

Small ball-shaped toys and other small parts

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The toy safety standard EN 71-1 contains specific requirements for toys that are small balls or contain small balls. When determining whether a ball-shaped toy presents a hazard, a template with a larger diameter than the small parts cylinder is used. The two templates reflect that small balls and small parts present different hazards.

How was the small parts cylinder developed?

The small-parts cylinder (Figure 1) has an opening diameter of 31.7mm and is used to determine whether an object can enter the airways, become lodged and thus block the flow of air and possibly cause choking. Originally, the American Academy of Pediatrics (AAP) proposed three dimensional principles to reduce choking incidents. Based on these principles, the Toy Manufacturers of America (today the Toy Industry Association) drafted a recommendation for a spherical template but also for a cylindrical template which was based on incidents involving sewing needles. The Bureau of Product Safety of the US Food and Drug Administration then combined these two templates to create the small parts test cylinder which was proposed in 1973. After various studies and reports by the Consumer Product Safety Commission, the small parts cylinder in its present shape was signed into law and became effective in 1980 in the US.

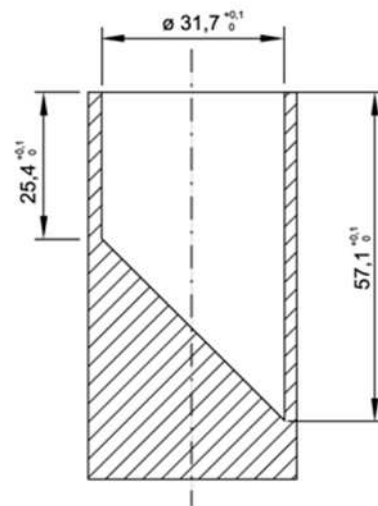


Figure 1

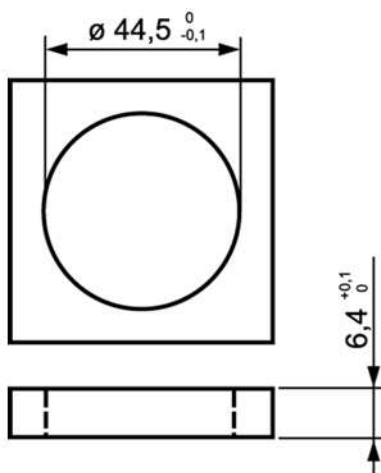


Figure 2

Why do we need a separate template for ball-shaped objects?

EN 71-1 includes a requirement that there must be no “small balls” in toys intended for children under 3 years. The ball is considered to be small if it passes entirely through a template (Figure 2) with a diameter of 44.5mm. The template is called “Template E” (the standard’s name for it) or the “small balls template”. The same template is also used to determine if a suction cup is large enough to not be dangerous for children under 3 years.

The reason for the special requirements for ball-shaped objects is that they present a different hazard than a small part. A ball in the mouth of a child can be “slippery” and slip down behind the tongue and become lodged over the

internal airways: If a ball reaches the rear part of the tongue the gagging reflex will cause the tongue to contract and relax rhythmically, thereby trying to get rid of the object by pushing it upwards/outwards. If the object is round and slippery there is a risk that it will instead rotate against the palate and move further to the rear of the mouth. The tongue might then "give up" which means that it sinks down such that the ball can become lodged below the root of the tongue. This can cause activation of the "swallowing reflex" and the ball can totally block the airways such that the child chokes (Figure 3). The shape of the ball makes it very difficult to remove and the body reflexes can no longer press the ball upwards.

The objective of using a template with a larger diameter than the small-parts cylinder (44.5mm is approximately the same diameter as that of a golf ball) is to minimise the risk that the ball can enter the mouth of a child under the age of three. As far as one knows, balls with a diameter larger than 44.5 mm have not been involved in fatal accidents.

Shapes that are very similar to the ball-shape could also present a similar hazard. Therefore, the small balls requirement covers not only spherical objects, but also slightly ovoid or ellipsoidal objects. The requirements do, however, not apply to conical-shaped items since they behave differently. Since the youngest children may have very small-sized inner airways, very small ball-shaped objects could also become lodged. This is why there is no lower limit at which a ball is considered to be safe or where it is considered to be a small part, rather than a small ball.

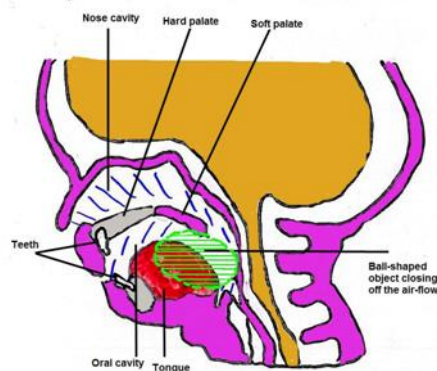


Figure 3

Small parts and balls attached to strings

Some toys have small balls attached to the toy by a string. A ball attached by a thin string can possibly still rotate in the manner described above. Therefore, balls attached to strings longer than about 30 mm¹ are also banned if they fit entirely in the small balls template. However, if the ball is attached to a spring for example, it cannot rotate freely in the same manner and will thus not present the same hazard and is not covered by the requirements.

Small parts attached to a toy by a string are, however, permitted in toys for children under three years, provided that the string does not fail the mandatory tests (e.g. the tension test) and provided that the toy with string and small parts as a whole does not fit in the small parts cylinder. It reflects that it is presumed that a small part can be removed from the mouth with the aid of the string (which might not be the case with a ball on the string since it can be more firmly lodged).

This difference in the requirements for small balls and small parts (when attached to a toy by a string that passes the tests) in practice means that it is not permitted in toys for children under 3 years to have e.g. a wooden small ball attached to the toy with a string (longer than 30 mm), but it is permitted to have e.g. a wooden cube attached to such a string. The different requirements

¹ The standard EN 71-1 includes a test for determining whether the length of the cord is acceptable or not.



are intended to reflect the available medical data regarding which objects are potentially hazardous to small children.

When a toy is not intended for children under three, but could be dangerous for such children (e.g. due to the presence of small parts or small balls), the toy or its packaging shall carry a warning indicating that the toy is unsuitable for children under three.

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