



# FIM RACING HOMOLOGATION PROGRAMME

**FIM RACING HOMOLOGATION PROGRAMME FOR BARRIERS (FRHPba)**

## **Homologation manual FRHPba-01**

December 2020



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## GLOSSARY

<b>FRHP (FIM Racing Homologation Programme)</b>	FIM Programme that grants recognition to products related to safety and required for competitions.
<b>FRHPba (FIM Racing Homologation Programme for barriers)</b>	FIM Programme that grants recognition to barriers that meet the FIM Barrier Standard.
<b>FIM Racing Homologation</b>	Confirmation issued by the FIM as an official specification of performance for products related to safety and required for competitions.
<b>FIM Barrier Standard</b>	Ensemble of testing methods and corresponding performance criteria through which barriers are granted a FIM Racing Homologation.
<b>Applicant</b>	Legal entity applying for the FRHPba and representing the trademark. The applicant shall be the company that markets the barrier to its end-users through customary sales channels (wholesalers/retailers/direct sales) or sells and/or supplies the barrier to circuits. The Applicant may, and in many cases will, also be a barrier manufacturer.
<b>Homologation Manual</b>	Formal document that provides the Technical information and criteria, the Terms and Conditions and the Application Form of the FRHPba. The Homologation Manual, duly filled in, signed and returned by the Applicant to the FIM, represents the official application to the FRHPba.
<b>Application Form (homologation or update)</b>	Part of the Homologation Manual, to be completed by the Applicant while applying for the FRHPba.
<b>Barrier</b>	A system that is capable to absorb energy during a rider's impact.
<b>Module</b>	A single unit of a barrier
<b>APD</b>	Additional Protective Device (another name for barrier)
<b>CCP</b>	Track Racing Commission
<b>COG</b>	Centre of gravity
<b>Test Report</b>	Document issued by the Testing Laboratory that contains the test results relatively to a specific Application Form.
<b>Homologation Notice</b>	Formal document that expresses the granting of the homologation and sets out the rights licensed by the FIM.
<b>Homologation Emblem</b>	Emblem issued by the FIM together with the Homologation Notice. It includes the Applicant logo, the FIM logo, the FRHP logo, the category of product (Barriers), the Barrier Model and colour, the Homologation Manual of reference.
<b>Homologation Refusal</b>	Formal letter transmitted by the FIM to the Applicant in the

	event that homologation is not granted to an Applicant for a particular barrier.
<b>Homologation Labels</b>	Official labels provided by the FIM to the Applicant once homologation is granted.
<b>Homologation Label cost</b>	Fee associated with the purchase of official labels from the FIM related to the FRHPba.
<b>Intellectual Property Rights</b>	All trademarks, trade and business names, patents, copyright (including copyright in a computer program), database rights, design rights, registered designs, utility models, semi-conductor topography rights, inventions, know-how, confidential information and all other intellectual property and rights of a similar or corresponding nature in any part of the world, whether or not registered or capable of registration, in respect of such rights which are registrable and all applications for registration of any of the foregoing rights.
<b>Personal Data</b>	Any information relating to an identified or identifiable natural person; an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.

## I. FOREWORD

Until now, the FIM has referred solely to existing international standards for the approval of barriers for use in its competitions.

In order to take account of a more complete and demanding evaluation of performance, and give specific and exclusive recognition to barriers that meet more demanding criteria, the FIM Technical, Track Racing Commissions and Circuit Racing Commission have now launched a pioneering and unique programme, the FIM Racing Homologation Programme for barriers (FRHPba), which features the latest state of art methods of testing.

Under this programme, the FIM will grant barriers a homologation certificate and labels, which will be a mandatory prerequisite to be entitled to be used on Circuit for FIM competitions.

To obtain such homologation, the barrier will have to meet the high performance and quality standard set by the FIM.

The barrier properties will be evaluated through a test protocol which aims to trigger the development of barriers offering an optimal protection for riders. An optimal protection is understood as providing a minimised risk of slipping under the barrier or rebounding.

The FIM test approach will first assess the barrier response to dummy projection test to evaluate the energy absorption capability.

FIM Homologated barriers will be required 2028 for Track Racing FIM World Championships and Prize events. The homologation will allow the FIM to ensure a more complete and high-end protection for its riders and in particular to better track and control barriers used in FIM competitions. It will also tend to preserve the interests of the homologated barriers' manufacturers.

