FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

TECHNICAL RULES
HARD ENDURO

2022

RÈGLEMENTS TECHNIQUES
HARD ENDURO

FIM
HARD ENDURO
WORLD CHAMPIONSHIP

Technical Rules Hard Enduro

2022

Règlements Techniques Hard Enduro

YEAR 2022		
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DIAGRAMS

Any references to the male gender in this document are made solely for the purpose of simplicity and refer also to the female gender except when the context requires otherwise.

01.01 INTRODUCTION

The term motorcycle covers all vehicles having, in principle, less than four wheels, propelled by an engine and designed essentially for the carriage of one or more persons of which one is the rider of the vehicle. The wheels must normally be in contact with the ground except momentarily or in certain exceptional circumstances. Furthermore, in order to traverse certain surfaces one or all of the wheels can be replaced with skis, rollers or chains.

01.03 FREEDOM OF CONSTRUCTION

A motorcycle must conform to the requirements of the FIM regulations, to the Supplementary Regulations, as well as to a number of specific conditions that the FIM may require for certain competitions. No restriction is placed on the make, construction or type of motorcycle used.

01.05 CATEGORIES AND GROUPS OF MOTORCYCLES

For FIM Hard Enduro World Championship there are accepted followed category and group:

All solo motorcycles (Group A) must be constructed in such a way that they are entirely controlled by a rider

Category I
Vehicles propelled by a thermal engine and by the action of only one driving wheel in contact with the ground in only one direction.

Category II
Vehicles propelled by an electrical engine and the action of only one driving wheel in contact with the ground in only one direction (see Art. 01.50).

01.07 CLASSES

For FIM Hard Enduro World Championship there are no classes.

01.11 MEASUREMENT OF CAPACITY

11.11 Reciprocating movement engine, "Otto" Cycle

The capacity of each engine cylinder is calculated by the geometric formula which gives the volume of a cylinder; the diameter is represented by the bore, and the height by the space swept by the piston from its highest to lowest point:

$$\text{Capacity} = \frac{D^2 \times 3.1416 \times C}{4}$$

where D = bore
and C = stroke

When a cylinder bore is not circular the cross sectional area must be determined by a suitable geometrical method or calculation, then multiplied by the stroke to determine capacity.

When measuring, a tolerance of 1/10 [mm] is permitted in the bore. If with this tolerance the capacity limit is exceeded for the class in question, a further measurement should be taken with the engine cold, to 1/100 [mm] limits.

11.13 Rotary engines

The capacity of an engine which determines the class in which the motorcycle shall compete in a meeting shall be calculated by:

$$\text{Capacity} = \frac{2 \times V}{N}$$

where V = total capacity of all the chambers comprising the engine
and N = number of turns of the motor necessary to complete one cycle in a chamber.

This engine is classified as a 4-stroke.

11.15 Wankel system

For Wankel system engines with a triangular piston, the capacity is given by the formula:

$$\text{Capacity} = 2 \times V \times D$$

where V = capacity of a single chamber
and D = number of rotors

This engine is classified as a 4-stroke.

01.17 SUPERCHARGING

Supercharging by means of a device of any kind is forbidden in all meetings.

An engine whether 2-stroke or 4-stroke coming within any one of the recognised classes (determined by the capacity of the working cylinder) shall not be considered as supercharged when in respect of one engine cycle, the total capacity measured geometrically, of the fuel charging device or devices, including the capacity of the

working cylinder (if used for injecting the fuel), does not exceed the maximum capacity of the class in question.

01.18 TELEMETRY

Information must not be transmitted in any way to or from a moving motorcycle.
An official signalling device may be required on the machine.
Automatic lap timing devices are not considered as “telemetry”.
Automatic lap timing devices must not disrupt any official time keeping methods and equipment.

01.19 MOTORCYCLE WEIGHTS

At present, there are no minimum weight limits for motorcycles. Minimum weight limits may be introduced in the future.

01.21 DESIGNATION OF MAKE

When two manufacturers are involved in the construction of a motorcycle the name of both must appear on the machine as follows:

- The name of the chassis manufacturer
- The name of the engine manufacturer

01.23 DEFINITION OF A PROTOTYPE

A prototype motorcycle is a vehicle which must conform to the safety requirements as required by the FIM Sporting Code and Appendices applicable to the type of competition for which it is to be used.

01.25 GENERAL SPECIFICATIONS

The following specifications apply to all vehicles of the groups indicated and to all types of competitions except where otherwise stated in the corresponding section of the FIM Sporting Code.

They should also be applied to all national competitions unless the FMNR (National Motorcycling Federation) has otherwise directed.

Further specifications for some competitions may also be required and these will be detailed in either the appropriate FIM Appendix or in the Supplementary Regulations for the competition in question.

Concerning material verification, in case of doubt, a sample or the part in question shall be taken and analysed at a Material Testing laboratory.

25.01 Use of titanium

The use of titanium alloy in the construction of the frame, the front forks **(refered only to structural parts: legs, tubes, etc)**, the handlebars, the swinging arms, the swinging arm spindles, and the wheel spindles is forbidden.

The use of light alloys for wheel spindles is also forbidden.

The use of titanium alloy nuts and bolts is allowed.

25.03 Carbon fibre

The use of carbon fibre reinforced materials is authorised (with the exception of handlebars and wheel rims).

25.04 Ceramic materials

The use of ceramic parts is forbidden.

25.05 Other equipment

No signal of any kind may pass between a moving motorcycle and any person, including radio and Bluetooth communication. The exception is for the signal from the time keeping transponder, automatic lap timing devices or from the approved on-board cameras (with prior written approval from the Championship Promoter/Organiser, which cannot be granted for helmet mounted cameras).

25.06 Number of cylinders

The number of cylinders in an engine is determined by the number of combustion chambers.

25.07

If separate combustion spaces are used they must be connected by an unrestricted passage of minimum cross sectional area at least 50% of the total inlet port area.

01.26 DEFINITION OF A FRAME OF A SOLO MOTORCYCLE

The structure or structures used to join any steering mechanism at the front of the machine to the engine/gear box unit and to all components of the rear suspension.

01.27 STARTING DEVICES

Starting devices for the engine are compulsory.

01.29 OPEN TRANSMISSION GUARDS

A guard must be fitted to the countershaft sprocket

29.01

If the primary transmission is exposed, it must be fitted with a guard as a safety measure. The guard must be designed so that rider or the passenger cannot under any circumstances come into accidental contact with the transmission parts. It must be designed to protect the rider or passenger from injuring his fingers.

29.04

A chain guard must be fitted in such a way to prevent trapping between the lower chain run and the final driven sprocket at the rear wheel.

01.31 EXHAUST PIPES

Exhaust pipes and silencers must fulfil all the requirements concerning sound control (see also Art. 01.79).

31.01

The axis of the silencer end must be parallel (tolerance 15°) to the two principal longitudinal planes of the vehicle. The extremity of the silencer must not pass the vertical tangent of the rear tyre.

31.02

The edge of the silencer shall not be dangerous in case of accidental contact with the riders or helpers. If the final tube protrudes more than 3 [mm], the edge must be rolled to an angle of 180° or radiused (see pictures below). In both cases, the edge thickness shall be 3 [mm] minimum. See Figure 1

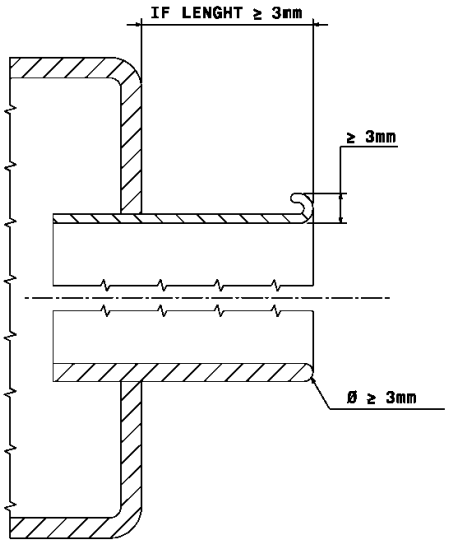

Figure 1

31.03

Exhaust fumes must be discharged towards the rear but not in such a manner as to raise dust, foul the tyres or brakes, or any other rider.

31.04

Any valve systems installed on the exhaust system with a view to influencing (or modifying) the sound level meter test is forbidden. Only exhaust valve systems (e.g. EXUP) provided by the manufacturer on the manifold are authorised. The setting is free.

01.33 HANDLEBARS

33.01

The width of handlebars must be not less than 600 [mm] and not more than 850 [mm] (see Figure 2).

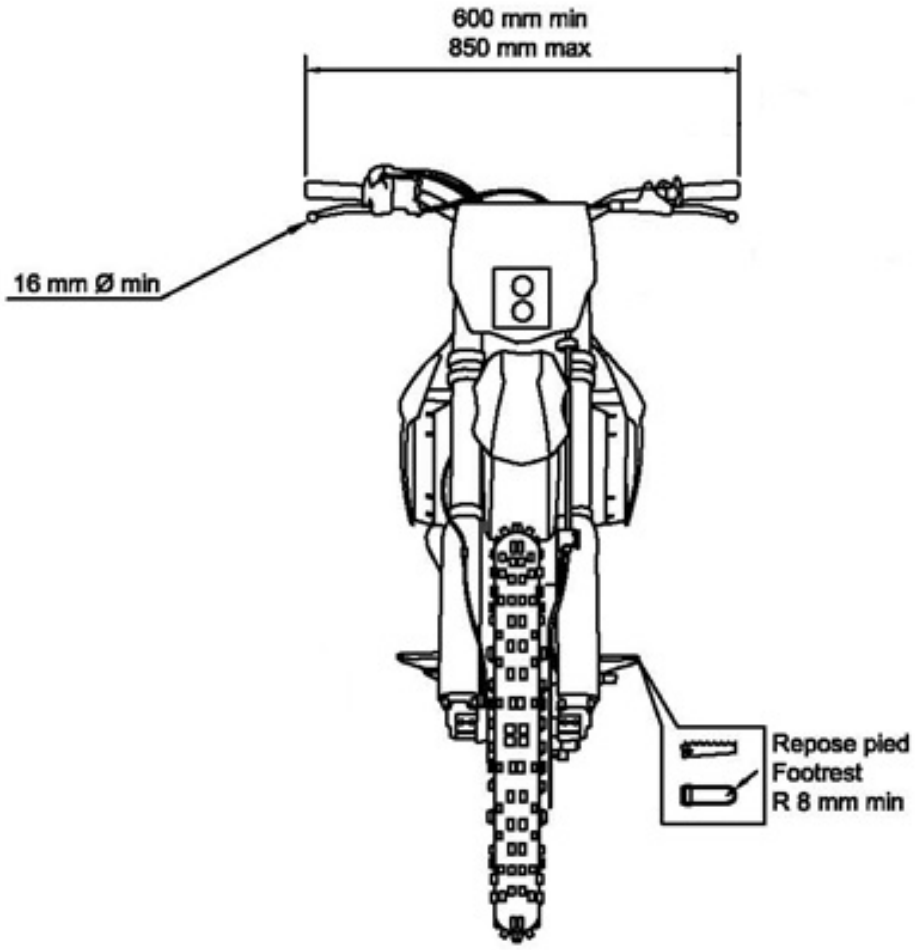

Figure 2

33.02

The handlebars must be equipped with a protection pad on the cross bar. Handlebars without a cross member must be equipped with a protection pad located in the middle of the handlebars, covering widely the handlebars clamps.

33.03

Handlebar clamps must be very carefully radiused and engineered to avoid any fracture points in the handlebar.

33.04

Exposed handlebar ends must be plugged with a solid material or rubber covered.

33.06

When hand protectors are used, these must be made of a shatter-resistant material and have a permanent opening for the hand.

33.07

Handlebars made of composite materials are not authorised.

33.08

Repair by welding of light alloy handlebars is prohibited.

33.09

Solid stops (when on full-lock, other than steering dampers) must be fitted. These must ensure a minimum clearance of 30 [mm] between the handlebar with levers and the tank to prevent trapping the rider's fingers.

01.35 CONTROL LEVERS

35.01

All handlebar levers (clutch, brake, etc.) must be in principle ball ended (diameter of this ball to be at least 16 [mm]). This ball can also be flattened, but in any case, the edges must be rounded (minimum thickness of this flattened part 14 [mm]). These ends must be permanently fixed and form an integral part of the lever. (see Figure 2). If the gear lever consists of a tube, then its edge must be rounded.

35.03

Each control lever (hand and foot levers) must be mounted on an independent pivot.

35.04

The brake lever if pivoted on the footrest axis must work under all circumstances, such as the footrest being bent or deformed.

35.05

Hand -and foot- controls may be modified for mobility challenged riders.

01.37 THROTTLE CONTROLS

37.01

Throttle controls must be self-closing when not held by the hand. The throttle operation (opening and closing) shall only be activated by mechanical cable from the twist grip directly attached to the throttle valve. Electronically controlled throttle valves are forbidden. All air intakes into the cylinder must pass through the throttle body. No other means allowing ambient air into the inlet track of the cylinder head are allowed.

37.02

Motorcycles must be equipped with a functional ignition kill switch or button mounted on either right or left side of handlebar (within reach of the hand while on the hand grips), that cut the power to the engine.

01.39 FOOTRESTS

Footrests must be solidly fixed or of a folding type but in this case must be fitted with a device which automatically returns them to the normal position, and an integral protection is to be provided at the end of the footrest which must have at least 8 [mm] radius (see Figure 2). The footrest teeth shall not be sharp. The height of the footrest teeth must be 10 [mm] maximum.

