

# RACEGUIDE

2023 LE MANS 24 HOURS



# LE MANS 24 HOURS

ROUND 4 • 2023 FIA WORLD ENDURANCE CHAMPIONSHIP (FIA WEC)

62 ENTRIES



JUNE 10-11, 2023

91<sup>st</sup> RUNNING



#WeRaceForChange



# CIRCUIT TRIVIA /

## LE MANS 24 HOURS

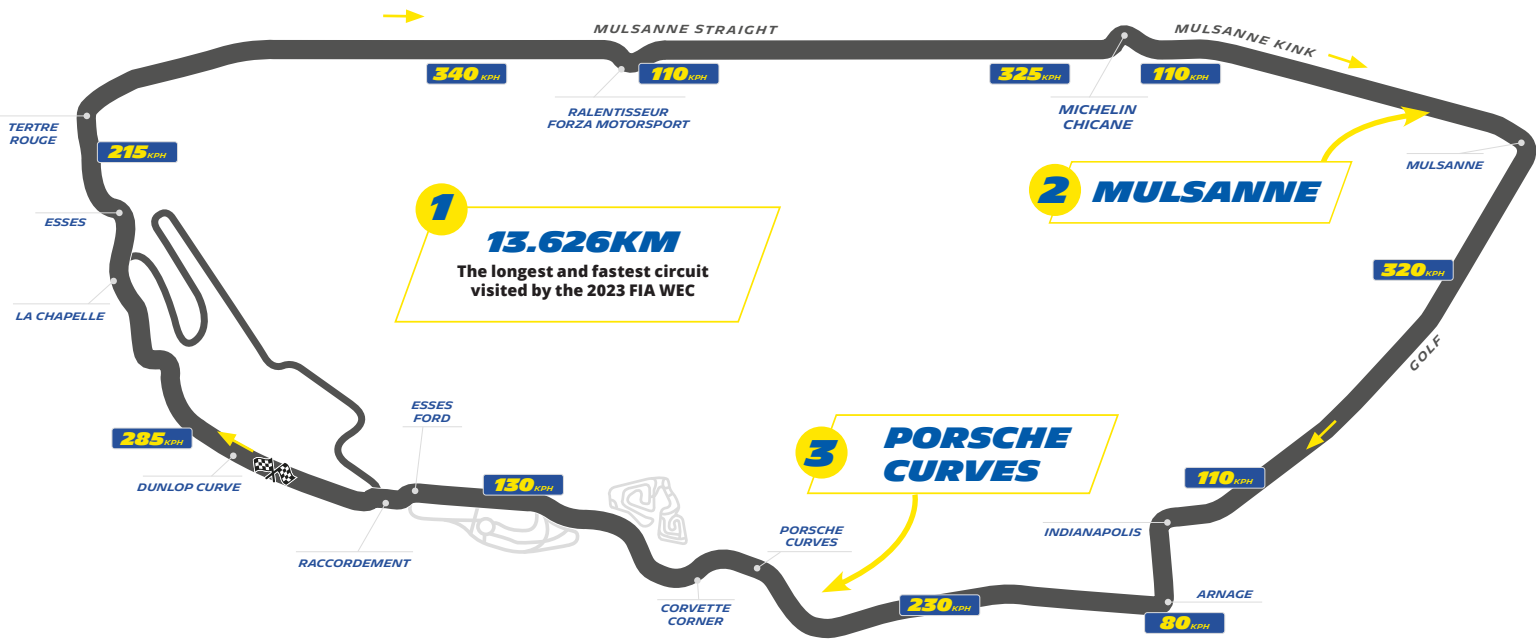
24h  
LE MANS



Fifteenth different track layout since 1923

33  
TURNS

CLOCKWISE



**1**  
**13.626KM**  
The longest and fastest circuit  
visited by the 2023 FIA WEC

**2**  
**MULSANNE**

**3**  
**PORSCHE  
CURVES**

### FEATURES

Non-permanent: 50 percent of the circuit is open to ordinary traffic the rest of the year

Different surfaces between the track's permanent and non-permanent sections

Cars are slowed along the 5.750km Mulsanne Straight by two chicanes



**LAP RECORD** (13.626km circuit):  
3m15.267s  
(Kamui Kobayashi, Toyota  
TS050 Hybrid/Michelin, 2020)  
Average speed: 251.20kph