This document was prepared under the direction of the FIM International Technical Commission, in collaboration with the FIA and leading road barrier manufacturers. The document provides the TECHNICAL INFORMATION AND CRITERIA, the TERMS AND CONDITIONS and the APPLICATION FORM, for interested parties wishing to apply to the Programme.

This document may be subject to amendments as determined by the FIM.

## II. SCOPE

This standard aims to evaluate the safety performance of barriers intended for use in motor racing competitions. It defines appropriate test methods for measuring the performance in terms of absorption during impact of a rider.

Barriers homologated in accordance with this standard are intended to be used for Track Racing (CCP).

## III. TECHNICAL INFORMATION AND CRITERIA (FIM BARRIER STANDARD)

### III.1 ELIGIBLE BARRIERS

The barrier can be with foam or inflating system. In the case inflating system is used, it is mandatory to have a pressure regulation system with a high pressure release valve and a low pressure sensor (to inflate the system again).

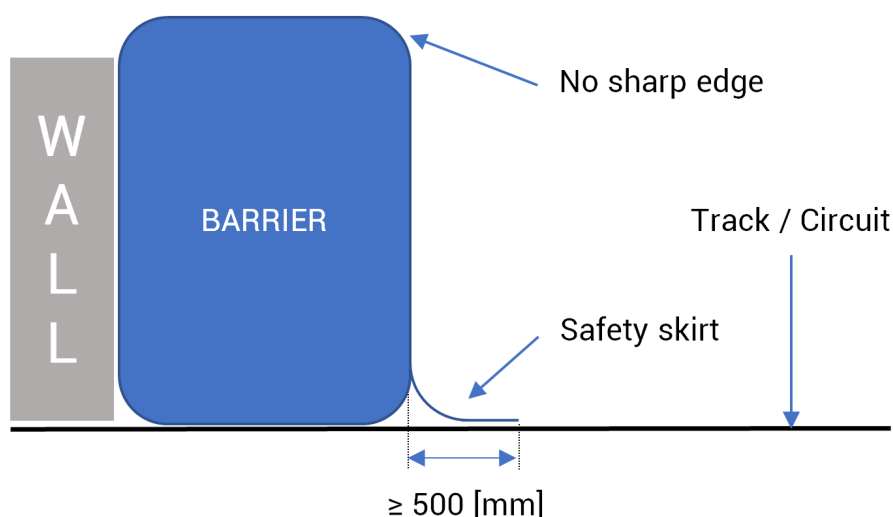


Figure 1: Schematic view of a barrier

In the case of foam barrier, the edges toward the riders must not be sharp. An assessment of this point will be carried on by the lab during homologation tests.

In case the barrier is placed at the same ground level that the track/circuit, it must be equipped with a safety skirt made out of the same material as the envelope and without any holes of a length of at least of 500 [mm].

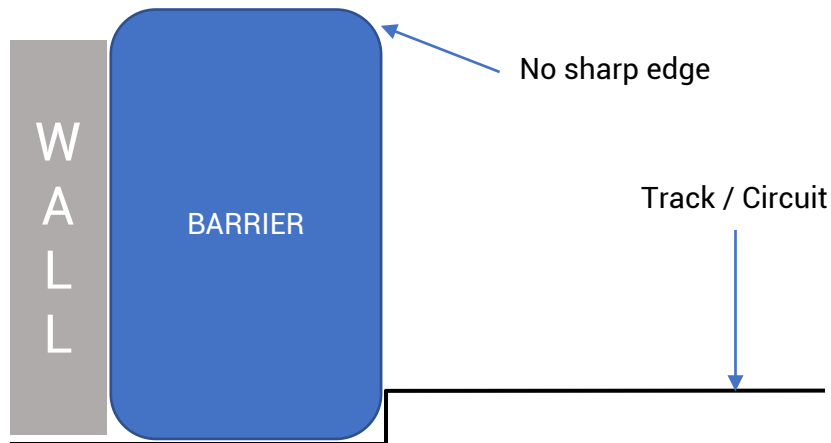


Figure 2: Schematic view of a barrier with groove on track

## III.2 PRODUCT REQUIREMENT

The barrier shall meet all the product requirements specified below in **III.2.1 Material requirement**. Any alteration of these requirements constitutes a change of product (extension), for which a FIM authorisation is required.

The barrier shall have a proper fixation method to be applied against a wall, but also between the different modules.