01.41 BRAKES

All motorcycles must have at least 2 efficient brakes (one on each wheel) operated independently.

01.43 MUDGUARDS AND WHEEL PROTECTION

Motorcycles must be fitted with rounded mudguards.

43.01

Mudguards must project laterally beyond the tyre on each side.

43.02

The front mudguard must cover ~~at least 100° of the circumference of the wheel.~~ The angle formed by one line drawn from the front edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel must be ~~between 45° and~~ **maximum** 60°.

43.03

The rear mudguard must cover ~~at least 120° of the circumference of the wheel.~~ The angle formed by two lines, one drawn from the rear edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel shall not exceed ~~20°~~ **70°. (See Figure 3)**

~~The angle (20° max.) for the rear mudguard shall be measured with the rider sitting on the motorcycle (See Diagram S).~~

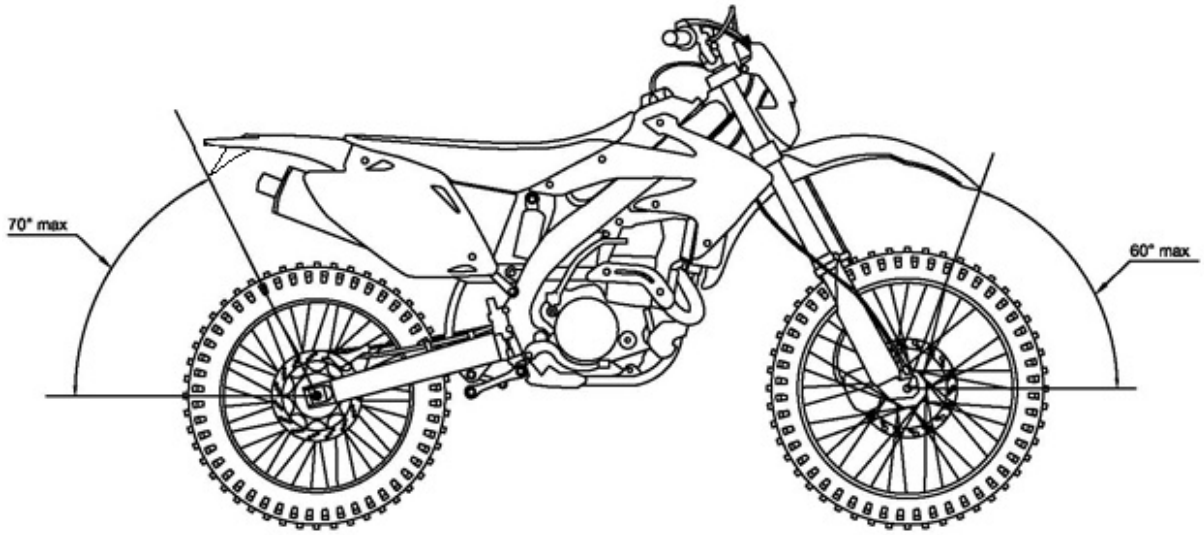

Figure 3

01.45 STREAMLINING

No type of streamlining is allowed.

Radiator covers (shields) must be made of flexible materials only (e.g. plastics).

01.47 WHEELS AND RIMS

47.01

All tyres will be measured mounted on the rim at a pressure of 1 [kg/sq.cm] (14 [lb./sq.in]); measurements are taken at a tyre section plane with a 90° angle with the ground plane.

47.02

Any modification to the rim or spokes of an integral wheel (cast, moulded, riveted) as supplied by the manufacturer (other than for rims with spokes, or valve and security bolts) is prohibited, except for tyre retention screws sometimes used to prevent the tyre movement relative to the rim. If the rim is modified for these purposes, bolts, screws, etc., must be fitted.

01.49 TYRES

49.01 General

Only tyres normally available from commercial or retail sources are authorised.

Modifying the tyre is not authorised. It is forbidden to treat tyres with chemicals, cut or groove them, use tyre warmers or any other means which may alter the shape, minimum Shore hardness, construction or other characteristics.

The tyres shall appear on the tyre manufacturers range catalogue or tyre specification lists available to the general public.

Any marking on the tyre reporting “FIM” approved or similar is forbidden for new production dates (from 2018). **FIM Quality Products are exempt of this rule.**

49.02 Enduro Tyres

Enduro Tyres are allowed for Hard Enduro World Championship.

They shall be approved according to UN Vehicle Regulation 75 Rev. 2 (2010) with the following specific features:

- Category of use (5.2): it shall be "snow" or "special" or "All terrain"
- Speed category symbol (5.4): M (130 Km/h) or above
- Load capacity index (5.5): 45 (165 Kg) or above.

It is recommended that the tyres be used according to the European Tyre and Rim Technical Organisation (ETRTO) guidelines.

The E approval mark and number as defined by the UN Vehicle Regulation R75 must be present on both the front and rear tyre sidewalls.

The DOT approval mark is also accepted.

The rear tyre must present a tread groove with a maximal depth of 13 [mm]. Such a depth must be measured between the "minimum" of the tread groove and a line tangent with the side wall (see Figure 4)

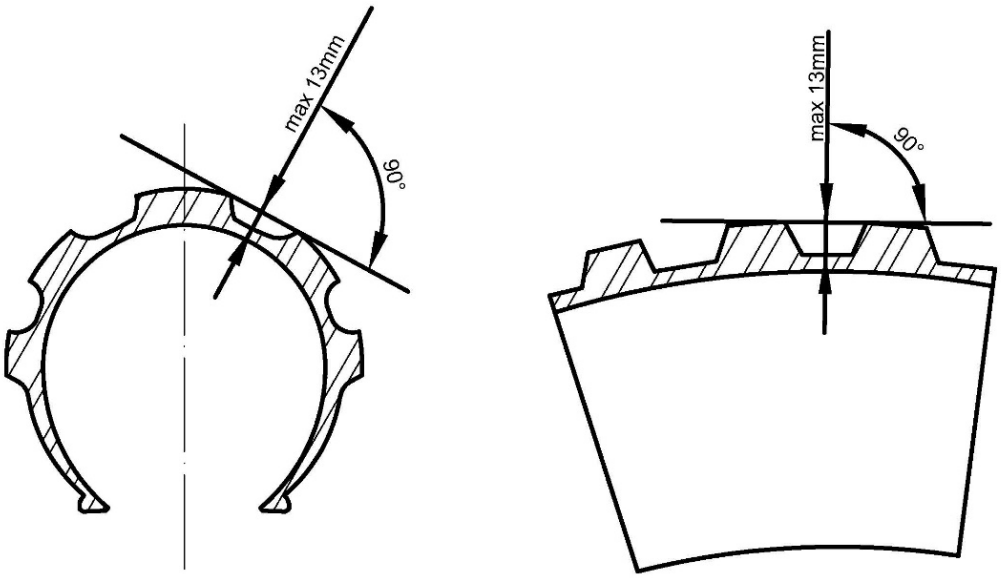

Figure 4

49.03 Motocross Tyres

The use of motocross tyres will be defined in the Supplementary Rules of the event, as long as legal roads are not used as a part of a track.

Only motocross tyres available from commercial tyre retail sources are authorised. These shall appear on the manufacturer's tyre catalogue or tyre specification list available to the general public.

49.04 Trial Tyres

Trial tyres (Art. 20 of Technical rules for Trial) are strictly forbidden.

49.05 Tyres with studs

The use of studded tyres will be defined in the Supplementary Rules of the event.

The use of studded tyres shall be approved by the Clerk of the Course/FIM Race Director, based on the state of the course.

Only studded tyres available from commercial tyre retail sources are authorised. These shall appear on the manufacturer's tyre catalogue or tyre specification list available to the general public.

All dimensions of the studs, their number, method of mounting, etc., must be in accordance with the national legislation of the country where the event is held.

Scoop or paddle tyres (continuous radial rib) are forbidden.

01.55 NUMBER PLATES

Number plates are required for Hard Enduro. They must be fitted as follows.

55.03

Number plates must be made of flexible materials only (e.g. plastic).

The shape of the front number plate is free and may be part of the general design of the motorcycle.

55.04

The plates curved not more than 50 [mm] out of a true plane must not be covered or bent.

The following minimum dimensions must be respected:

- Height of the number 100 [mm]
- Width of each number 50 [mm]
- Width of the stroke 20 [mm]
- Space between two numbers 10 [mm]

The English form for numbers must be used. That is single vertical line for the "one" and a simple sloping line without a horizontal line for the "seven" (see Diagram O).

Reflecting numbers are forbidden.

The numbers must be clearly legible and like the background, they must be painted in matt colours to avoid reflection from sunlight.

In case of a dispute, the decision of the FIM Technical Director will be final.

55.05 Front number plates

One plate must be fixed to the front inclined not more than 30° rearwards from the vertical. Holes can not be perforated between the numbers on the number plate. Under no circumstances may the numbers be perforated. See Figure 5

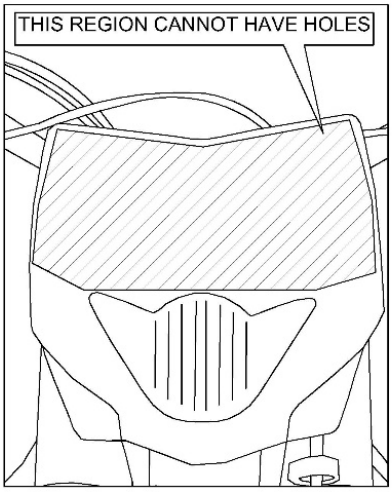

Figure 5

55.06 Side number plates

The side number plates must be positioned above a horizontal line drawn through the rear wheel spindle and the front edge of the plate must be behind a vertical line drawn at 200 [mm] to the rear of the rider's footrest.

They must be fixed in such a manner as to be clearly visible and they must not be masked by any part of the motorcycle or by the rider when seated in the riding position.

55.07

In place of separate plates, a space of equivalent size in matt colours can be painted or fixed on the bodywork.

55.09

All other number plates or markings on a motorcycle liable to cause confusion with the number must be removed before the start of a competition.

55.10

The figures must be applied to each machine by the organisers during the preliminary examination. The carrying of number plates is obligatory for the Six Days Enduro and any rider who retires during the event, must immediately remove them.

In case of a dispute concerning the legibility of numbers, the decision of the Technical Steward will be final.

01.56 LIGHTING, WARNING EQUIPMENT AND SPEEDOMETERS

Motorcycles and their equipment must comply with rules specified in the Supplementary Regulations.

If public roads are used in an event every motorcycle and its equipment must comply with following:

- The electric generator must operate continuously and normally with respect to current and voltage requirements to run front and rear lights during the competition and at post competition control. The electrical connections must be retained.

- A stop light activated by the front or rear brake, a front and rear light as well as a speedometer, in good working order, are compulsory.

- The registration number of the machine (if applicable) shall be displayed on a plate firmly fixed to the rear mudguard of the machine (not handwritten on the mudguard direct). The number plate or its copy must be made of flexible and non-cutting material and must not exceed the width of the rear mudguard.

- With the engine running all electrical equipment/consumers of electricity simultaneously must be supplied with electricity produced by the generator.

If the event is held only on private land or using officially closed roads the motorcycle requirements will be stipulated in the Supplementary Regulations and every motorcycle and its equipment must comply with following:

- A front light with number plate combined are necessary (enduro appearance).
- The lights must be fitted, but do not have to be operational.

The use of the side-stand is optional.

Each motorcycle must be equipped with an exhaust pipe and a silencer in accordance with Article 01.31.

01.65 EQUIPMENT AND PROTECTIVE CLOTHING DURING PRACTICE AND RACE

The FIM cannot be held liable for any injuries that a rider or passenger may sustain from the use of a specific item of equipment or protective clothing.

65.01 Clothing and protectors

It is compulsory that riders wear either a suit or trousers and long-sleeve shirt.

Repaired overalls are acceptable provided that the repair guarantees protection to the same standard as the original garment. The Chief Technical Steward has the right to refuse any temporary repairs which are not deemed to provide the same protection as the original garment.

Any modifications brought to the protectors remove the certification of the equipment and will not be accepted.

If the clothing and/or protectors listed below does not meet the technical requirements or is found to be defective, the Technical Steward must clearly mark in red (e.g. with a red dot) all international marks without destroying them and retain it until the end of the event. The rider must submit another clothing and/or protectors for approval by the Technical Steward. After an accident involving impact, the back and chest protector must be presented to the Technical Steward for examination.

65.01.1 Limb joints protectors

It is recommended that riders wear limb joint protectors for knees, hips, elbow and shoulders.

The limb joint protectors, **if present,** should be certified according the International norm:

- EN 1621-1, Level 1 or 2

65.01.2 Back protector

It is compulsory that riders wear a back protector.

The back protector must be certified according the International norm:

- EN 1621-2, Level 1 or 2, only CB (Central Back) or FB (Full Back)

65.01.3 Chest protector

It is compulsory that riders wear a chest protector.

The chest protector must be certified according the International norm:

- EN 1621-3, Level 1 or 2 **or EN 14021*, for the chest**

***The chest protector according to EN 14021 are allowed until 31.12.2022**

65.02 Footwear

Footwear, in a good condition, made of leather or other materials having equivalent properties, shall be worn and have a minimum height of 30 [cm].

65.03 Gloves

Riders shall wear gloves made of leather or other materials having equivalent properties.