### FOCUS SUR DES POINTS DU CIRCUIT



**1**

When the cars reach their top speed of around 350kph, their MICHELIN Pilot Sports become oval in shape as their diameter increases by as much as 5cm. This is countered by the aerodynamic downforce that pushes the tires against the ground



**2**

The fastest prototypes brake for the Mulsanne Turn from **315kph to 90kph**, shedding 200kph in the space of just 200 meters and four seconds. As a result, their MICHELIN Pilot Sport tires need to dissipate **400 kJoules**, the amount of energy required to halt a 38-tonne truck travelling at 50kph



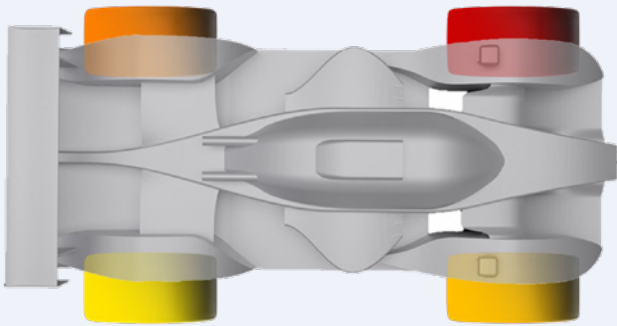
**3**

Going into the Porsche Curves, the MICHELIN Pilot Sport tires that equip the hypercars are subjected to a **lateral force of 2,8g** for 4 seconds at 240kph, equivalent to them being pulled outwards by a mass of 1,200kg

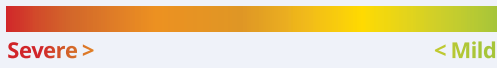




# ENERGY LEVEL PER TIRE



»»»»» DIRECTION OF TRAVEL »»»»»





## **PIERRE ALVES**

Endurance Racing Program Manager,  
Michelin Motorsport

“After hours spent testing on the simulator, it’s time at last to get to see our 2023 MICHELIN Pilot Sport range of tires for the Hypercar prototypes perform at Le Mans. For the centenary race, our partners can choose between soft, medium and hard slicks to benefit from the best performance possible depending on the conditions of the moment. To facilitate identifying which cars are running which compound at any given time, and to help fans understand the teams’ respective strategies, we have added color-coded sidewall markings.

“The MICHELIN Pilot Sport range is conceived to cover the complete spectrum of weather conditions. The soft compound will likely be the preferred choice for colder track temperatures, the medium is a particularly versatile and consistent tire, and the hard allows even those cars that submit their tires to the biggest constraints to multi-stint.

“Tire optimization and strategy are key aspects of the permanent dialogue that goes on between Michelin Motorsport’s technical staff and our partners. The objective is to determine the ideal operating windows of each choice in order to maximize longevity and consistency, two vital parameters not only during the race itself, but also in free practice and qualifying.”

**IT'S TIME AT LAST  
TO GET TO SEE OUR  
2023 MICHELIN PILOT  
SPORT RANGE OF TIRES  
FOR THE HYPERCAR  
PROTOTYPES PERFORM  
AT LE MANS**



**CHECK OUT OUR LE MANS  
24 HOURS PREVIEW**



# EXPERT OPINION

**ALLAN McNISH**

Three-time Le Mans 24 Hours winner  
2013 FIA World Endurance Champion

## What is Le Mans?

Le Mans is a huge challenge for all teams and drivers, 24 hours of flat-out racing against top level competition, changing weather conditions, the track itself and finally yourself and your team.

Le Mans can be a beautiful, seductive place or one of the cruelest places in sport, but if you are lucky enough to stand on the podium you have one of the most amazing sights with 50,000 fans flooding onto the track as far as you can see to celebrate with you.

My first win 25 years ago was sensational, standing on the podium was an experience that is so difficult to describe, but with my team mates Laurent and Steph, we did not know how this would change our careers, but that is the power of Le Mans.

## My favorite memory

I have so many favorite memories but a very personal one is seeing my wife minutes after we had won in 2008, a race we should not have won on paper but one where our team did everything perfectly to make it possible. Kelly was very pregnant with our soon-to-be daughter who was obviously a Le Mans fan as she was kicking like mad. The Rolex Daytona that I won that day has her name on it and that meant I needed to win another to be able to give one to our son as well, that job was done in 2013.