The FIM reserves the right to refuse the homologation if the FIM Technical Commission and the FIM Circuits Commission of FIM Track Racing Commission deem the product unacceptable.

### III.2.1 Material requirement

#### III.2.1.1 Fire resistance

All the component of the barrier shall be constructed using fire resistant materials in order to resist burning methanol and contact with a hot exhaust system. This can be demonstrated by either material data sheets or physical testing at the testing laboratory.

To perform the fire test, a piece of 60\*30 cm of each material is tested with 200 ml of pure methanol. The test has to be video recorded and a stopwatch must be clearly visible. The sample must remain in one piece without holes. The test is finished when all the methanol has been burnt.

## III.3 TESTING PROCEDURES

### III.3.1 Test site

The test site must have a rigid wall with a height of at least 1 [m] and shall have an effective length equal or longer than two third of one module of safety barrier. In case of testing the junction of two modules, the length must be at least of the length of one module.

The wall can be either flat or made out of rail guards. The wall must be straight and vertical with a tolerance of  $\pm 2$  [°] to the vertical.

## III.3.2 Crash test dummy

### III.3.2.1 CCP

The crash test dummy shall be based on the Black Tuffy body-form, specified by SAEJ944, with the following inclusions or modifications:

- Mass  $75 \pm 1$  [kg]
- Impact surface area  $0.24$  [m<sup>2</sup>]
- CoG vertical  $550 \pm 25$  [mm] from the top of the head
- CoG longitudinal Not specified
- CoG transverse Central axis of crash test dummy

## III.3.3 Instrumentation

The crash test dummy shall be fitted with a tri-axis accelerometer at the CoG. All instrumentation shall conform to SAE J211 (latest revision) and ISO/DIS 6487; 1996E with a channel frequency class (CFC) of 180 and channel amplitude class (CAC) of 500g. The sampling frequency shall be at least 10,000Hz. The time of first contact between the crash test dummy and the barrier shall be measured and recorded as Time-zero.

## III.3.4 Environmental conditions

The assessment of the influence of temperature is done by tensile tests on raw material samples at three different temperatures 0, 20 and 40 [°C]; the strength and the tensile modulus will be recorded. The values shall not differ more than 25% with the temperature of reference of 20 [°C].

## III.3.5 Pressure conditions

When testing an inflating system, the barrier must be tested at different pressures. At room temperature, the system will be tested at the lowest, nominal and higher pressure required by the manufacturer.

If the system has been designed to use only one pump for many modules, the farthest module from the pump has to be tested at least once at room temperature and at nominal pressure condition.

## III.3.6 Impact testing

A method of projecting the crash test dummy at the safety barrier shall be provided. The direction of motion shall be  $90 \pm 2$  [°] to the front face of the rigid wall. At the moment of impact the crash test dummy shall be vertical  $\pm 2$  [°] and the base shall be  $100 \pm 25$  [mm] above the ground.



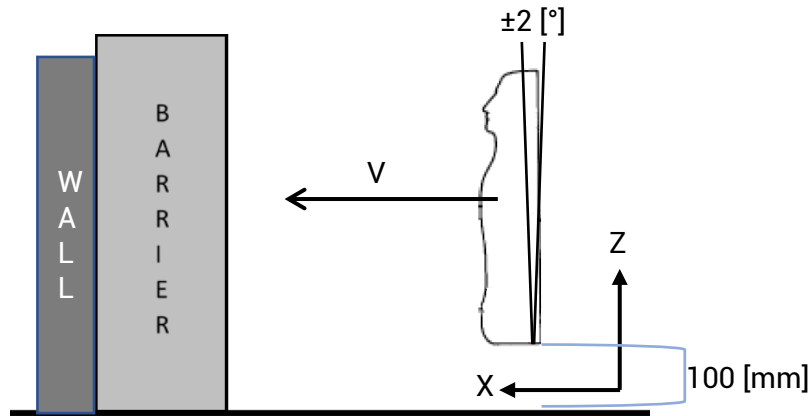


Figure 3: Side view of an impact testing

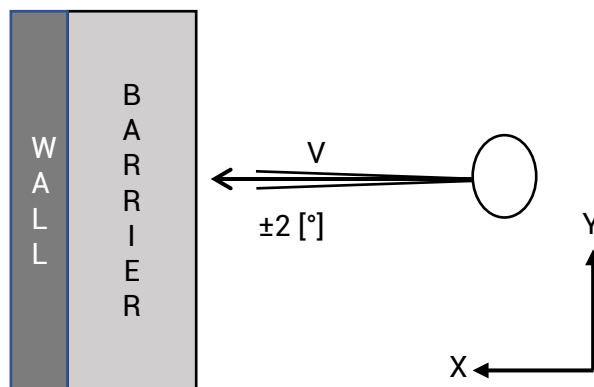


Figure 4: Top view of an impact testing

### III.3.6.1 CCP acceptance criteria

The testing speed and criteria for CCP barriers are listed in **Table 1**.