65.04 Eye protection

Riders shall wear goggles. The use of glasses, helmet visors and "roll offs" is also permitted. The use of "tear offs" is forbidden for environmental reasons. The material used for glasses, goggles and visors must be made of shatter-proof material. Helmet visors must not be an integral part of the helmet.

Eye protectors which cause visual disturbance (e.g. scratched) must not be used.

01.67 WEARING OF HELMETS

- It is compulsory for all participants taking part in practice and races to wear a protective helmet. The helmet must be properly fastened, be of a good fit, and be in good condition. The helmet must have a chin strap type 'retention system'.

- A protective lower face cover must be present and must be not detachable, not moveable.

- Helmets constructed with an outer shell made of more than one piece are not permitted (e.g. they must not contain any seam).

- A retention system with a strap and the double D ring closing system is recommended.

- All helmets must be marked with one of the official international standard marks mentioned in Art. 01.70. Any FMN approval marks do not substitute the official international standard marks.

- A helmet is made to provide protection. A helmet is not a platform to attach foreign objects. Cameras or other accessories are NOT permitted nor shall be attached to the rider's helmet.

- Long hair, whether of female or male riders, must not come out of the helmet. Long hair must be completely contained within the helmet.

Failure to observe the above rules will entail exclusion.

01.69 HELMET OPERATIVE INSTRUCTIONS

69.01

Scrutineers, under the supervision of the Chief Technical Steward, may check prior to practice and the races that all helmets meet the technical requirements.

69.02

If a helmet does not meet the technical requirements or is found to be defective, the Technical Steward must clearly mark in red (e.g. with a red dot) all international marks without destroying them and retain the helmet until the end of the event. The rider must submit another helmet for approval by the Technical Steward. After an accident involving impact, the helmet must be presented to the Technical Steward for examination (see also Art. 77.02).

69.03

All helmets must be intact and no alteration must have been made to their construction. After an accident involving a shock or impact, the helmet must be presented to the Technical Steward for examination.

69.04

The Chief Technical Steward and/or the Technical Steward may perform the following checks before the rider is permitted to take part in practice of the race:

69.04.1 That the helmet fits well on the rider's head.

69.04.2 That it is not possible to slip the retention system over the chin, when fully fastened.

69.04.3 That it is not possible to pull the helmet over the rider's head by pulling it from the back of the helmet.

01.70 RECOGNISED HELMET APPROVAL MARKS

Helmets must conform to one of the recognised international standards:

EUROPE	ECE 22-05 or ECE 22-06 (only "P" type)
JAPAN	JIS T 8133:2015 (only "Type 2 Full face")
USA	SNELL M 2015 or SNELL M 2020D or SNELL M 2020R

Examples of labels are reported below:

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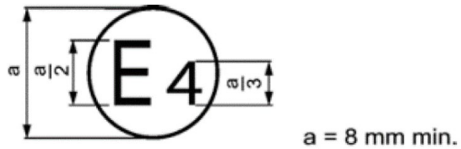
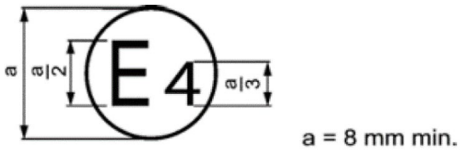
<tr><td>EUROPE</td><td> 

051406/P-1952</td><td> 

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<tr><td>JAPAN</td><td colspan="2">
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<tr><td>USA</td><td colspan="2">
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01.75 BADGE OF THE FIM

Under certain circumstances the FIM may permit the use of the FIM badge on certain equipment in order to show that the latter conforms to the standards laid down by the FIM. When this authorisation is granted and provided the equipment on which it appears is in good condition, the badge is then the guarantee of the conformity with the standard set by the FIM.

01.77 TECHNICAL VERIFICATIONS

77.01 Preparation

- Prior to the Technical Verifications, it should be decided who is doing what and note decisions. "Efficiency" must be the watchword. Always keep cheerful and remember the reasons for scrutineering: SAFETY AND FAIRNESS.

- Inspection must take place under cover with a large enough area.

- Inspection area must be supplied with the necessary equipment, including tables, chairs, electric light and power outlet.

- The necessary tools are listed below:

    - ✓ Revolution meter
    - ✓ Sound meter, calibrator and spare batteries
    - ✓ Slide calliper (for verifying engine capacity, carburettor diameter, etc.)
    - ✓ Depth gauge
    - ✓ Steel measuring tape
    - ✓ Seals
    - ✓ Colour for marking parts
    - ✓ Heat resistant stickers or paint for marking the silencer (and solvent)
    - ✓ Magnet
    - ✓ Adequate fuel sample bottles
    - ✓ PC with CD Drive + updated operating system
    - ✓ Printer, etc. are recommended
    - ✓ Calculator

- The necessary documents are listed below:

    - ✓ Supplementary Regulations
    - ✓ FIM Technical Rules - current year
    - ✓ FIM Rules of the discipline concerned
    - ✓ FIM Sporting Code
    - ✓ Homologation papers (if applicable)
    - ✓ Writing material
    - ✓ Technical Verifications forms

- All necessary measures and administrative equipment should be in place at least 1/2 hour before the start of the Technical Verifications is due to open (time in Supplementary Regulations).

77.02 Verifications

- The Technical Verifications must be carried out in conformity with the procedure and times fixed in the CEN Rules and the Supplementary Regulations of the event.

- The Sound control must be carried out first. The Sound level will be recorded in the technical card. The exhaust silencer will be marked with paint or sticker.

- An example of minimum verifications that shall be performed is given below:

INITIAL TECHNICAL VERIFICATIONS	HARD ENDURO
Sound	✓
Cut-off switch	✓
Self-closing throttle	✓
Lights (front, rear, brake)	✓*
Make + model	✓
Race fuel certificate	✓
Vehicle identification plate/chassis number	✓
Crankcase	✓
Wheels (hubs)	✓
Registration plate + insurance (green card)	✓
Silencer	✓
Guard for the countershaft sprocket and rear sprocket	✓
Handlebar ends + protection + levers	✓
Side stand	✓
Tyres	✓
Helmet(s)	✓
Protective clothing	✓

* not applicable for closed circuits when specified in the Supplementary Regulations

- An overall inspection of the motorcycle must be carried out in conformity with the FIM rules. On accepted motorcycles a sticker or paint will be applied on the front of the main frame.

- The Technical Verifications will only be carried out when the Technical Verifications form of the motorcycle has been presented by the rider or his mechanic.

- At the arrival, at the end of the competition, all the marked parts on the motorcycles must be controlled. After control, the machines must be placed in a closed park for 30 minutes after arrival of the last rider from the class concerned, in case a protest is lodged, or further examination is required.

- If a motorcycle or a part of a motorcycle must be verified and completely dismantled, the motorcycle, the part or the group of parts must be sealed and shipped to a place where the required tools are present for a disassembly. The Clerk of the Course/FIM Race Director must take the decision for this operation.

- The disassembly and the verification of the motorcycle or the parts in question must take place in the presence of the Technical Steward, appointed to the event.

- The Organiser will pay the costs for the transportation and for the verification according to Art. 77.02.14 and 77.02.15.

- If a disassembly is required and ordered by the Clerk of the Course/FIM Race Director, following a protest, according to Art. 77.02.14 and 77.02.15, the losing party will incur all the transportation and verification costs, or a part of these costs fixed by the Clerk of the Course/FIM Race Director.

77.03 FMNR Chief Technical Steward and technical stewards

- The Chief Technical Steward must attend an event one hour before the Technical Verifications are due to begin. He must inform the Clerk of the Course/FIM Race Director and FIM Technical Director, if present, of his arrival.

- The Chief Technical Steward must ensure that all technical stewards appointed for the event carry out their duties in a proper manner. The Chief Technical Steward shall appoint the technical stewards to individual posts for the race, practices and final control.

- Scrutineers can have different tasks, but the team of scrutineers must have a minimum of four persons. The FMNR Chief Technical Steward must be a holder of an FIM SENIOR Technical Stewards Licence and at least one Technical Steward must hold a FIM Technical Stewards Licence. A minimum number of scrutineers is required according to the following:
  - Sound test, silencer marking: two
  - Machine inspection, helmet and clothing: two
  It is recommended to have 2 up to 4 helpers (staff).

- The Sound Control Officer (SCO) must be holder of a valid FIM Technical Steward's license, come with good knowledge and experience of the sound control and application of the test method. The FMNR may propose the services from a special technician (acoustic engineer) if there is no FIM licenced Technical Steward available to act as SCO.

- After the Technical Verifications has been completed the Chief Technical Steward will submit to the Clerk of the Course/FIM Race Direction a list stating the names of the accepted riders, machines and the sound levels.

- During the event, in the arrival and departure areas, the technical steward must control the repairs and changes made to the machines. He must control that no outside assistance is made. He must also control the condition of the machines.

- At individual time checks, the technical steward must control repairs and other technical assistance. He must also control that the machines are marked in order to ensure that no unallowed change in motorcycle occurred on the course.

- At the arrival, at the end of each day, the technical steward must check all parts and the condition of the machine. A rider is allowed an extra 30 minutes to repair or replace a silencer and/or exhaust pipe only.

- If a motorcycle is involved in an accident, the Technical Steward must check the machine to ensure that no defect of a serious nature has occurred. However, it is the responsibility of the rider to present his machine for this re-examination together with the helmet and clothing worn.

- The Chief Technical Steward has the right to look/ inspect any part of the motorcycle at any time of the event.

- All technical stewards shall be well informed and shall make sure their FMN has supplied them with all technical "updates" that may have been issued subsequent to the printing of the Technical Rules books.

77.04 FIM Technical Director

- The FIM Technical Director is appointed by the Director of the FIM International Technical Commission in consultation with the Director of the FIM Enduro Commission.

- The FIM Technical Director is not responsible for the technical verifications but will ensure that they are carried out in accordance with the FIM Technical Rules.

- The FIM Technical Director works in cooperation with the FIM Race Director and the FIM Delegate.

- The authority and duties of the FIM Technical Director include but are not limited to (Please, also refer to the FIM Technical Rules):

  a) The FIM Technical Director will report any concerns or deficiencies relating to the technical verifications to the FIM Race Director and FIM Delegate and present proposals to resolve such concerns.

  b) The FIM Technical Director is the final arbiter in relation to technical issues at the event.

  c) The FIM Technical Director will examine with the Chief Technical Steward the motorcycle(s) and the protective equipment of any rider(s) involved in serious or fatal accidents and present a written report to the FIM Delegate.

d) The FIM Technical Director will attend all meetings of the Race Direction, but without voting rights.

77.05 Rider and/or mechanic

- The rider must present themselves to the Technical Verifications within the limit stated in the Supplementary Regulations.

  The maximum number of persons present at the technical verifications except the rider will be the mechanic and/or the Team Manager.

- A rider remains at all times responsible that his machine and his personal protective gear are in conformity with the FIM Technical Rules for Hard Enduro motorcycles.

- The rider must present a clean motorcycle in conformity to the FIM Hard Enduro Technical Rules.

- A rider must present one motorcycle only and one spare silencer.

- The rider must present the rider's protective wear (equipment), e.g. helmet and clothing.

- For preliminary inspection rider have to bring one environmental mat and use it in Parc Fermé underneath of motorcycle in order to protect the ground from dropping liquids (oil, chain spray, fuel etc.). If environmental mats are provided by the organiser, this must be written in the Supplementary Regulation.

- After the marking, riders must confirm his agreement by signing the Technical Verifications Form (Technical Card), which must indicate the frame number. The motorcycles will then be placed immediately in a closed park (Parc Fermé).

- Competitors must retrieve their machines within 30 minutes after the opening of the closed park area, except for the machines that are chosen for disassembly. After this time limit, the closed park officials will no longer be responsible for the machines left behind.

- Any rider failing to report as required by the provisions below may be excluded from the meeting.

- The Clerk of the Course/FIM Race Director may prohibit any person who does not comply with the rules, or any rider who could be a danger to other participants or to spectators, from taking part in the competitions.

01.78 DANGEROUS MACHINES

If, during practice or the race, a Technical Steward finds that a machine is defective and might constitute a danger to other riders, he must immediately notify the Clerk of

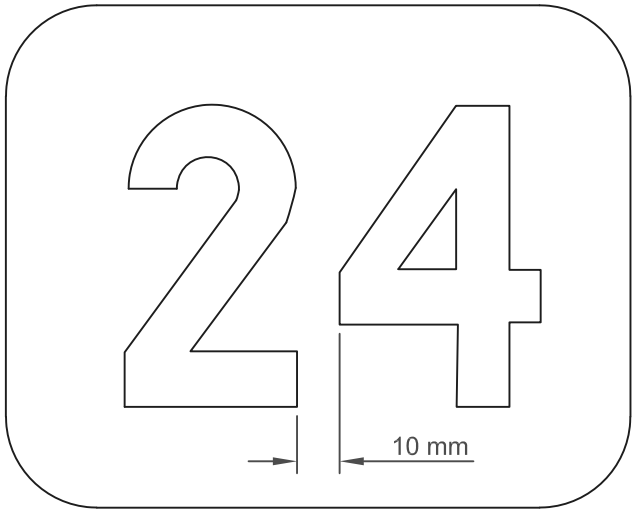
the Course/FIM Race Director or his deputy. It is their duty to exclude such a machine either from the practice or from the race itself.

