

## International / National Standards for Pen Caps & End Closures of Writing & Marking Instruments

**Safety of Pen Caps** has been discussed in our previous STR newsletters<sup>#</sup> and we now present an overview of the current applicable National / International safety standards for pen caps, summarizing their similarities and differences.

<sup>#</sup> Visit [http://www.strlab.com/www/strlab/media\\_news/theMonitor.html](http://www.strlab.com/www/strlab/media_news/theMonitor.html) for the STR Stationery News from February 2008 & May 2008.

**Table 1 - Current Applicable National / International Safety Standards for Pen Caps**

Requirements	UK		International	Japan	China
	BS 7272-1: 2008	BS 7272-1:2000 (with amendment No.1) (Withdrawn & replaced by BS 7272-1:2008)	ISO 11540:1993	JIS S 6060:1996	GB 21027-2007
<b>General requirement</b>	Clause 3.1	Clause 3.1	Clause 3.1	Clause 3.1	Clause 3.7
	Caps shall comply with the requirements of Cap Size, or Ventilated Caps Air Flow.	Caps shall comply with the requirements of Cap Size, Ventilated Caps Vent Area or Ventilated Caps Air Flow.			
<b>Cap size</b>	Clause 3.2	Clause 3.2	Clause 3.2	Clause 3.2	Clause 3.7.1
	A Cap is introduced with its main axis perpendicular to a 16 (+0.05, -0) mm diameter ring gauge of 19 mm thickness and part of the cap enters that gauge, at least 5 mm of the length of the cap shall not enter under its own weight.	A Cap is introduced with its main axis perpendicular to a 16 (+0.05, -0) mm diameter ring gauge and part of the cap enters that gauge, at least 5 mm of the length of the cap shall not pass freely through it.			
<b>Ventilated caps vent area</b>	Annex B (Informative)*	Clause 3.3	Clause 3.3.1	Clause 3.3.1	Clauses 3.7.2 & 4.6.2
	<ul style="list-style-type: none"> <li>A continuous air passage of at least 6.8 mm<sup>2</sup> shall (*should) extend for the length of the cap body.</li> <li>The cross-sectional area of the continuous air passage, if not entirely enclosed, shall (*should) be that area that would be encompassed by a thin piece of cotton thread wrapped tautly around any section perpendicular to the main axis or to the largest dimension.</li> <li>Where a clip or other protrusion is the means of providing the air passage, it shall (*should) be securely fixed and shall not be more than 2 mm short of either end of the cap body (*should extend to within at least 2 mm of each end of the cap body). However, the clip may extend any distance beyond the end of the cap body.</li> </ul>				
<b>Ventilated caps air flow</b>	Clause 3.3	Clause 3.4	Clause 3.3.2	Clause 3.3.2	Clause 3.7.3
	No specific requirement for test sample size but the following items shall be reported: <ul style="list-style-type: none"> <li>No. of caps tested;</li> <li>Airflow of each cap in both directions;</li> <li>The minimum air flows recorded;</li> <li>Size of the tubing used &amp; its % relationship to the circumscribing circle of the cap tested.</li> </ul>	No specific requirement for test sample size. Air flow test shall be performed in both directions of each cap. Report the minimum air flow recorded.	Test 10 caps in both directions, giving a total of 20 air flow results. Record separately the air flows for each cap tested. Report the minimum air flow recorded.		
<b>Marking (or Identification)</b>	Clause 4	Clause 4	Clause 4	Clause 4	Clause 6
	<ul style="list-style-type: none"> <li>Shall be legibly and indelibly marked.</li> <li>Shall contain the name, trademark or other means of identifying the manufacturer / supplier on products or its packaging or accompanying documentation.</li> </ul>	<ul style="list-style-type: none"> <li>Shall be legibly and indelibly marked.</li> <li>Shall contain the name, trademark or other means of identifying the manufacturer / supplier on products or its packaging or accompanying documentation.</li> </ul>	<ul style="list-style-type: none"> <li>Shall be legibly and indelibly marked.</li> <li>Shall contain the name, trademark or other means of identifying the manufacturer / supplier on products or its packaging.</li> <li>Reference to this international standard (i.e., ISO11540:1993).</li> </ul>	<ul style="list-style-type: none"> <li>Shall be legibly and indelibly marked.</li> <li>Shall contain the name, trademark or other means of identifying the manufacturer / supplier on products or its packaging.</li> <li>(Optional) Reference to this standard, JIS S 6060:1996, with title of standard or explanation about the compliance with that safety requirement shall be expressed.</li> </ul>	Shall comply with the requirements of GB5296.5-2006, i.e., <ul style="list-style-type: none"> <li>shall be legibly and indelibly marked.</li> <li>shall contain the product name, model number, a reference to this GB standard (i.e., GB21027-2007), name and address of the manufacturer / supplier on products or its packaging.</li> </ul>