Barrier Type	Minimum speed [km/h]	Max Peak Acceleration in [g]	Min energy absorbed [J] below 20 g	Rebound energy compared to impact energy
A plus / A+	60	35	5'000	< 25%
A	52	35	4'000	< 25%

Table 1: CCP Impact requirements

### III.3.6.2 Replacing time

The replacing time should be taken also in account. After one impact test, the system has to be dismantled and remounted as it will be on circuits/tracks to mimic real life scenario. The replacing has to be below 10 minutes.

### III.3.6.3 After crash condition

The barrier has to be designed in such way that it should never seems intact with external visual inspection when a module is damaged and/or dismantled.

In automatic inflating system, an alarm (visual or acoustic) has to be implementing to warn the pressure loss. The pressure loss is considered as unable to reach the minimal pressure defined by the system.

In not automatic inflating system, if the pressure of the barrier has reached the minimum pressure required, it should be seen with visual inspection; either the barrier has lost its shape or a visual alarm is visible.

In foam system, the internal structure of the barrier should either remain in place or it should be visible from outside that the internal structure is not in place anymore.

### **III.3.6.4 Other**

The FIM reserves the right to refuse the homologation if the FIM Technical Commission and the FIM Circuits Commission or the FIM Track Racing Commission deems the product unacceptable.

## **III.4 TEST REPORT**

The test report should include all the information recorded as a result of the performance assessment of the barrier. Additionally, the test report should include at least the following information about the test site:

- a) Photograph of the test site location;
- b) A complete listing of the test equipment, which shall include instrument accuracy and calibration dates;
- c) Photographs of the barrier and annotation of the batch number and date of manufacture;
- d) Any additional information requested at the discretion of the FIM.

## **III.5 FIM MARKING AND LABELLING**

Each barrier having passed the requirements of this standard will have to be clearly marked and labelled as prescribed below:

- a) Marking, as specified below.
- b) FIM Label, which include a FIM hologram, to be sewed onto the barrier. The FIM Label must be exclusively purchased from the FIM.

The marking shall be affixed or printed onto each barrier container, and be clearly visible and remain so for the expected use and lifetime. It shall contain at least the following information:

- a) FIM Standard Name;
- b) Name of the Manufacturer, which could be replaced by its logo (if not already present);
- c) Batch number (if not already present);
- d) Date of Manufacture (if not already present);
- e) Expiry date (if not already present).

The manufacturer is required to provide the FIM with the following details for each batch of FIM homologated barrier:

a) Documentary evidence that each production batch has undertaken factory production control tests, as specified in **III.6.3 FACTORY PRODUCTION CONTROL TEST RECORDS** of this standard.

The manufacturer is required to provide the following documentation with each delivery:

- a) Installation guidelines;
- b) Handling and Storage Guidelines;
- c) Barrier Removal Guidelines;
- d) Disposal Guidelines;
- e) FIM Homologation Certificate, based on the template provided by the FIM.

Upon request by the manufacturer, the documents listed above can be electronically stored on the FIM database and accessible to anyone when scanning the QR-Code.

## **III.6 MANUFACTURER'S GUIDELINES FOR INSTALLATION, STORAGE AND DISPOSAL**

The additional information included herein must always be provided with each delivery of FIM homologated barrier. It is possible to provide the same information in electronic version.

### **III.6.1 LIFETIME OF MODULES**

#### **III.6.1.1 CCP**

The maximum lifetime of the module is five years, in the only condition that the module is not damaged. After this period the lifetime can be extended twice by one year. After seven years the module cannot be used anymore.

### **III.6.2 MANUFACTURER'S INSTALLATION GUIDELINES**

The manufacturer's application guidelines shall include at least the following information:

- a) Barrier preparation and installation
- b) Method to fix the barrier (if applicable) to the wall
- c) Method to fix two (or more) modules together
- d) For inflated barriers: method to connect pipes and module to the pump

### **III.6.3 MANUFACTURER'S GUIDELINES FOR STORAGE AND DISPOSAL**

The manufacturer's guidelines for storage must prescribe correct procedures to prevent damage or deterioration when the barrier is left on track or stored between the races.