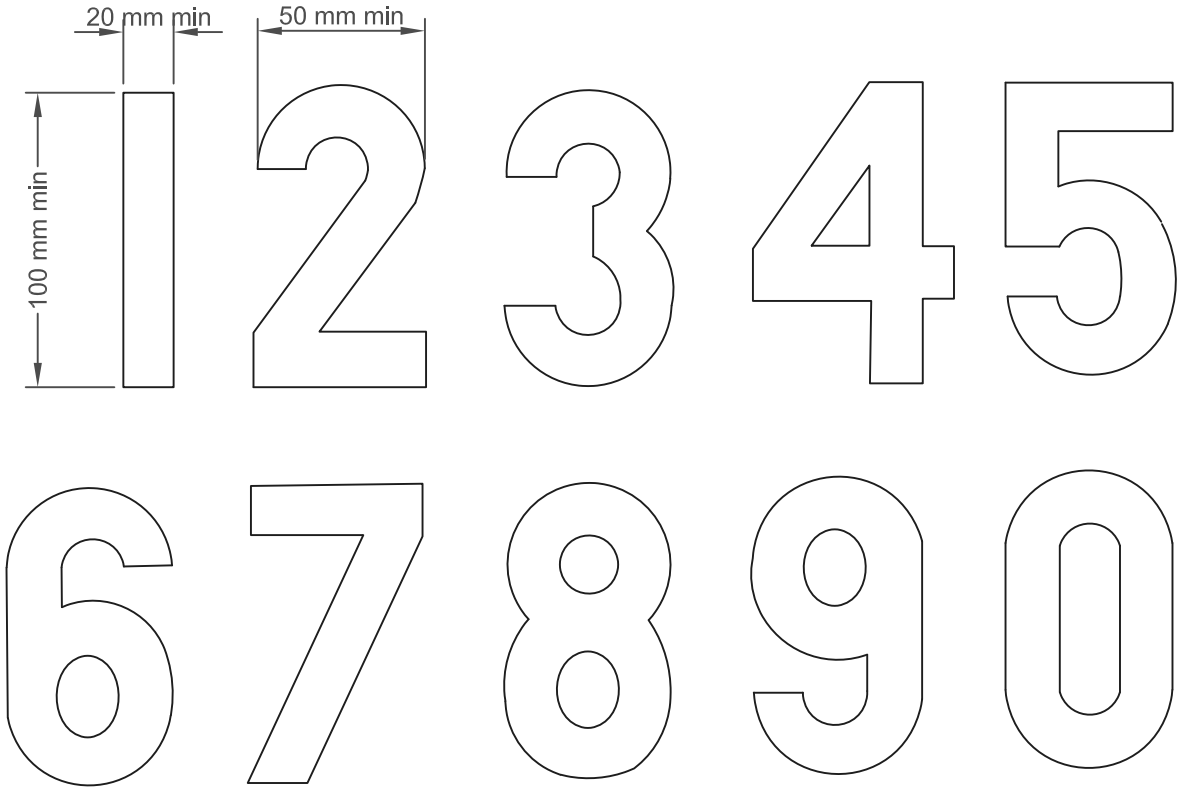
01.79 SOUND CONTROL

Exhaust pipes and silencers must fulfil all the requirements concerning sound control (see also **FIM Sound Regulation**).

Diagrams

NUMBERS/NÚMEROS





TEN FITTING TESTS FOR HELMETS
DIX TESTS D'ADAPTATION POUR LES CASQUES

1. *Obtain correct size by measuring the crown of the head*
   Avoir la bonne grandeur en mesurant le sommet de la tête

2. *Check there is no side to side movement*
   Vérifier qu'il n'y ait pas de déplacement d'un côté à l'autre

3. *Tighten strap securely*
   Serrer solidement la jugulaire

4. *With head forward, attempt to pull up back of helmet to ensure helmet cannot be removed this way*
   Tête en avant, essayer de soulever le casque pour s'assurer qu'il ne peut pas être enlevé de cette façon

5. *Check ability to see clearly over shoulder*
   Vérifier si vous pouvez voir clairement par-dessus l'épaule

6. *Make sure nothing impedes your breathing in the helmet and never cover your nose or mouth*
   S'assurer que rien ne gêne votre respiration dans le casque et ne jamais couvrir le nez ou la bouche

7. *Never wind scarf around neck so that air is stopped from entering the helmet. Never wear scarf under the retention strap*
   Ne jamais enrouler une écharpe autour du cou, car cela empêche l'air d'entrer dans le casque. Ne jamais porter d'écharpe sous la jugulaire

8. *Ensure that visor can be opened with one gloved hand*
   S'assurer que la visière peut être ouverte avec une main gantée

9. *Satisfy yourself that the back of your helmet is designed to protect your neck*
   S'assurer que l'arrière de votre casque a une forme telle qu'il vous protège la nuque

10. *Always buy the best you can afford*
    Toujours acheter le meilleur que vous pouvez vous offrir

FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

FIM-MOTO.COM
11, ROUTE DE SUISSE | CH - 1295 MIES
cti@fim.ch

62 790 10

FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

FIM SOUND REGULATIONS

2022

FIM Sound Regulation

Règlement FIM pour le son

Modifications log		
Updated	**Applicable as from**	**Modified articles**
January 1st 2021	01.01.2021	Creation
November 27th 2021	01.01.2022	New value for Motocross
December 22th 2021	01.01.2022	New 2025 values for SuperEnduro
January 18th 2022	**18.01.2022**	**A, D, E.6,**
February 17th 2022	**17.02.2022**	**E.3**
February 22th 2022	**22.02.2022**	**B, C**
April 20th 2022	**20.04.2022**	**A, C**
May 17th 2022	**17.05.2022**	**E.6**

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A. INTRODUCTION

In order to pursue the measures taken to reduce the sound level in favour of environment and in the framework of the 'RIDE QUIET' campaign, a new method for measuring the sound level called "2 metre max" is applied as from 2013 in all 'all-terrain' disciplines.

For the first World Championship event, all competitors' machines will be checked for sound level. After the first event, the machine of a 'wild card-' or 'one event' rider, will be checked for the sound level, as well as any other rider's machine on a random basis.

Excessively loud machines must always be checked, regardless of the participants' status.

The technical specifications and the resources to apply such a method, for the use of the technical stewards and officials, are outlined in the present article.

The "2 metre max" method shows a very good correlation between the sound power level (LwA) issued by motorcycles in full acceleration, and the maximum sound pressure levels measured at proximity of the same motorcycles, with engines at idle and quickly taken to their maximum rotational speeds.

The "2 metre max" method will consist in quantifying not only the sound level produced by the silencer of the exhaust, but the maximum global sound level achieved by the motorcycle when the engine rpm's are raised to the maximum engine speed, limited by a natural regulation (for 2 strokes) or rev limiters (for 4 strokes).

Only the sound levels measured with the "2 meter max" method will be considered by the technical stewards and by the Race Direction/Jury of the event to decide whether the motorcycle is in conformity with the maximum sound levels authorised.

For Motocross, Enduro/ISDE/SuperEnduro/HardEnduro:

Before the opening of the season, the manufacturers must declare to the FIM International Technical Commission (CTI) at cti@fim.ch the maximum power rpm value of the engine of their motorcycles (in standard 'production' specification as sold on the market). The minimum threshold of rpm applied for each class for the sound control procedure will be defined and communicated by the FIM Technical Director.

No modification (in any possible way) of the original RPM channel is allowed. During the sound control, the engine must be able to reach its maximum admissive RPM level (meaning at least the minimum rpm set for each class by the FIM Technical Director according to the information provided by the manufacturers) in Neutral or In Gear position of the gearbox (at the discretion of the Sound Control Officer (SCO)).

Furthermore, all systems of dB-Killers must be either the original part delivered by the exhaust manufacturer or made in a safe and professional (well-engineered) way. In case of dispute, the decision of the FIM Technical Director will be final.

B. PREPARATION OF THE SOUND METER

For all FIM championships and prizes, sound level meters must conform to the frequency response tolerance for Class 1 or Class 2 for nominal frequencies between 125Hz to 8000Hz, as stated by the IEC 61672-1:2013 subsection 5.5 standard.

All sound level meters must also conform to the tolerance for Class 1 or Class 2 for amplitude linearity, for it's specified class, as stated by the IEC 61672-1:2013 subsection 5.6 standard. IEC 61672 is a regulatory document, which covers specifications and qualification requirements for class 1 and class 2 sound level meters.

~~For all FIM Championships and Prices, all sound meters must have a frequency response According to IEC61672 Section 11 within a limit of plus or minus 2 [dB/A] from 125 to 8000 [Hz] at 94, 104 and 114 [dB/A].~~

Two sets of equipment must be available in case of failure of tachometer, sound level meter or calibrator during technical control.

Sound level measuring equipment must also include:

- a compatible calibrator, which must be used immediately before testing begins and always just prior to a re-test if a disciplinary sanction may be imposed;
- a tachometer.

The sound meter shall be prepared by applying the following procedure:

1. Activate the 'A' weighing
2. FAST time weighting must be activated
3. Select the highest range available (ex. 80~130 [dB])
4. Calibrate the sound meter according to the instructions, taking into account the incidence of the wind foam ball
5. Position the wind foam ball on the microphone
6. Activate the function MAX MIN – set on MAX

C. SET UP OF THE MEASUREMENT

The sound levels will be measured with the microphone fixed on a tripod at a height of 1.35 m above the ground, in horizontal (levelled) position. It is helpful to have the microphone equipped with an extension cable to the sound meter.

For the place and position of the motorcycle, ensure that there are no solid obstacles within 10 m around the microphone.

Depending on the vehicle, the sound meter will be positioned:

for Solo motorcycles: at an angle of 45° from the longitudinal axis of the vehicle, on the exhaust side, at a distance of 2 m behind the vehicle (measured from the point where the centre of rear tyre touches the ground).

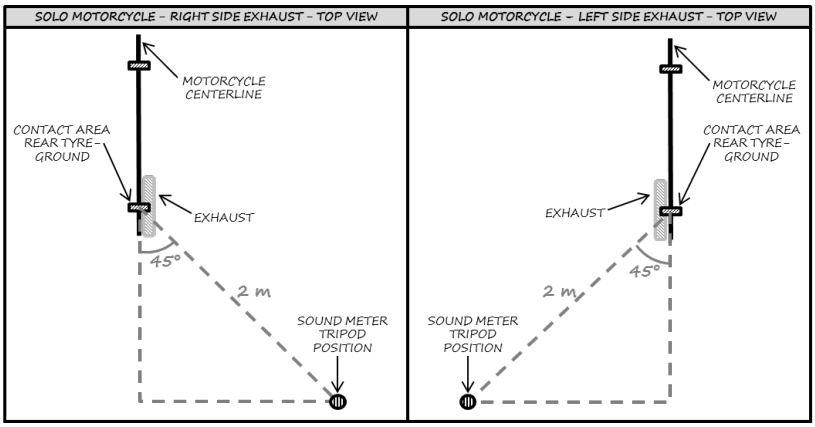


Figure 1 : Sound meter position for solo motorcycle

for Solo motorcycles with 2 exhaust outputs: at an angle of 45° from the longitudinal axis of the vehicle, on the side of the air intake, at a distance of 2 m behind the vehicle (measured from the point where the centre of rear tyre touches the ground). Note: if a central positioned air intake is used, both sides will be tested.

for Snowmobiles: at an angle of 90° from the longitudinal axis of the vehicle, on the side of the silencer, at a distance of 2 m next to the vehicle (measured from the silencer exit). For continuity of the measurement, use the handlebar as a reference to line up the machine with the microphone - the exhaust pipe is usually located on the right hand side of the machine and directly under the handlebar position. Note: the use of only one silencer is allowed for Snowmobiles.

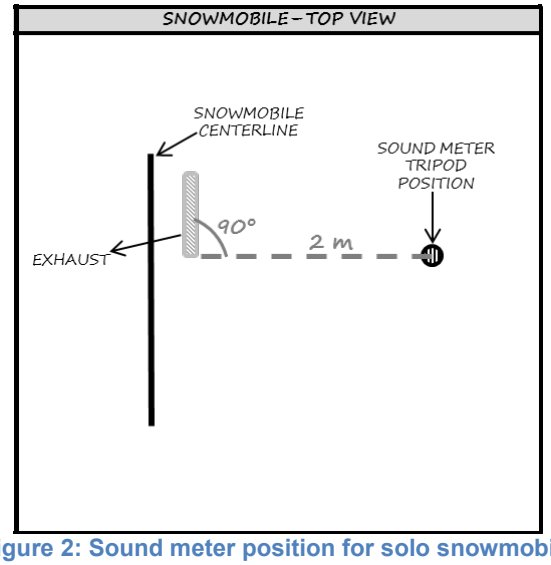


Figure 2: Sound meter position for solo snowmobile

for Sidecars: at an angle of 45° from the longitudinal axis of the vehicle, on the sidecar side, at a distance of 2 m behind the vehicle (measured from the point where the sidecar tyre touches the ground). If the exit of the silencer is closer to the motorcycle rear wheel, the reference point will be the contact point of the motorcycle rear wheel on the ground (as for Solo motorcycles).

