

20-22 Nov. 2002
12th IHRA/PS N230
Adelaide, Australia

Specification of the Headform Impactor

Japan

Proposal for the Headform Specification

- Japan MLIT -

added tolerance additional analysis

Impactor Specification	IHRA 2001 Report		Japan MLIT proposal	
	Child Headform	Adult Headform	Child Headform	Adult Headform
Mass	3.5±0.1 kg	4.5±0.1 kg	3.5±0.1 kg	4.5±0.1 kg
Diameter	165 mm		165 ±1 mm	
Moment of Inertia	shall be [0.0151]kgm ² shall be [0.0239]kgm ²		0.0075-0.0200 kgm²	0.0075-0.0200 kgm²
Location of the Accelerometer (seismic masses location)	G.C.S ± 10 mm. (G.C.S.: Geometric Center of Sphere)		In the direction of measurement axis: G.C.S. ± 10 mm. In the direction perpendicular to the measurement axis: G.C.S. ± 1 mm.	
Location of the Center of Gravity	G.C.S ± 10 mm.		G.C.S. ± 2 mm.	
Natural Frequency	-		over 5000Hz	

based on 11th IHRA discussion, and investigated the technical feasibility.

Technical Feasibility for the Headform Development

- JAMA/JARI Headform Impactor -

Impactor Specification	Japan MLIT proposal		JAMA/JARI developed headform impactor	
	Child Headform	Adult Headform	Child Headform	Adult Headform
Mass	3.5±0.1 kg	4.5±0.1 kg	3.504 kg	4.496 kg
Diameter	165±1 mm		165 mm	165 mm
Moment of Inertia	0.0075-0.0200 kgm ² 0.0075-0.0200 kgm ²		0.0089-0.0104	0.0115-0.0123
Location of the Accelerometer (seismic masses location)	In the direction of measurement axis: G.C.S. ± 10 mm. In the direction perpendicular to the measurement axis: G.C.S. ± 1 mm.		In the direction of measurement axis: G.C.S. ± 4.4-8.5 mm. In the direction perpendicular to the measurement axis: G.C.S. ± 0 mm.	
Location of the Center of Gravity	G.C.S. ± 2 mm.		G.C.S. ± 0.4mm	G.C.S. ± 0.4mm
Natural Frequency	over 5000Hz		7424 Hz	8496 Hz

All of Requirements are satisfied

After the 12th IHRA Discussion

Discussion Results for the Headform Specification

- 12th IHRA/PS meeting -

added tolerance additional analysis

Impactor Specification	IHRA 2001 Report		IHRA decision on 12th meeting	
	Child Headform	Adult Headform	Child Headform	Adult Headform
Mass	3.5±0.1 kg	4.5±0.1 kg	3.5 +/- 0.07 kg	4.5±0.1 kg
Diameter	165 mm		165 ±1 mm	
Moment of Inertia	shall be [0.0151]kgm ²	shall be [0.0239]kgm ²	0.0075-0.0200 kgm ² *	0.0075-0.0200 kgm ² *
Location of the Accelerometer (seismic masses location)	G.C.S ± 10 mm. (G.C.S.: Geometric Center of Sphere)		In the direction of measurement axis: G.C.S. ± 10 mm. In the direction perpendicular to the measurement axis: G.C.S. ± 1 mm.	
Location of the Center of Gravity	G.C.S ± 10 mm.		G.C.S. ± 2 mm.	
Natural Frequency	-		over 5000Hz	

* This range value allows different designs of impactors. For a specific design, narrower tolerance value needs to be defined.

based on 11th IHRA discussion, and investigated the technical feasibility.

2% tolerance (Child 0.07kg, Adult 0.1kg)