The manufacturer's guidelines for disposal must prescribe correct procedure to eliminate the barrier and all the accessories (including pipes, pumps....)

### III.6.4 FACTORY PRODUCTION CONTROL TEST RECORDS

The manufacturer must declare to have undertaken factory production control (fpc) tests. Every five year the module has to be retested at normal condition only at the middle of the module. If the values differ more than 25% from the homologation tests, the complete series of tests has to be done again to prove compliance.

## V. APPLICATION FORM (HOMOLOGATION) / FRHPba-01

To be filled in *for each Barrier Model* and returned by e-mail to [frhp@fim.ch](mailto:frhp@fim.ch)

<b>(1) Applicant's information</b>	
(1.1) Name	
(1.2) Address (road, city, ZIP code, country)	
(1.3) E-mail	
(1.4) Phone	
(1.5) Commercial trade mark(s)	
(1.6) Contact name	
(1.7) VAT number/Legal registration number	
<b>(2) Manufacturer's information</b>	
(2.1) Name	
(2.2) Address (road, city, ZIP code, country)	
(2.3) E-mail	
(2.4) Phone	
(2.5) Contact name	
<b>(3) Barrier Model</b>	
(3.1) Commercial name(s)	
(3.2) Date of manufacture (mm, yyyy)	
(3.3) Size(s)	
(3.4) Fixation method	
(3.5) List of material	
(3.6) Material of the envelope	
(3.7) Fixation method(s)	
(3.8) Wished amount of Homologation labels (per year)	

**(4) Documents to be mandatorily annexed**

(4.1) Tests reports for <b>Fire Resistance</b> (if applicable) or raw material certificate
(4.2) Communication and guidelines for installation, storage, lifetime and disposal
(4.3) Photos of the module

By signing this Application Form (homologation), the undersigned Applicant attests to the accuracy of the information provided and that the Samples submitted (in all types) are fully consistent with the indications set forth on the Application Form.

Applicant's representative

\_\_\_\_\_

Name

\_\_\_\_\_

Signature

On \_\_\_\_/\_\_\_\_/\_\_\_\_

## VI. APPLICATION FORM (UPDATE ONLY) / FRHPba-01

To be filled in for each Barrier Model and returned by e-mail to [frhp@fim.ch](mailto:frhp@fim.ch)

<b>(1) Applicant's information</b>	
(1.1) Name	
(1.2) Address (road, city, ZIP code, country)	
(1.3) E-mail	
(1.4) Phone	
(1.5) Commercial trade mark(s)	
(1.6) Contact name	
(1.7) VAT number/Legal registration number	
<b>(2) Manufacturer's information</b>	
(2.1) Name	
(2.2) Address (road, city, ZIP code, country)	
(2.3) E-mail	
(2.4) Phone	
(2.5) Contact name	
<b>(3) History (to be filled by FIM)</b>	
(3.1) Application Form (homologation) of reference	
<b>(4) Barrier Model</b>	
(4.1) Commercial name(s)	
(4.2) Date of manufacture (mm, yyyy)	
(4.3) Size(s)	
(4.4) Fixation method	
(4.5) List of material	
(4.6) Material of the envelope	
(4.7) Fixation method(s)	
(4.8) Wished amount of Homologation labels (per year)	

**(Please indicate items for each Barrier Type if they differ)**

<b>(5) Reason for update</b>	
(5.1) Update <input type="radio"/> trademark(s) <input type="radio"/> commercial name(s) <input type="radio"/> guide lines <input type="radio"/> materials <input type="radio"/> others (please specify: _____ _____	

<b>(6) Tests requested (to be filled in by FIM)</b>	

<b>(7) Documents to be mandatorily annexed (for each Barrier model)</b>	
	(4.1) Tests reports for <b>Fire Resistance</b> (if applicable) or raw material certificate
	(4.2) Communication and guidelines for installation, storage, lifetime and disposal
	(4.3) Photos of the module

By signing this Application Form (update), the undersigned Applicant attests to the accuracy of the information provided and that the Samples submitted (in all types) are fully consistent with the indications set forth on the Application Form.

Applicant's representative

\_\_\_\_\_  
Name Signature

On \_\_\_/\_\_\_/\_\_\_