

The Committee for Conformity Assessment of Accreditation and Certification
on Functional and Technical Textiles

Specified Requirements of Impact Protectors for Motorcyclists'

Document No. FTTS-FP-112e

Last revised date : May 11, 2006

1.Scope :

This European Standard specifies requirements and test methods for impact protectors incorporated or intended to be incorporated into motorcycle riders' clothing or used as separate items.

2.Terminology :

2.1 impact areas: areas of the body which are at greatest risk of impact in case of accidents.

2.2 protector: an arrangement of energy absorbing and /or impact spreading materials designed to offer some protection to the impact areas.

2.3 templates: pieces of flexible material used to define test areas

2.4 test areas: areas on which impact tests are performed.

3. Requirements :

The following body regions are specified as impact areas and protectors shall be categorized as follows:

- a) shoulder: protector "S"
- b) elbow and forearm: protector "E"
- c) hip: protector "H"
- d) knee and upper tibia: protector "K"
- e) knee, upper and middle tibia: protector "K+L"
- f) the front of the leg below protector "K" protector "L"

When impact protection is tested in accordance with clause 5, the mean value of the test results shall

not exceed 35 kN and no single value shall exceed 50 kN.

4. Conditioning and testing atmosphere :

The sample shall be conditioned for at least 24h in an atmosphere with a temperature of $(20\pm 2)^{\circ}\text{C}$ and a relative humidity of $65\%\pm 5\%$. If the tests are carried out in an atmosphere different to these specified values, the tests have to be commenced within 5 min of being removed from the conditioning atmosphere.

5. Test method (Summary) :

5.1 Equipment : The apparatus shall be such that a mass (“falling weight”) may be released in order to drop along a guided vertical path onto the sample placed on a test anvil. The centre of the mass of the falling block shall lie over the center of the anvil.

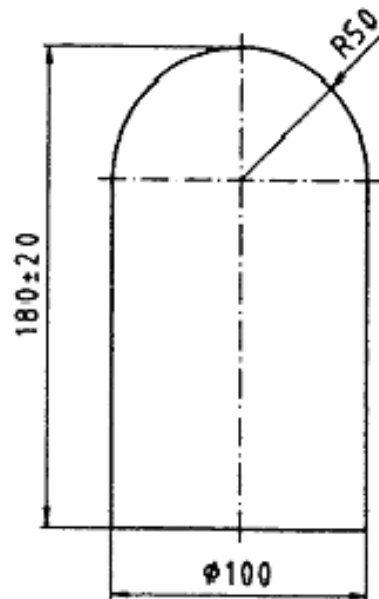
The mass shall weight (5000 ± 10) g and its kinetic energy on impact shall be 50J.

5.2 Drop striker: The striker face shall be made of polished steel with dimensions of 40mm X 80mm and 5mm radius edges.

5.3 Anvil: The anvil surface shall be hemispherical with a radius of 50mm. The anvil shall be made of polished steel and have a total height of (180 ± 20) mm (see Figure 1). The anvil shall be attached through a piezoelectric load cell to a mass of at least 1000kg. The force transducer shall have a calibrated range of not less than 200kN and a lower threshold of less than 1kN.

5.4 Template material (1): Templates shall be prepared from a non-fraying (e.g. coated) fabric of a quality which basically maintains its shape and dimensions during all use.

NOTE A suitable material is the polyurethane (PUR)-coated polyethersulfone (PES) fabric of 280 g/m^2 to 360 g/m^2 used for truck tarpaulins.



Dimension in millimetres

Figure 1 Anvil

Table 1 Dimension of the templates

Protector	Templates for type A protectors :mm			Templates for type B protectors :mm		
	r ₁	r ₂	l	r ₁	r ₂	l
S	55	32	64	70	40	80
E	45	24	118	50	30	150
K	55	24	100	70	30	130
H	32	24	64	40	30	80
L	32	24	64	40	30	80
K+L	55	24	185	70	30	240

5.5 Shape and dimensions of templates (1): The templates shall comply with the shapes specified in Figure 2 and the dimensions specified in Table 1. The manufacturer shall provide to allow it to select the appropriate size of testing template from the above table.