## Tires

There is a lot of testing before Le Mans to ensure the optimum tire choice for the big race, that means long endurance simulation tests at various tracks. But no other is like Le Mans. It has a unique combination of high

|| A TIRE THAT  
LASTS FOR HOUR  
AFTER HOUR AT  
AN AVERAGE SPEED  
OF OVER 240KPH  
PER LAP ||

speed straights with very high and also low corner speeds, different track surfaces and the fact the track grip consistently changes throughout the 24 hours race.

You run flat out on the long straights all above 320kph five times per lap which puts huge vertical loads on the tire. You also need good cornering stability for the fast change of direction through the super fast Porsche corners, good braking stability as you punch the brake at about 80 metres into the chicanes, front tire precision as you turn

into Mulsanne and Arnage, strong traction out of the slow speed corners to maximise speed on the straights, quick warm up after slow zones or safety cars, and finally, a tire that lasts for hour after hour at an average speed of over 240kph per lap. Or in other words, a Michelin.

## This centenary race will be a cracker

You can never be sure about winning Le Mans, but what I can be sure about is that this centenary race will be a cracker. The Hypercar battle has intense depth and whichever drivers stand on the podium, they will deserve their place in Le Mans history.

I think there will be two battles, one for pole where I would say it is open season but I am interested if Ferrari can repeat its Sebring pole. Then there is the race where experience is always a positive addition to your team, and Toyota certainly has that. However, can you discount Roger Penske taking his first and adding to Porsche's tally of wins, or Cadillac or Glickenhaus taking the trophy back to the USA or home heroes Peugeot repeating their 2009 win?

We will find out who is picking up that special trophy when the checkered flag falls on Sunday afternoon.



# THE 2023 LE MANS 24 HOURS

## TIMETABLE

FRIDAY, JUNE 2	
10:00am-7:00pm	Scrutineering and documentation
SATURDAY, JUNE 3	
10:00am-3:00pm	Scrutineering and documentation
SUNDAY, JUNE 4	
8:00am-8:45am	Ligier European Series (Free Practice)
9:15am-9:35am	Ligier European Series (Qualifying)
10:00am-1:00pm	<b>Le Mans 24 Hours (Test)</b>
2:00pm-3:00pm	Ligier European Series (Race)
3:30pm-6:30pm	<b>Le Mans 24 Hours (Test)</b>
TUESDAY, JUNE 6	
2:00pm-3:00pm	Pit-walk and autograph session
3:15pm-4:30pm	Pit-stop challenge
6:00pm-7:30pm	Autograph session (Le Mans city center)
WEDNESDAY, JUNE 7	
9:00am-9:45am	Porsche Carrera Cup (Free Practice 1)
11:30am-12:30pm	Road to Le Mans (Free Practice 1)
2:00pm-5:00pm	<b>Le Mans 24 Hours (Free Practice 1)</b>
7:00pm-8:00pm	<b>Le Mans 24 Hours (Qualifying)</b>
8:30pm-9:30pm	Road to Le Mans (Free Practice 2)
10:00am-midnight	Le Mans 24 Hours (Free Practice 2)
THURSDAY, JUNE 8	
10:55am-11:40am	Porsche Carrera Cup (Free Practice 2)
12:55pm-1:15pm	Road to Le Mans (Qualifying 1)
1:30pm-1:50pm	Road to Le Mans (Qualifying 2)
3:00pm-6:00pm	<b>Le Mans 24 Hours (Free Practice 3)</b>
6:30pm-7:25pm	Road to Le Mans (Race 1)
8:00pm-8:30pm	<b>Le Mans 24 Hours (Hyperpole)</b>
10:00pm-11:00pm	<b>Le Mans 24 Hours (Free Practice 4)</b>
FRIDAY, JUNE 9	
9:00am-9:45am	Porsche Carrera Cup (Qualifying)
11:30am-12:25pm	Road to Le Mans (Race 2)
2:00pm-4:30pm	Drivers' Parade
SATURDAY, JUNE 10	
10:45am-11:30am	Porsche Carrera Cup (Race)
12:00 noon-12:15pm	<b>Le Mans 24 Hours (Warm-up)</b>
1:50pm-3:00pm	Grid Walk
4:00pm	<b>Le Mans 24 Hours (Start)</b>