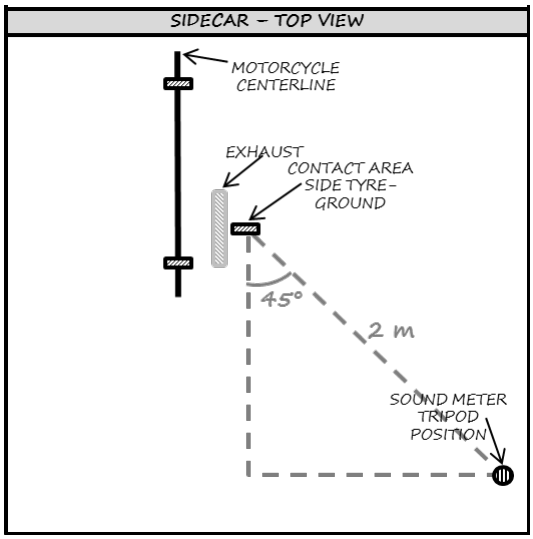


Figure 3: Sound meter position for sidecars

for Quads: at an angle of 45° from the median longitudinal axis of the vehicle, at a distance of 2 m behind the vehicle (measured from the point where the line drawn perpendicular to the rear axle touches the ground).

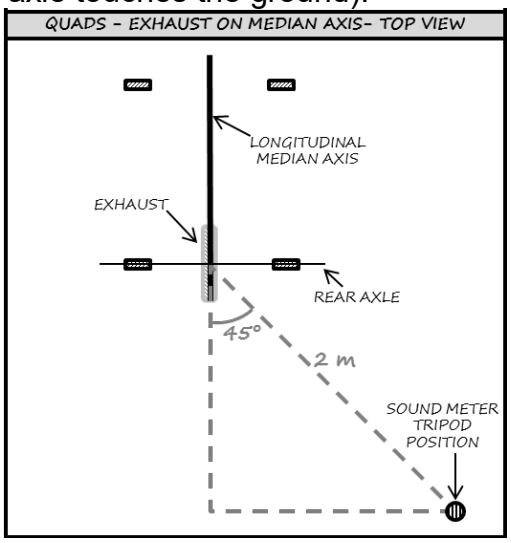


Figure 4: Sound meter position for quads

for Quads with the exhaust moved out of the median axis: at an angle of 45° from the exhaust axis, on the offset side, at a distance of 2 m behind the vehicle (measured from the point where the line drawn perpendicular to the rear axle touches the ground).

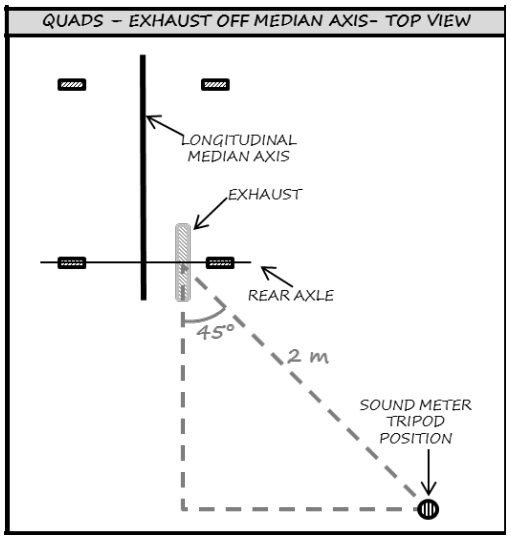


Figure 5: Sound meter position for solo motorcycle with exhaust moved out of the median axis

The sound level for engines with more than one silencer will be measured on each exhaust end.

Silencers fitted with adapters aiming to reduce the sound level shall be permanently fitted.

To make repetitive measurements, all motorcycles can be positioned into a small frame fixed on the ground, making sure to respect the 45° requirements. A squared frame helps the positioning of the motorcycle.

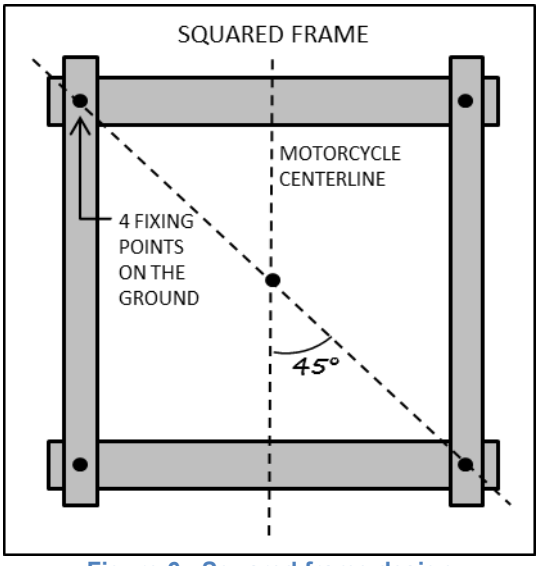


Figure 6 : Squared frame design

Vehicles which are not equipped with a gear box neutral must be placed on a stand.

It is preferred to make the tests on soft ground, not reverberating, i.e. grass or fine gravel.

In other than moderate wind, machines should face forward against the wind direction.

The ambient sound at the point of measurement must be minimum 15 [dB/A] less than the lowest FIM sound limit applied in each discipline.

It is recommended to re-calibrate the sound meter before starting measurements and before putting the system away except when there has been any accident (physical impact to the equipment). In the event of an impact, the sound meter must be systematically re-calibrated before restarting any measurements.

~~It is recommended to regularly re-calibrate the sound meter during the test day.~~

D. TEST PROCEDURE

The Sound Control Officer (SCO) must be holder of a valid FIM Technical Stewards' license, come with good knowledge and experience of the sound control and application of the test method. The FMNR may propose the services from a special technician (acoustic engineer) if there is no FIM licenced Technical Steward available to act as SCO.

The SCO must have arrived in sufficient time for discussions with the Clerk of the Course/FIM Race Director and other Technical Officials in order that a suitable test site and testing procedure can be agreed. The SCO takes place next to the vehicle, opposite to the sound meter/microphone, in order not to screen or stand between the bike and the microphone.

A second technical steward can be present to help. The rider can also be present.

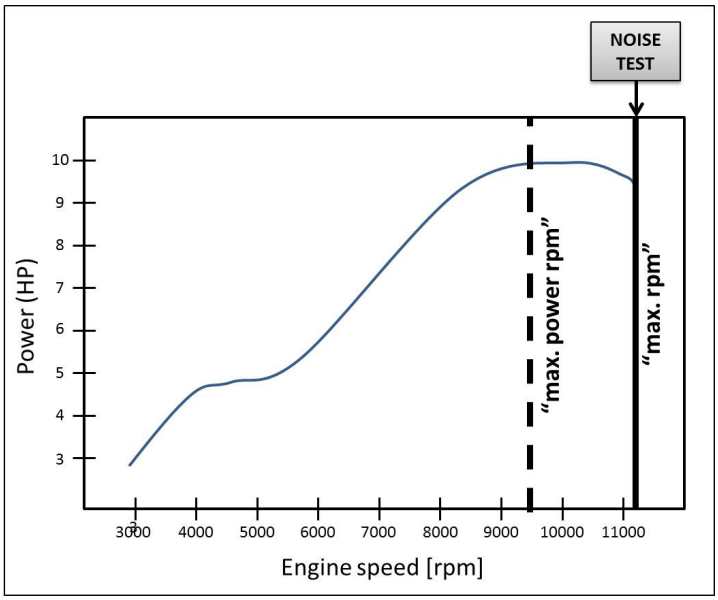
It is strongly advised that the technical steward(s) use earplugs, a headset or ear protectors.

The measurement**s are** ~~is~~ made with motorcycle on its wheels, with a hot engine, **whatever in neutral gear position of in-gear position (at the discretion of the SCO).** During the sound test, only the rider may sit on the vehicle in the normal riding position.

A rider or a mechanic, placed on the left side of the motorcycle, shall disengage the clutch.

The SCO (and not others) shall open the throttle as fast as possible (instantly, within 0.3 s) until "full open throttle", in order to reach the maximum rpm value ("max. rpm").

For Motocross, Enduro/ISDE/SuperEnduro/HardEnduro, Cross-country rallies/Bajas and Track Racing motorcycles with no FIM homologated silencers, the "max rpm" is the one defined by the ECU (for 4-stroke engines), or by a natural regulation (for 2-stroke engines).
When in doubt, it can be verified that such "max. rpm" value is higher than the rpm value at which the vehicle supplies its maximum power (kW) ("max. power rpm").



For Trial, the "max rpm" is established at 10000 (±200) rpm and obtained thanks to a dedicated "sound test" mapping of the internal ECU or an external one, purpose-made and connected in occasion of the test.

For Track-Racing with FIM homologated silencers, when sound tests are needed, the "max rpm" is established at 11000 (±500) rpm.

The SCO then keeps the engine at the "max. rpm" value for at least 1 s (or until there is an audible sign of over-revving the engine), during which the measurement is taken.

To conclude the test, the SCO releases the throttle quickly.

The maximum noise value (dB/A) registered during the measurement interval is then read on the sound meter and recorded. This noise value shall not be rounded down to the nearest whole number.

The noise value is then compared with the sound limits (see **Art. E**).

The noise test can be "**PASSED**" or "**NOT PASSED**":

"**PASSED**": The sound test is considered "passed" if the recorded noise value is below or equal to the sound limits of **Art. E**. The silencer can then be marked by the SCO at the end of the test.

The silencer can be changed after verification under the conditions of Technical control.

The end opening of the silencer shall remain unmodified once it has been checked and marked.

"**NOT PASSED**": The sound test is considered "not passed" if the recorded noise value is above the sound limits of **Art. E**.
In this case, the vehicle (with the same silencer) can be presented again, but for two more tests maximum. If the third test result is negative, the rider can present a different

or repaired silencer (in case the sound test was done before the race) will receive a penalty (in case the sound test was done during or after the race).

The sound meter is then reset by pushing on the side-line and armed by pushing on the side-line again.

Notes:

If the engine starts to misfire, close the throttle slightly and re-open the throttle.

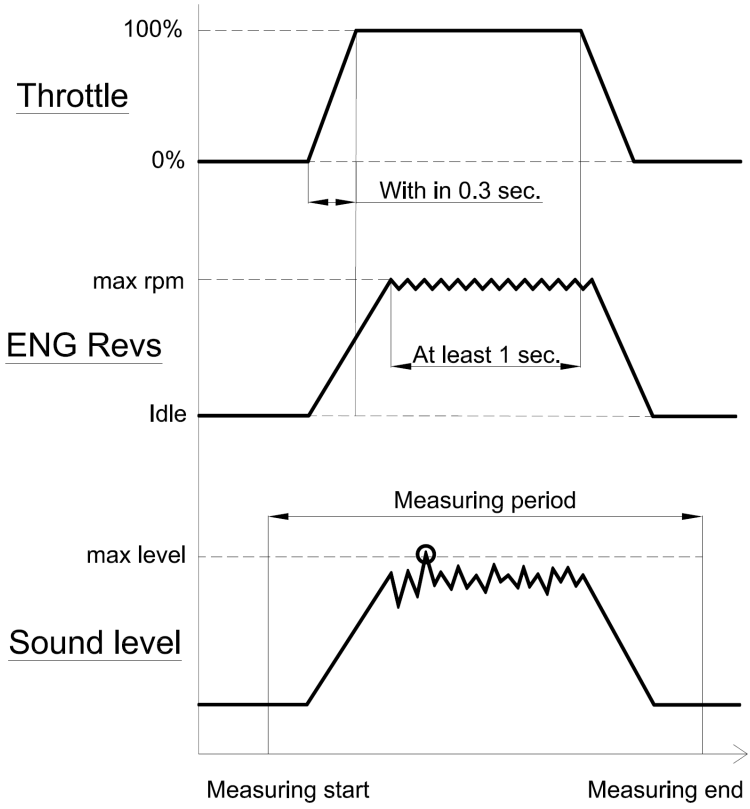
If detonations appear, the measurement must be started again.

For vehicles without an engine rev. limiter, the throttle will have to be opened not more than 2 s or until there is an audible sign of over-revving the engine.

Even in case a vehicle has not exceeded the respective sound limit, if there is any doubt, the vehicle may be checked again.

If the vehicle is unable to reach the "max. power rpm" value, the vehicle shall be refused. Any attempt by a participant to prevent his engine from reaching the "max. power rpm" will be considered a breach of the rules.

In case the SCO doubts that the "max. power rpm" value (as declared by the manufacturers or previously obtained with the dyno test), he/she shall measure the engine speed with a tachometer connected to the spark.



1. The Inspector shall open the throttle until full open throttle within 0.3 seconds.
2. And keep at the max rpm (at rpm limiter) at least 1 second. Then, release the throttle quickly.
3. The sound level is measured in the all period and the maximum level shall be recorded in any case. (automatically by the sound meter).

E. SOUND LIMITS

Below are listed the maximal sound limits by category and by type of engine. No deductions for ambient temperature, pressure or altitude are allowed. If present, the values that have to be respected after the race take into account the degradation of the silencer (i.e. the limit is raised of 1 [dB/A]).
The measured noise value shall not be rounded down to the nearest whole number.
The values already take into account the accuracy of the method.