NOTE The type B protector dimensions are intended to cover the needs of most motorcycle riders. However, for ergonomic reasons, in certain cases the type B protectors may be unsuitable. In such cases the alternative type A protectors may be chosen by the user.

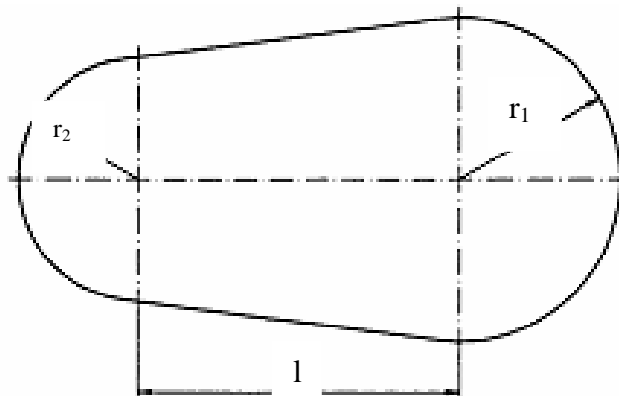
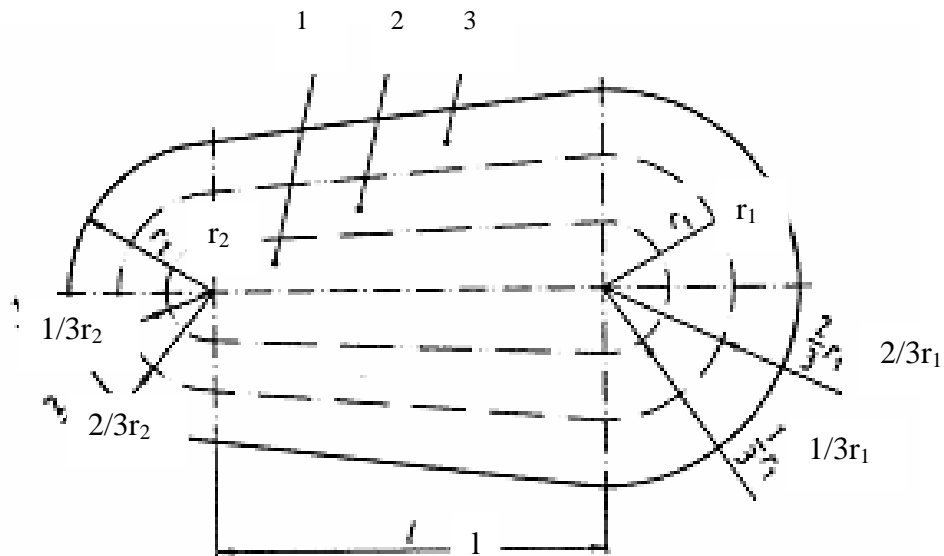


Figure 2 Shape of the templates

5.6 Test procedure :

- (1) Sampling: Protectors made to the same specification (e.g. material thickness, density etc.) can be considered as belonging to the same “family”. The test sample shall consist of three protectors from the same “family”.

- (2) Positioning of the sample: The samples shall be securely positioned on the test anvil.
- (3) Testing shall be carried out at three different points on each sample piece, at least 50mm apart within the template/ test area. Of the nine points tested, three shall be in test area A, three in test area B and three in test area C; the Figure 3 defines the three test areas on the template.



- 1 Test area A
2 Test area B
3 Test area C

Figure3 Definition of the test area

5.7 Test report :

- (1) Test results: The mean value shall be calculated from the nine measurements.
- (2) Test conditions
- (3) Test equipment
- (4) Date of test
- (5) Test method and date

6.Reference standard :

- 6.1 EN 1621-1: 1997 : Motorcyclists' protective clothing against mechanical impact-
Part 1:Requirements and test methods for impact protectors