Centenary edition (first race held on May 26-27, 1923)

All 16 Hypercar prototypes representing seven different makes on Michelin tires

Michelin has been chosen by all of the 21 cars competing in LMGTE Am

The 2023 Le Mans 24 Hours is ticket-only. Around 300,000 spectators are expected

During pit stops, tires may only be changed once refueling has been completed. Keeping the same set consequently saves time

Although the use of tire warmers has been banned in the FIA WEC this year, the FIA and ACO have made an exception for Le Mans where they are authorized

The eight fastest cars in each class in qualifying go on to contest the Hyperpole shootout

The H24 hydrogen-fueled prototype will perform a demonstration lap of Le Mans on Michelin '63' tires

Michelin is a partner of the Ligier European Series, Road to Le Mans and Porsche Carrera Cup support races





# LE MANS 24 HOURS 2022 RESULTS

24h  
LE MANS



## WINNERS:

**Buemi/Hartley/Hirakawa**  
(Toyota GR010 Hybrid/Michelin),  
380 laps (5,177.17km) at an  
average speed of 215.4kph



## POLE-POSITION:

**Brendon Hartley**  
(Toyota GR010 Hybrid/  
Michelin), 3m24.408s  
(240kph)



## MICHELIN STATISTIC

The 2022 Le Mans 24 Hours saw Michelin contribute to new distance-records in the Hypercar (5177.17km/average speed: 215.4kph), LMGTE Pro (4,768.52km/198kph) and LMGTE Am (4,673.14km/194.2kph) classes. On their way to beating the former benchmarks, the #8 Toyota GR010 Hybrid used just 12 sets of MICHELIN Pilot Sport tires (maximum allowed: 14 sets), the #91 Porsche used 14 sets (maximum: 15 sets), and the #33 Aston Martin used 13 sets (maximum: 15 sets). Their respective performances testified to the longevity of their MICHELIN Pilot Sport tires which proved their ability to go further using fewer sets!



## FASTEST RACE LAP:

**Jose-Maria Lopez**  
(Toyota GR010 Hybrid/  
Michelin)  
3m27.749s (236.1kph)

## TOP SPEED:

**Sébastien Buemi**  
(Toyota GR010 Hybrid/  
Michelin)  
342.3kph

A quarter-century of  
innovation: Michelin's  
25th consecutive Le  
Mans victory since  
1998

Fifth straight victory  
for Toyota with  
Michelin

The Hypercar  
prototypes  
successfully triple-  
stinted their Michelin  
Pilot Sport tires

Victory and new  
distance record for  
Porsche/Michelin in  
LMGTE Pro





# NEW MICHELIN PILOT SPORT RANGE LE MANS 24 HOURS

## HYPERCAR

### New MICHELIN Pilot Sport range

The 2023 regulations limit the number of specifications to three types of slick. Michelin's engineers have consequently worked on their compounds order to make them more versatile and improve their warm-up performance. A choice of three compounds is available: soft, medium and hard.

The availability of a single type of wet-weather tire to cover damp, wet and very wet conditions in 2023 has resulted in a new tire and new tread pattern. It incorporates more than 30 percent recycled or biosourced sustainable materials.



SOFT



MEDIUM



HARD



WET

### SLICKS

NEW COMPOUNDS

**Soft** (white sidewall marking): soft compound / dry or slightly damp conditions / low temperatures (nighttime racing/ early morning)

**Medium** (yellow): medium compound / dry conditions

**Hard** (red): hard compound / dry conditions / high track temperatures / big constraints

### RAIN TIRE

NEW PATTERN

**Rain** (blue): soft compound / wet conditions / versatile

### SLICK ALLOCATIONS

Free Practice, Qualifying, Warm-up	24 tires (6 sets)
Hyperpole	8 tires (2 sets)
Race	56 tires (14 sets)

#### SIZES:

FRONT: 29/71-18 (PEUGEOT: 31/71/18)  
REAR: 34/71-18 (PEUGEOT: 31/71-18)

Width (cm) / Exterior Diameter (cm) – Interior Diameter (inches)