1. TRIAL World Championships, Cups and Prizes

	Maximum Sound limit in [dB/A]	
Type of engine	**Before or during race**	**After race**
2-stroke	103.0	104.0
4-stroke	105.0	106.0

Table 1 : Sound limit for Trial

2. TRACK RACING World Championships, Cups and Prizes

	Maximum Sound limit in [dB/A]	
Type of engine	**Before or during race**	
All	115.0	

Table 2: Sound limit for Track Racing

3. ENDURO, ISDE, SUPERENDURO, HARDENDURO World Championships, Cups and Prizes

	Maximum Sound limit in [dB/A]	
Type of engine	**Before or during race**	**After race**
All **As of 2025**	114.0 **111.0** (Target **109.0** + 2.0 for the precision of the method)	115.0 **112.0** (Target **111.0** + 1.0 for the degradation of the silencer)

Table 3: Sound limit for

~~4. SUPERENDURO World Championships, Cups and Prizes~~

	~~Maximum Sound limit in [dB/A]~~	
~~**Type of engine**~~	~~**Before or during race**~~	~~**After race**~~
~~All~~	~~114.0~~	~~115.0~~

~~Table 4: Sound limit for SuperEnduro~~

5. CROSS-COUNTRY RALLIES & BAJAS World Championships and Cups

	Maximum Sound limit in [dB/A]	
Type of engine	**Before or during race**	**After race**
All	117.0	118.0

Table 5: Sound limit for Cross-Country Rallies

6. MOTOCROSS World Championships, Cups and Prizes

As from 01/01/2022:

MOTOCROSS World Championships, Cups and Prizes		
Discipline/Class	Maximum Sound limit (dB/A)	
	Before practice, during practice, before race	After race
MXGP, MX2, **Women MX**	114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Supercross (SX)	114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Sidecars: 2-stroke 4-stroke	114.0 114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Junior MX: 2-stroke (65/85) 2-stroke (125) 4-stroke	111.0 **(Target 109.0 + 2.0 for the precision of the method)** 114.0 **(Target 112.0 + 2.0 for the precision of the method)**	112.0 **(Target 111.0 + 1.0 for the degradation of the silencer)** 115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Supermoto	114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Snowcross	114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**
Quad: 2-stroke 4-stroke	114.0 114.0 **(Target 112.0 + 2.0 for the precision of the method)**	115.0 115.0 **(Target 114.0 + 1.0 for the degradation of the silencer)**

Table 6: Sound limit for Motocross as from 01/01/2022

NOTES:

- **The values that have to be respected after the race take into account the degradation of the silencer (i.e. the limit is raised of 1 dB/A).**
- **The values already take into account the accuracy of the method.**
- **No deductions for ambient temperature, pressure or altitude are allowed.**
- **The measured noise value shall not be rounded down to the nearest whole number.**

FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

FIM-MOTO.COM
11, ROUTE DE SUISSE | CH - 1295 MIES
cti@fim.ch

65 790 06

FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

FIM FUELS REGULATIONS

2022

FIM Fuels Regulation

Règlement FIM pour les essences

Modifications log		
Updated	**Applicable as from**	**Modified articles**
January 1st 2021	01.01.2021	Creation
November 27th 2021	01.01.2022	Fuels specification for Cat. 1 and new fuels added
May 4th 2022	04.04.2022	Art. D Fuels specification
May 17th 2022	04.04.2022	Art. D Fuels specification

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A.REGULAR FUEL

If not specified in the Technical Rules of the Chamiponships, Cup or Prize or in the Supplementary regulation of the event, regular fuel coming from Public Fuel station can be used.

By regular fuel. It is to be understand fuel available at the fuel station with a fuel gun and with an Octane not more than 98.

B. RACE FUELS

Fuel companies which supply “race” fuels (fuels other than those obtained at public pump stations) to participating teams/riders must test their fuel at against all the FIM specifications set out in **Art. D** of this regulation.

1. Conformed fuels

If the specifications of the fuel are in conformity to **Art. D** of this regulation, a certificate containing a test report and batch number will be issued to the fuel company.

The fuel company shall be able to provide a copy of such certificate to their client rider/teams before they take part in a race.

A list of fuels which are in conformity with FIM specifications are listed in **Art. I** of this regulation.

2. Appointed supplier(s) to event(s)

In the cases in which only fuel from the appointed supplier is permitted (for a specific event or the entire World Championship, Prize or Cup), the aforementioned fuel shall have been previously tested in a FIM appointed laboratory in order to test its conformity with the FIM specifications as set out in **Art. D** of this regulation:

- in case of conformity, a certificate of conformity (including test report and tested batch number) shall be available and **Art. I** of this regulation applies in case of controls for the riders/teams;

- in case the conformity is not achieved, the FMN of the organising country/the Organiser/the Promoter shall ask the FIM for a waiver in order to enable the use of fuel not corresponding to FIM specifications. If the waiver is granted, the riders/teams will be responsible for using the fuel provided without changing its composition. Controls may be carried out by FIM.

C. TESTING LABORATORY

For question regarding the “race” fuels and/or the testing of the fuels please contact the aforementioned testing laboratory:

Intertek (Schweiz) AG
Analytical Testing - Fuel, Lubricants & Combustible
Wagistraße 2
8952 Schlieren
Switzerland

Telephone: +41 43 433 78 10
Fax: +41 43 433 78 19
Email contact: fimfuels@intertek.com.

D. FIM SPECIFICATIONS FOR UNLEADED FUELS OR MIXTURES OF UNLEADED FUELS, CATEGORY 1

The following fuels specifications are valid for these FIM Competitions:

- MotoGP
- Moto2
- Moto3

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min.[1]	Max.[1]	Test Methods[2]
Density at 15°C	[kg/m3]	720.0	775.0	ASTM D4052
RON	-	95	102	EN ISO 5164
MON	-	85	90	EN ISO 5163
Oxidation stability	[min]	360		ASTM D525
Vapour pressure (DVPE)	[kPa]		90	EN 13016-1
Aromatics	% (V/V)		35.0	EN ISO 22854
Benzene	% (V/V)		1.0	EN ISO 22854
Diolefins total	% (m/m)		1.0	GC-MS HPLC
Existent Gum	[mg/100 mL]		5.0	EN ISO 6246
Lead	[mg/L]		5.0	ICP-OES or-EN 237
Manganese	[mg/L]		1.0	ICP-OES
Nitrogen	% (m/m)		0.2	ASTM D 4629
Olefins	% (V/V)		18.0	EN ISO 22854
Oxygen	% (m/m)		2.7	EN ISO 22854
Sulphur	[mg/kg]		10.0	ASTM D5453
Distillation:				EN ISO 3405
E at 70°C	% (V/V)	22.0	50.0	
E at 100°C	% (V/V)	46.0	71.0	
E at 150°C	% (V/V)	75.0		
Final Boiling Point	[°C]		210	
Residue	% (V/V)		2.0	
Copper Corrosion	Rating		Class 1	ISO 2160

Table 1 : Specifications and test methods (does not include the visual inspection)

[1] All reported min. and max. thresholds do not include the tolerance, which needs to be calculated in accordance with ISO 4259 and taken into account to correct the min. and max. thresholds
[2] In case of dispute the test method listed in **bold** will be the reference

Only the following oxygenates will be permitted:

- Methanol
- Ethanol
- Iso-propyl alcohol
- Iso-butyl alcohol
- Methyl tertiary butyl ether
- Ethyl tertiary butyl ether
- Tertiary amyl methyl ether
- Di-isopropyl ether
- n-Propyl alcohol
- Tertiary butyl alcohol
- n-Butyl alcohol
- Secondary butyl alcohol

In addition to these specifications, the appearance of the fuel, controlled by visual inspection must be clear, bright and free from solid matter and undissolved water.

The total of individual hydrocarbon components present at concentrations of less than 5% (m/m) must constitute at least 30% (m/m) of the fuel. The test method will be GC-FID (gas chromatography-flame ionisation detector) and/or GC-MS (gas chromatography-mass spectrometry).

The total concentration of naphthenes, olefins and aromatics classified by carbon number must not exceed the values given in the following table:

% (m/m)	C4	C5	C6	C7	C8	C9 +
Naphthenes	0	5	10	10	10	10
Olefins	5	20	20	15	10	10
Aromatics	-	-	1.2	35	35	30

Table 2 : Naphtenes, Olefins and aromatics contents

Bicyclic and polycyclic olefins are not permitted. The fuel must contain no substances which are capable of exothermic reaction in absence of external oxygen.

E. FIM SPECIFICATIONS FOR UNLEADED FUELS OR MIXTURES OF UNLEADED FUELS, CATEGORY 2

The following fuels specifications are valid all FIM Competitions not included in Category 1.

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min.[3]	Max.[1]	Test Methods[4]	
Density at 15°C	[kg/m3]	720	785	EN ISO 12185	ASTM D4052
RON	-	95	102	EN ISO 5164	ASTM D2699
MON	-	85	90	EN ISO 5163	ASTM D2700
Oxidation stability	[min]	360		EN ISO 7536	ASTM D525
Vapour pressure (DVPE)	[kPa]		100	EN 13016-1	ASTM D5191
Aromatics	% (V/V)		35.0	EN ISO 22854	ASTM D6839
Benzene	% (V/V)		1.0	EN ISO 22854	ASTM D6839 or D5580
Diolefins total	% (m/m)		1.0	GC-MS	HPLC
Lead	[mg/L]		5.0	ICP-OES or-EN 237	AAS
Manganese	[mg/L]		2.0	ICP-OES	AAS
Nitrogen	% (m/m)		0.2	**ASTM D 4629**	ASTM 5762
Olefins	% (V/V)		18.0	EN ISO 22854	ASTM D6839
Oxygen (includes 10% ethanol allowance)	% (m/m)		3.7	**EN ISO 22854**	EN 13132 or elemental analysis
Sulphur	[mg/kg]		10.0	EN ISO 20846	ASTM D5453
Distillation:				EN ISO 3405	ASTM D86
E at 70°C	% (V/V)	20.0	52.0		
E at 100°C	% (V/V)	46.0	72.0		
E at 150°C	% (V/V)	75.0			
Final Boiling Point	[°C]		210		
Residue	% (V/V)		2.0		
Oxygenates:				**EN ISO 22854**	EN 13132
Methanol	% (V/V)		3.0		
Ethanol	% (V/V)		10.0	The only oxygenates permitted are paraffinic mono-alcohols and paraffinic mono-ethers (of 5 or more carbon atoms per molecule) with a final boiling point below 210°C.	
Isopropanol	% (V/V)		12.0		
Isobutanol	% (V/V)		15.0		
tert-Butanol	% (V/V)		15.0		
Ethers (C5 or higher)	% (V/V)		22.0		
Others	% (V/V)		15.0		

Table 3 : Specifications and test methods (does not include the visual inspection)

[3] All reported min. and max. thresholds do not include the tolerance, which needs to be calculated in accordance with ISO 4259 and taken into account to correct the min. and max. thresholds

[4] In case of dispute the test method listed in **bold** will be the reference

In addition to these specifications, the appearance of the fuel, controlled by visual inspection must be clear, bright and free from solid matter and undissolved water.

The total of individual hydrocarbon components present at concentrations of less than 5% (m/m) must constitute at least 30% (m/m) of the fuel. The test method will be GC-FID (gas chromatography-flame ionisation detector) and/or GC-MS (gas chromatography-mass spectrometry).

The total concentration of naphthenes, olefins and aromatics classified by carbon number must not exceed the values given in the following table:

% (m/m)	C4	C5	C6	C7	C8	C9 +
Naphthenes	0	5	10	10	10	10
Olefins	5	20	20	15	10	10
Aromatics	-	-	1.2	35	35	30

Table 4 : Naphtenes, Olefins and aromatics contents

Bicyclic and polycyclic olefins are not permitted. The fuel must contain no substances which are capable of exothermic reaction in absence of external oxygen.

F. FIM SPECIFICATIONS FOR MIXTURES OF UNLEADED FUEL(S) AND LUBRICANT

The lubricant must not:

1. change the composition of the fuel fraction when added to the fuel
2. contain any nitro-compounds, peroxides or any other engine power boosting additives
3. contribute to an improvement in overall performance in any way
4. show a reduction in mass by evaporation of more than 10% (m/m) during the distillation up to 250°C (test method: simulated distillation GC)
5. contain more than 10% of anti-knock agents (lead, manganese, iron) (test method: ICP-OES).

Moreover, the following specifications are set for the mixture of unleaded fuel(s) and lubricant:

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min.	Max.[1]	Test Methods	
Density at 15°C[5]	[kg/m^3]	690	815	EN ISO 12185	ASTM D4052
RON	-		102	EN ISO 5164	ASTM D2699
MON	-		90	EN ISO 5163	ASTM D2700

[5] For the density measurement, the min. and max. thresholds do include the tolerance

G. FUELS CONTROLS

The FIM may require fuel controls, i.e. controls of the unleaded fuel, mixture of unleaded fuels or mixture of unleaded fuel and lubricant, used by riders/teams at events. These controls involve an initial sampling at the event and further testing in the FIM appointed laboratory.

3. Sampling

1) The FIM Technical Director (or the FMNR Chief Technical Steward when there is no FIM Technical Director appointed) is the sole official responsible for the sampling management and supervision.
2) Riders/teams selected for fuel controls are directed to proceed with their vehicles to the area that has been designated for this purpose.
3) The FIM Technical Director/FMNR Chief Technical Steward collects the fuel from the motorcycle by using only new sample containers and pipettes/hand pumps.
4) The fuel is transferred through the use of the pipette/hand pump directly from the fuel tank into three containers, denominated A, B and C. The containers are closed and sealed by the FIM Technical Director/FMNR Chief Technical Steward.
5) The FIM Technical Director/FMNR Chief Technical Steward fills in (in all its parts) and signs the Fuel Sample Declaration Form (see forms). The rider or a team representative also signs this Form, after verifying that all the information is correct.
6) The FIM Technical Director/FMNR Chief Technical Steward prepares an appropriate shipping box containing the collected A, B and C samples and a copy of the respective, signed, Fuel Sample Declaration Form. The box is then shipped to the FIM appointed laboratory by courier.

