

# 10. Cable flame test methods

## Flame retardance level

Flame retardance level				
1	2	3	4	5
Not flame retardance	Electrical Appliance and Material Safety Law (<PS>E) 60° Angle	UL VW-1	UL Vertical-tray flame test	CSA FT4
		CSA FT1		
	CSA FT2	IEC 60332-1-2 (EN 60332-1-2)		

## Cable flame test methods

Flame retardance level 2 : JIS,<PS>E 60°Angle	
Test outline	Test figure
<p>Adaptation standard : JIS C 3005, &lt;PS&gt;E</p> <p>Specimen : 300mm×1</p> <p>Burner : Bunsen burner</p> <p>Burning time : ≤ 30 seconds</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Extinguished naturally within 60s(or 30s)</li> </ul>	

Flame retardance level 2 : CSA FT2	
Test outline	Test figure
<p>Adaptation standard : UL 758, UL 1581(UL 2556)</p> <p>Specimen : 250mm×1</p> <p>Burner : Laboratory burner</p> <p>Burning time : 30 seconds</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Burning speed ≤ 25mm/min</li> <li>The surgical cotton is not burned by falling object</li> </ul>	

Flame retardance level 3 : UL VW-1 , CSA FT1	
Test outline (UL VW-1)	Test figure
<p>Adaptation standard : UL 758, UL 1581(UL 2556)</p> <p>Specimen : 610mm×1</p> <p>Burner : Laboratory burner</p> <p>Burning time : Flame impinges on the specime for 15s and is then moved away for 15s. This cycle is repeated 5 times.</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Time for flaming of the specimen, after the end of each application of the burner flame ≤ 60 seconds</li> <li>Indicator flag burned ≤ 25%</li> <li>The surgical cotton is not burned by falling object</li> </ul>	
Test outline (CSA FT1)	Test figure
<p>Adaptation standard : UL 758, UL 1581(UL 2556)</p> <p>Specimen : 610mm×1</p> <p>Burner : Laboratory burner</p> <p>Burning time : Flame impinges on the specimen for 15s and is then moved away for 15s. This cycle is repeated 5 times.</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Time for flaming of the specimen, after the end of fifth application of the burner flame ≤ 60 seconds</li> <li>Indicator flag burned ≤ 25%</li> </ul>	

Flame retardance level 3 : IEC 60332-1-2 (EN 60332-1-2)	
Test outline	Test figure
<p>Adaptation standard : IEC 60332-1-2 (EN 60332-1-2)</p> <p>Specimen : 600mm×1</p> <p>Burner : The gas burner which adapts to IEC 60695-2-4/1</p> <p>Burning time : It depends on cable diameter (example : In the case of ≤ 25mm, it is 60s)</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Length from upper part support arm to the upper end of the charred part ≥ 50mm</li> <li>Length from upper part support arm to the bottom end of the charred part ≤ 540mm</li> </ul>	

Flame retardance level 4 : UL Vertical-tray flame test	
Test outline	Test figure
<p>Adaptation standard : UL 13, UL 444, UL 1581(UL 1685)</p> <p>Specimen: 2.4m×n (It depends on cable diameter)</p> <p>Burner : Ribbon burner</p> <p>Burning time : 20min</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Do not burn to the upper end of the cable</li> </ul>	

Flame retardance level 5 : CSA FT4	
Test outline	Test figure
<p>Adaptation standard : UL 13, UL 444, UL 1581(UL 1685)</p> <p>Specimen : 2.4m×n (It depends on cable diameter)</p> <p>Burner : Ribbon burner</p> <p>Burning time : 20min</p> <p>Judgment standard :</p> <ul style="list-style-type: none"> <li>Cable burned ≤ 1.5m</li> </ul>	