## End Closures:

The first standard concerning the **Safety of End Closures** was published by the British Standards Institution (BSI) in September, 2000 and was recently revised in April, 2008 to the 2<sup>nd</sup> edition. So far, BS 7272-2 is the only available published safety standard for end closures. To allow suppliers with sufficient time to comply with the new edition, BS 7272-2:2008 will become effective 18 months after the publication date and the 1<sup>st</sup> edition (BS 7272-2:2000) will be withdrawn on 30 September, 2009. The similarities and differences between the 1<sup>st</sup> and 2<sup>nd</sup> editions are given in **Table 2**.

Table 2 – Summary of the Similarities and Differences between BS 7272-2:2008 and BS 7272-2:2000 for the Safety of End Closures

Requirements	UK	
	BS 7272-2: 2008	BS 7272-2:2000 (with Corrigendum No. 1) (Superseded by BS 7272-2:2008 & to be withdrawn on 30 Sept. 2009)
<b>General requirement</b>	<b>Clause 4.1</b> <i>Except for cap-like end closures and those secured by a thread, which shall confirm to the requirement of Additional Safeguard, other end closures shall conform to at least one of the requirements of Size, Security, Inaccessibility, Minimal Protrusion or Air Flow.</i>	<b>Clause 4.1</b> <i>End closures shall conform to at least one of the requirements of Size, Security, Inaccessibility, Minimal Protrusion or Air Flow.</i>
	<b>Clause 4.2</b> <i>An end closure shall not pass through a 16 (+0.05, -0) mm diameter ring gauge of at least 19 mm thickness under its own weight.</i>	<b>Clause 4.2</b>
<b>Size</b>	<b>Clause 4.3</b> <i>The end closure shall not be removed when subjected to a force of 50 (+2, -0) N applied in line with the body of the writing or marking instrument.</i>	<b>Clause 4.3</b>
	<b>Clause 4.4</b> <i>The end closure when in the form of a plug shall be completely recessed, and be reasonably secure by withstanding a minimum force of 10 N, applied in line with the body of the writing or marking instrument.</i>	<b>Clause 4.4</b>
<b>Inaccessibility</b>	<b>Clause 4.5</b> <i>The grippable surface of an end closure, when in the form of a plug, shall not extend more than 1 mm beyond the end of the writing or marking instrument and overall the end closure shall not extend more than 3 mm beyond the end of the writing or marking instrument.</i>	<b>Clause 4.5</b>
	<b>Clause 4.6</b> <i>It shall be reasonably secure by withstanding a minimum force of 10 N, applied in line with the body of the writing or marking instrument.</i>	<b>Clause 4.6</b>
<b>Air flow</b>	<b>Clause 4.6</b> <i>An end closure shall permit a minimum air flow of 8 l/min, measured at room temperature, with a maximum pressure difference of 1.33 kPa.</i>	<b>Clause 4.6</b>
	<b>Clause 4.7</b> <i>It shall be reasonably secure by withstanding a minimum force of 10 N, applied in line with the body of the writing or marking instrument.</i>	<b>Clause 4.6</b>
<b>Additional safeguard</b>	<b>Clause 4.7</b> <i>Where the end closure is in the form of a cap and fits over the barrel (instead of inside it like a plug) and its length exceeds its diameter or the end closure is secured by a screw thread but does not conform to the requirements of size, or inaccessibility, it shall meet both requirements of security and air flow.</i>	---
	<b>Clause 7</b> <i>Shall be legibly and indelibly marked.</i>	---
<b>Identification</b>	<b>Clause 7</b> <i>Shall contain the name, trademark or other means of identifying the manufacturer / supplier on products or its packaging or accompanying documentation.</i>	<b>Clause 5</b>
	<b>Clause 7</b> <i>Shall be legibly and indelibly marked.</i>	<b>Clause 5</b>