4. Testing

1) One or more properties to be checked (following the relevant testing method as per **Art. D, E** or **F**) are set by the FIM for each selected rider/team.
2) Sample A is the first sample to be tested by the FIM appointed laboratory.
3) Sample B can be used for a second analysis if required by the FIM. The test result of the A or B sample more favourable to the rider/team is taken into account. Costs for the shipping and testing of sample A and B are paid by FIM.
4) As soon as possible after completing the testing, the FIM appointed laboratory reports the test results directly to the responsible CTI Coordinator.
5) For negative cases (i.e. conformity of the tested property(ies) with the specification), the riders/teams concerned will be individually informed by the FIM in due course, copying the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

6) Only for positive cases following testing of sample A or B or A and B (i.e. non-conformity of one or more properties*), the responsible CTI Coordinator notifies by electronic mail* the rider/team concerned (including the testing results) and, 24 hours after, forwards the relevant information to the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

   *Note: The non-conformity of one property (except the Appearance) is sufficient for declaring non-conformity of the fuel or the mixture.

7) If the rider/team wishes to request a counter-expertise, he must notify the responsible CTI Coordinator by electronic mail* accordingly, within 72 hours of receipt by the FIM of the delivery status notification pertaining to the notification of the test results to the rider/team.

   - If a counter-expertise is requested, the sample dedicated to the counter-expertise is sample C and the test shall aim at checking the same property(ies) previously checked on sample A/B. The rider/team can request that sample C be tested at one of the available FIM appointed laboratories. Costs for shipping and testing of sample C are paid by the rider/team concerned.

     Upon notification of the sample C results, the responsible CTI Coordinator notifies by electronic mail[6] the rider/team concerned (including the testing results) and forwards the relevant information to the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

   - If no counter-expertise is requested within the time limit, the responsible CTI Coordinator forwards the relevant information by electronic mail* the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward), the competent authority (e.g. Race Direction, International Jury), the CTI Director, Director and Coordinator(s) of the sporting Commission concerned.

8) The competent authority of the event concerned (e.g. Race Direction, International Jury) makes a decision based on the information received. The Coordinator of the sporting Commission concerned notifies the rider/team concerned regarding the decision by electronic mail*.

   The non-conformity of :

   - A sample (in the cases B sample was not used) or
   - B sample (in the cases A sample result was not conclusive) or
   - A and B samples or

[6] The receipt of a delivery status notification will be deemed as proof of delivery

- A and B and C samples (in the cases B sample was used and a counter-expertise was requested) or
- A and C samples (in the cases B sample was not used and a counter-expertise was requested)

automatically results in the disqualification of the rider/team from the entire event.

No disqualification will be applied in case of conformity of sample C.

Furthermore, in any case, other penalties may be applied.

9) The rider/team has the right to appeal against the decision of competent authority of the event concerned (e.g. Race Direction, International Jury) in accordance with FIM Disciplinary and Arbitration Code applicable to the relevant discipline.

H. FUEL SAMPLE DECLARATION FORM

FIM Fuel Sample Declaration Form

Discipline	
IMN (xxx/xx)	
Rider/team's name	
Rider/team's number	
Rider/team's email or telephone number	
Team	
Vehicle's make	
Fuel's make and type	
Fuel origin (public station or race supplier)	
Fuel samples taken on date (dd/mm/yy)	
Fuel samples taken at (right before or after):	

MOTOCROSS	**TRIAL**	**TRACK RACING**	**ENDURO /ISDE**	**RALLIES /BAJAS**
Practice ☐	Day 1 ☐	Heat n°__ ☐	Day 1 ☐	Day 1 ☐
Qualifying race ☐	Day 2 ☐		Day 2 ☐	Day 2 ☐
Race 1 ☐			Day n°__ ☐	Day n°__ ☐
Race 2 ☐				

		Container seal n°
Sample A		
Sample B		
Sample C		

The above listed details refer to fuel samples taken from the fuel tank of the motorcycle specified.

Sample A is the first testing sample to be used by the FIM appointed laboratory

Sample B can be used for a second analysis if required by the FIM

Sample C is used if a counter-expertise is required by the rider/team.

The serial numbers of the vial seals and the accuracy of the listed information have been verified.

Rider or team responsible name	
Rider or team responsible signature	
FIM Technical Director/ FMNR Chief Technical Steward name	
FIM Technical Director/ FMNR Chief Technical Steward signature	

I. LIST OF APPROVED FUELS[7]

The fuels are listed in 2 categories:

- **Category 1**: MotoGP, Moto2, Moto3
- **Category 2**: All others

ENI

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
2	19/01/12	112052/01	11/314	ENI SBK 2010 B	1	2
4	04/03/13	113085/02		Eni Blu super +	1	2
5	22/05/13	113085/03	13/002	Eni Blu super +	1	2
6	24/06/13	113085/04	13-131	SF-S	1	2
7	03/09/13	113085/05	PP130540	SF-S	1	2
8	20/01/14	114053/01	PP130711	Eni SF-S	1	2
9	31/01/14	114053/02	14/001	Eni Blu super +	1	2
10	10/02/15	115095/01#01	PP 140390	SF-S	1	2
11	02/03/15	115095/02	PTMG 01	Eni Blu Super+	1	2
12	09/03/15	115095/03#01	PP 150065	Eni SF S	1	2
13	15/02/16	116162/01	3391	SF-S 102	1	2
14	08/04/16	116162/02	E031-16	Eni SF-S	1	2

[7] The approved fuels listed here above are classified by manufacturer's alphabetical order to facilitate the reading

Haltermann ETSP

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
2	04/04/2013	113118/03	13-04/3015	ESC 1954		2
5	17/10/2013	113118/17	13-10/3157	TBX 4 EVO 2		2
6	17/10/2013	113118/18	13-10/3160	TBX 5 EVO 2		2
7	17/10/2013	113118/19	13-10/3161	XS EVO 2		2
8	14/03/2014	114152/01	14-03/3306	ESC LC5	1	2
9	04/08/2014	114152/02	14-07/3434	TBX 5 EVO 3		2
11	10/12/2015	115176/02	15-12/3865	ESC 1935	1	2
12	09/03/2016	116248/01	15-10/3833	IRF 102	1	2
13	29/08/2011	111045/05#01-02	BI-11-08/2595	ESC1933(APA001)	1	2
15	20/07/2016	116248/05	BI 16-07/4077	ESC STRAT 5	1	2
16	22/08/2016	116248/07	BI 16-08/4096	ESC LC6	1	2
17	11/01/2017	117019/06	BI 17-01/4185	ESC 1955 A		2
18	31/03/2017	117019/07	BI 17-03/4282	ESC LC6	1	2
19	14/07/2017	117019/08#01	BI 17-07/4362	ESC LC6	1	2
20	21/08/2018	118082/09	BI 18-08/4698	ESC LC6	1	2
21	15/03/2019	119076/04	BI 19-02/4826	ESC 1955		2
22	22/05/2019	119076/07	BI 19-05/4905	STRATO 5	1	2
23	06/06/2019	119076/09	BI 19-06/4921	ESC LC6	1	2
24	08/01/2020	120019/01	BI 19-12/5078	STRATO 5	1	2
25	10/01/2020	120019/02	BI 20-01/5084	STRATO 5	1	2
26	23/01/2020	120019/03	BI 20-01/5094	ESC 1955		2
27	30/06/2020	120019/04	BI 20-06/5155	STRATO 5	1	2
28	21/10/2020	120019/06	BI 20-10/5216	ESC 1937 C		2
29	30/10/2020	120019/07#01	BI 20-10/5214	STRATO 5	1	2
30	19/01/2021	121000/02	BI 21-01/5232	ESC 1955		2
31	09/04/2021	121000/03	BI 21-04/5289	STRATO 5	1	2
32	17/05/2021	121000/04	BI 21-05/5311	STRATO K2 B	1	2
33	**17/06/2021**	**121000/05**	**BI 21-06/5339**	**STRATO K2 B**	**1**	**2**
34	**12/08/2021**	**121000/06**	**BI 21-08/5374**	**STRATO K2 B**	**1**	**2**

Lantmännen Aspen

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	09/08/2017	117548/01	N/A/	NEW AR / **ASPEN R**	1	2

Lukoil

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	09/05/2016	116405/01	#1	Sporting gasoline	1	2
2	03/08/2016	116405/03	1330	Gasoline "SPORT"	1	2

P1 Racing fuels

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	11/01/2019	119033/01		SBX (P-RG-008-03)	1	2

Panta

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
3	27/05/2014	114219/01		K4	1	2
4	18/05/2015	115206/01			1	2
5	05/04/2016	116283/02	19/16	K4	1	2
6	15/03/2017	117183/01	01-17	Mtv4T01	1	2
7	15/03/2017	117183/02	22-17	K4	1	2
8	19/02/2020	120118/01	101	Panta MTV 4T-01		2
9	19/02/2020	120118/02	104	Panta K4	1	2
10	20/05/2020	120118/04	120	Panta K20	1	2

Petronas

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	15/11/2019	119415/01#01	M2A	Petronas Primax Pro-Race 1902M2A	1	2
2	11/11/2020	120374/01	M2A	Petronas Primax Pro-Race 2001M2A	1	2

Race Republic

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	11/02/2014	114101/01		P1 102 RX racing fuel	1	2

Renegade

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	17/04/2013	113179/01	14213	GP4-2/7	1	2

Repsol

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	14/02/2012	112101/01		CTR-55-HRC	1	2
2	18/02/2013	113087/01		CTR-55 HRC	1	2
3	04/02/2014	114085/01		CTR-55 HRC	1	2
4	29/01/2015	115069/01		CTR-55-HRC	1	2
5	10/11/2015	115069/02#01		CTR-55-HRC	1	2
6	20/04/2016	116362/01	2016/01	CTR-19-MH	1	2
7	25/10/2016	116362/02		CTR-55 HRC	1	2
8	15/03/2017	117179/01	2017/01	CTR-19-MH	1	2
9	22/11/2017	117179/02		CTR-55-HRC	1	2
10	05/04/2018	118280/01		CTR-55-HRC	1	2
11	05/04/2018	118280/02		CTR-19	1	2
12	29/11/2018	118280/03		CTR-55-HRC	1	2
13	25/03/2019	119117/01		CTR-55	1	2
14	12/09/2019	119117/02	1-2019	CTR-19	1	2
15	01/09/2020	120024/01		CTR-55	1	2
16	09/03/2021	121153/01		CTR-19 MH	1	2
17	**27/05/2021**	**121153/02**		**CTR-55 HRC**	**1**	**2**

Scuderia Braunschweig

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
Scu1	10/07/2019	119278/01	1907	SGR102		2

Shell (1/2)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	25/05/2011	111008/06	PR4414	PR4414 - Ducati Fuel G2	1	2
2	09/02/2012	112091/01	PR4666	Ducati Fuel Duc 3	1	2
3	13/02/2012	112091/02	PR4670	RD 05-08-Fuel	1	2
4	13/03/2012	112091/03	PR4696	Ducati Fuel Duc 10	1	2
5	21/03/2012	112091/05	PR4719	Racing Fuel - RT	1	2
6	27/03/2012	112091/06	PR4722	Racing Fuel - BF	1	2
7	13/06/2012	112091/07	PR4826	Ducati Fuel DUC 10	1	2
8	28/01/2013	113058/01	PR5050	Ducati Fuel Duc 10	1	2
9	20/02/2013	113058/02	PR5088	Ducati Fuel Duc 10	1	2
10	14/06/2013	113058/03	PR5193	Ducati Fuel Duc 10	1	2
11	06/12/2013	113058/04	PR5383	Ducati Fuel Duc 10	1	2
12	27/12/2013	113058/05	PR5438	Ducati Fuel Duc 12	1	2
13	10/03/2014	114140/01	PR5498	Ducati Fuel Duc 12	1	2
14	04/06/2014	114140/06	PR5640	Ducati Fuel Duc 12	1	2
15	22/08/2014	114140/11	PR5803	Ducati Fuel Duc 12	1	2
17	27/11/2014	114140/13	PR5941	Ducati Fuel Duc 12	1	2
18	16/02/2015	115104/01	PR6084	Ducati Fuel Duc 30	1	2
19	07/05/2015	115104/02	PR6198	Ducati Fuel Duc 30	1	2
20	01/06/2015	115104/03	PR6235	Ducati Fuel Duc 30	1	2
21	27/07/2015	115104/04	PR6293	Ducati Fuel Duc 30	1	2
22	23/10/2015	115104/05	PR6395	Ducati Fuel Duc 30	1	2
23	13/01/2016	116063/01	PR6456	Ducati Fuel Duc 30	1	2
24	21/04/2016	116063/02	PR6605	Ducati Fuel Duc 30	1	2
25	02/08/2016	116063/05	PR6697	Ducati Fuel Duc 50	1	2
26	09/09/2016	116063/06	PR6730	Ducati Fuel Duc 51	1	2
27	17/10/2016	116063/07	PR6795	Ducati Fuel Duc 30	1	2
28	20/02/2017	117138/01	PR6914	Ducati Fuel Duc 50	1	2
29	08/05/2017	117138/02	PR6980	Ducati Fuel Duc 30	1	2
30	08/05/2017	117138/03	PR6989	Ducati Fuel Duc 53	1	2
31	09/06/2017	117138/04	PR7042	Ducati Fuel Duc 53	1	2
32	11/07/2017	117138/05	PR7074	Ducati Fuel Duc 50	1	2
33	04/12/2017	117138/06	PR7219	Ducati Fuel Duc 53	1	2
34	06/02/2018	118039/01	PR7275	Ducati Fuel Duc 30	1	2
35	09/02/2018	118039/02	PR7308	Ducati Fuel	1	2
36	09/02/2018	118039/03	PR7313	Ducati Fuel	1	2
37	20/02/2018	118039/04	PR7324	Ducati Fuel	1	2
38	27/02/2018	118039/05	PR7331	Ducati Fuel	1	2
39	21/03/2018	118039/06	PR7361	Ducati Fuel	1	2
40	16/07/2018	118039/07	PR7519	Ducati Fuel	1	2
41	25/07/2018	118039/08	PR7531	Ducati Fuel	1	2
42	14/08/2018	118039/09	PR7557	Ducati Fuel	1	2
43	16/11/2018	118039/10	PR7652	Ducati Fuel	1	2
44	30/01/2019	119075/01	PR7674	Shell V-Power	1	2
45	13/05/2019	119075/02	PR7832	Ducati Fuel	1	2
46	05/08/2019	119075/03	PR7917	Ducati Fuel	1	2
47	24/12/2019	119075/04	PR8101	Ducati Fuel	1	2
48	29/01/2020	120070/01#01	PR8129	Ducati Fuel	1	2
49	06/07/2020	120070/03	PR8283	Ducati Fuel		2
50	10/08/2020	120070/04	PR8329	Ducati Fuel	1	2

