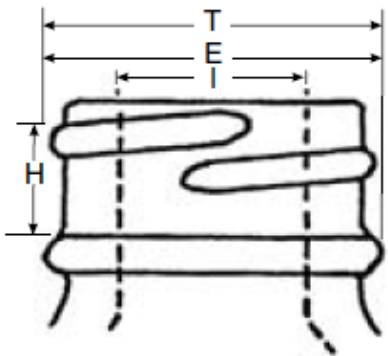
Blue glass is usually obtained by the addition of cobalt to a low-iron glass. Almost any colored glass can be produced either by furnace operation or by glass coloring in the conditioning forehearth. The latter operation is an expensive way of producing glass and commands a premium product price. Forehearth colors would generally be outside the target price of most carbonated soft drinks.

**Structure of glass container**

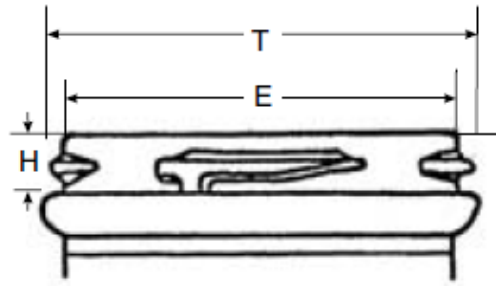


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**Bottles without neck is called Jar**



Continous thread (C.T)  
screw closure



Lug closure

- I Diameter at smallest opening inside finish
- T Thread diameter measured across the threads
- E Thread root diameter
- H Top of finish to top of bead or to intersection with bottle shoulder on beadless designs

**The nomenclature of Finish (Courtesy: The Institute of Packaging)**