Shell (2/2)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
51	14/08/2020	120070/05#01	14/08/2020	Ducati Fuel	1	2
52	31/03/2021	121194/01#01	PR8569	Ducati Fuel	1	2
53	**18/05/2021**	**121194/02**	**PR8672**	**Ducati Fuel**		**2**
54	**07/06/2021**	**121194/03**	**PR8694**	**Ducati Fuel**	**1**	**2**
55	**26/07/2021**	**121194/04**	**PR8749**	**Ducati Fuel**	**1**	**2**
56	**05/08/2021**	**121194/05**	**PR8820**	**Ducati Fuel**	**1**	**2**

Showa Shell Sekiju

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	10/07/2014	114266/01			1	2

Slovakia Ring Agency

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	20/03/2018	118224/01		OMV MaxxMotion 100+	1	2

Soldà Vladimiro SpA (Wladoil)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	27/05/2016	116466/01	16/05/04	WLADOGAS BB1	1	2

Total (1/3)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	30/12/2011	111083/18	WSBK-FIM, 01220581U	MOTO 4TMAX, O1220561U	1	2
2	09/01/2012	112012/01	O1220559U	YMH48	1	2
3	01/03/2012	112012/03	P0120617U	MITS46	1	2
4	01/03/2012	112012/04	P0220640U	MITS42	1	2
5	07/03/2012	112012/05	P0220643U	Moto 4SGP	1	2
6	30/04/2012	112012/07	P0420713U	Moto 4SGP	1	2
7	31/05/2012	112012/08	P0520750U	YMH48	1	2
8	27/06/2012	112012/09	P0520756U	MITS 46	1	2
9	12/07/2012	112012/10	P0720847U	SPB MOTO 4T MAX	1	2
10	13/08/2012	112012/11	P0620824U	ESSENCE SP MITS 43	1	2
11	07/01/2013	113014/01	P1221076U	SPB HRC41	1	2
12	07/01/2013	113014/02	P1221064U	MOTO 4SGP	1	2
13	17/01/2013	113014/03 113014/07	P1221069U T0321199U	MOTO 4TMAX WSBK	1	2
14	17/01/2013	113014/04	P1221066U	YMH48	1	2
15	17/03/2013	113014/05	T0221130U	SP YMH48	1	2
16	17/03/2013	113014/06	T0221129G	MOTO 4TMAX	1	2
17	10/05/2013	113014/08	T0321200U	MOTO 4SGP	1	2
18	09/09/2013	113014/09	T0821415U	SPB HRC41	1	2
19	15/10/2013	113014/10	T0921520U	SPB HRC41	1	2
20	13/11/2013	113014/11 113014/12	T1021523U T1021523U	SZK34 SP 4THRC33	1	2
22	17/12/2013	113014/16	T1121601U	MOTO 4T YMH48	1	2
23	06/01/2014	114015/01	T1121610U	SPB HRC41	1	2
24	03/02/2014	114015/02	PCT120371U PCQ010325U	SPB MOTO 4TMAX WSBK-FIM	1	2
25	11/02/2014	114015/03	PCQ010240U	SPB MOTO 4SGP	1	2
26	20/02/2014	114015/04	PCQ010236U	SP YMH48	1	2
27	14/04/2014	114015/05	PCQ040134G PCQ040211	SPB MOTO 4TMAX WSBK-FIM T50L	1	2
28	19/05/2014	114015/06	PCQ040116U	SPB HRC41	1	2
29	23/05/2014	114015/07	PCQ030232G PCQ050131G	SPB MOTO 4TMAX WSBK-FIM	1	2
30	02/06/2014	114015/08	PCQ050143U	SP YMH48	1	2
31	27/06/2014	114015/09	PCQ060147U	SPB MOTO 4SGP	1	2
32	31/07/2014	114015/13	PCQ070079U	SPB HRC41	1	2
33	22/08/2014	114015/15	PCQ060192G PCQ080194G	SPB MOTO 4TMAX WSBK-FIM	1	2
34	23/09/2014	114015/22	PCQ090232U	SZK34	1	2
35	16/12/2014	114015/23	PCQ100382U	SPB HRC41	1	2
36	07/01/2015	115017/01	PCQ120216U	SZK34	1	2
37	14/01/2015	115017/02	PCQ120252U	YMH48	1	2
38	18/02/2015	115017/03	PCZ020169U	MOTO 4SGP	1	2
39	10/07/2015	115017/04	PCZ060345 PCZ060291	MOTO 4TMAX WSBK-FIM	1	2
40	11/08/2015	115017/05	PCZ070267U	YMH48	1	2
41	14/09/2015	115017/06	PCZ090168U	HRC41	1	2
42	30/09/2015	115017/07	PCZ090304U	Moto 4SGP	1	2

Total (2/3)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
43	22/12/2015	115017/08	PCZ110339U	SZK34	1	2
44	22/12/2015	115017/09	PCZ090305U	SPB MOTO 4SGP	1	2
45	22/12/2015	115017/10	PCZ120176G	MOTO 2 FIM	1	2
46	12/01/2016	116060/01	PCZ120373U	MOTO 4SGP	1	2
47	23/02/2016	116060/02	PCS020149U	YMH48	1	2
48	03/03/2016	116060/03	PCS020288U	MOTO 4SGP	1	2
49	31/03/2016	116060/04	PCS030155U	SZK34	1	2
50-51	05/04/2016	116060/05	PCS030327 + PCS030328	MOTO 4T MAX + WSBK-FIM	1	2
52	10/05/2016	116060/06	PCS040330U	SPB MOTO 4SGP	1	2
53	14/06/2016	116060/07	PCS050314U	MITS46	1	2
54	22/07/2016	116060/08	PCS060244U	SZK34	1	2
55	27/07/2016	116060/09	PCS070136G	SPB MOTO 4SGP	1	2
56	31/08/2016	116060/10	PCS080240U	SBP HRC41	1	2
57	08/09/2016	116060/11	PCS080332	SPB MOTO 4T MAX	1	2
58	08/09/2016	116060/11	PCS080333	WSBK-FIM	1	2
59	14/12/2016	116060/12	PCS110336U	HRC41	1	2
60	30/12/2016	117012/01	PCS1202616U	SPB MOTO 4SGP	1	2
61	30/12/2016	117012/02	PCS120465U	SZK 34	1	2
62	03/02/2017	117012/03	PCE010121G	ELF MOTO 2 FIM	1	2
63	03/02/2017	117012/03	PCE010121G	TOTAL MOTO 2 FIM	1	2
64	24/02/2017	117012/04	PCE010368U	SPB MOTO 4T MAX	1	2
65	24/02/2017	117012/04	PCE020215	WSBK-FIM	1	2
66	09/03/2017	117012/05	PCE0201799G	Moto 4SGP	1	2
67	09/03/2017	117012/06	PCE030052U	YMH48	1	2
68	04/05/2017	117012/07	PCE040329U	SZK46	1	2
69	18/05/2017	117012/08	PCE040292U	MOTO 4SGP	1	2
70	26/05/2017	117012/09	PCE040261U	HRC41	1	2
71	07/06/2017	117012/10	PCE050235U	SZK34	1	2
72	22/09/2017	117012/11	PCE080094U	MITS46	1	2
73	06/10/2017	117012/12	PCE090297U	MOTO 4SGP	1	2
74	15/12/2017	117012/13	PCE110351U	SZK34	1	2
75	01/02/2018	117012/14	PCE120271U	APL03	1	2
76	01/02/2018	118013/01	PCE120284U	HRC41	1	2
77	05/02/2018	118013/02	PCE120376U	MOTO 4SGP	1	2
78	08/02/2018	118013/03	PCE120378U	YMH48	1	2
79	08/02/2018	118013/04	PCH010065G	ELF MOTO 2 FIM	1	2
80	09/04/2018	118013/05	PCH030291G	ELF MOTO 2 FIM	1	2
81	30/04/2018	118013/07	PCH040203U	MOTO 4SGP	1	2
82	09/05/2018	118013/08	PCH050144U	APL03	1	2
83	09/05/2018	118013/09	PCH050163P	APL03	1	2
84	04/06/2018	118013/10	PCH050294U	SZK46	1	2
85	29/06/2018	118013/11	PCH050362U	Moto 4SGP	1	2
86	08/08/2018	118013/16	PCH080204U	APL03	1	2
87	16/08/2018	118013/17	PCH080148U	YMH48	1	2
88	16/08/2018	118013/17	PCH080487	APL02	1	2
89	12/09/2018	118013/18	PCH080141U	Moto 4SGP	1	2
90	10/12/2018	118013/19	PCH100529U	Moto 4SGP	1	2

Total (3/3)

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
91	09/01/2019	119022/01	PCH110243G	ELF MOTO 2 FIM	1	2
92	01/02/2019	119022/02#01	PCF010098G	ESSENCE SPB MOTO 4SGP	1	2
93	26/02/2019	119022/05	PVF020242U	Essence SP YMH48	1	2
94	13/03/2019	119022/06	PCF020373U	SZK48	1	2
95	17/04/2019	119022/08	PCF040238U	APL02	1	2
96	29/05/2019	119022/09	PCF050286U	YMH48	1	2
97	11/06/2019	119022/10	PCF050313U	MOTO 4SGP	1	2
98	18/07/2019	119022/11	PCF070179U	MOTO 4SGP	1	2
99	05/08/2019	119022/12	PCF070373U	MOTO 4T MAX	1	2
100	19/08/2019	119022/13	PCF070414U	APL02	1	2
101	19/08/2019	119022/14	PCF080079	WBSK-FIM	1	2
102	10/12/2019	119022/15	PCF120187U-GC	YMH48	1	2
103	13/12/2019	119022/16	PCF120134G	MOTO 4SGP	1	2
104	27/12/2019	119022/17	PCF110267U	MITS46	1	2
105	09/03/2020	120050/12	PCV020291U	ELF 4S FIM EVOX		2
106	09/03/2020	120050/13	PCV020392U	APL05	1	2
107	25/05/2020	120050/14#01	PCV040144U	Essence SPB YMH48	1	2
108	21/07/2020	120050/15	PCV070214U	ELF 4S FIM EVOX	1	2
109	31/07/2020	120050/17	PCV070412	APL05	1	2
110	11/08/2020	120050/18	PCV070408G	ELF MOTO2 FIM	1	2
111	25/08/2020	120050/19	PCV070431U	ELF 4S FIM EVOX	1	2
112	30/09/2020	120050/20	PCV090122U	Essence SP YMH48	1	2
113	13/11/2020	120050/21	PCV100391U	ELF 4S FIM EVOX		2
114	22/02/2021	121131/01	PCU020095U	Essence SPB MOTO 4SGP	1	2
115	22/02/2021	121131/02	PCU020136U	Essence SP YMH48	1	2
116	24/03/2021	121131/04	PCU030021G	ELF MOTO 2 FIM	1	2
117	26/04/2021	121131/07	PCU040311U	ELF 4S FIM EVOX		2
118	**14/05/2021**	**121131/08**	**PCU040289**	**APL05**	**1**	**2**
119	**06/07/2021**	**121131/13**	**PCU060378U**	**Essence SP YMH48**	**1**	**2**
120	**/2021**	**121131/14#01**	**PCU050322U**	**Essence SPB MOTO 4SGP**	**1**	**2**
121	**22/07/2021**	**121131/15**	**PCU070208U**	**ELF 4S FIM EVOX**		**2**

VP Racing Fuels

N°	Sample incoming	Dossier	Batch/Lot	Reference	Category	
1	28/05/2015	115205/01	128/15	VP Moto		2
2	31/08/2018	118649/01	242/18	VP Moto		2
3	11/04/2019	119078/03	#053/19	VP MGP	1	2

FÉDÉRATION INTERNATIONALE
DE MOTOCYCLISME

FIM-MOTO.COM
11, ROUTE DE SUISSE | CH - 1295 MIES
cti@fim.ch

65 790 06