# MICHELIN TIRES

## LE MANS 24 HOURS



### LM GTE AM

All 21 LMGT3 Am entries racing on Michelin tires



#### SLICKS

**Soft** (white sidewall marking): soft compound / low temperatures (nighttime racing / early morning)



**Medium** (yellow): medium compound



**Hard** (red): hard compound / high track temperatures / big constraints



#### RAIN TIRES

**Drying Wet** (blue): damp or drying conditions / little water



**Full Wet** (no sidewall marking): soft compound / wet conditions / deep water

#### SLICK ALLOCATIONS

Free Practice, Qualifying, Warm-up	28 tires (7 sets)
Hyperpole	8 tires (2 sets)
Race	60 tires (15 sets)

#### MICHELIN PILOT SPORT SIZES

FRONT TIRES: 30/68-18

REAR TIRES: 31/71-18

Width (cm) / Exterior Diameter (cm) - Interior Diameter (inches)



# MICHELIN'S LE MANS LOGISTICS

Approximately 8,000 MICHELIN Pilot Sports are available for the 37 Michelin-equipped cars entered for this year's Le Mans 24 Hours Test Day and race. Around 800 tires are trucked to the track ahead of the Test Day. They are then taken back to Clermont-Ferrand where stocks are replenished by a further 800 or so covers on the Tuesday of race week. This plan optimizes logistical costs and reduces Michelin's environmental impact.



## MICHELIN MOTORSPORT'S STAFF AT THE LE MANS 24 HOURS

### Fitters

Fitters comprise the bulk of Michelin Motorsport's personnel at Le Mans where they fit, balance and remove tires on one of the workshop's three lines. In the course of Le Mans week, they fit more than 4,000 Michelin tires. Orders from partner teams are received via a bespoke application. The 54 fitters work in shifts during the race.

### Technicians

At least one Technical Team Advisor is delegated to work with each of Michelin's partner teams. Their role ranges from advising on tire usage as a function of the prevailing conditions and management of the teams' tire quotas, to attending technical briefings with the teams' own engineers and drivers to assist with tire choices and tire-pressure recommendations. Their input can be decisive.

### Developers

The development experts responsible for the current Hypercar and LMGTE Am ranges attend the race to monitor tire performance, make sure that Michelin's usage recommendations are adhered to as

a function of the cars' set-ups and respond in case of any issues. They contribute to the job of inspecting the tires that come off the cars after the early stints in order to see how the different plies performed in order to possibly authorize triple or even quadruple stints.

### Performance analysts

These engineers permanently monitor tire and car performance using the data and graphs provided by Michelin's partner teams. They check that the real-time data corresponds with the forecasts obtained during simulation work upstream of the race.

### Tire analysts

Tire analysts section the tires that come off the cars to check that the different plies (crown, casing, sidewalls) and materials performed correctly. As a function of their findings, the developers decide whether the number of stints cars stay out on the same tires can be increased, and provide the teams' engineers and technicians with usage and set-up recommendations.

## MICHELIN'S FACILITIES AT LE MANS

Tires taken to the circuit: approximately **8,000**

Paddock **1,600m<sup>2</sup>**  
Workshop space: 700 square meters  
Storage space: 900 square meters

**37**  
of the 62 cars entered are racing on Michelin tires

TOTAL MICHELIN STAFF: **101**

**54 28 14 5**  
Fitting staff Technicians Engineers Managers

## MICHELIN MOTORSPORT'S CUSTOMER RACING ACTIVITIES AT LE MANS

In addition to the 37 cars contesting the Le Mans 24 Hours on Michelin tires in 2023, Michelin is the exclusive supplier to contestants in the week's Porsche Carrera Cup, Ligier European Series and Road to Le Mans support races. The 71 Porsche Carrera Cups race on MICHELIN Pilot Sport Cup N3s, N3Rs or P2Ls. The 58 LMP3 and GT3 Road to Le Mans entries (including Valentino Rossi's BMW M4 GT3) race on MICHELIN Pilot Sport S9Ms, S8Ms or P2Ls, and the 25 Ligier European Series runners are equipped with S9Ls, S9Ms or P2Ls. The total number of Michelin Customer Racing tires at Le Mans amounts to approximately 4,000.



### HYPERCAR

<b>N°2</b>	CADILLAC RACING	Cadillac V-Series.R	BAMBER/LYNN/WESBROOK	
<b>N°3</b>	CADILLAC RACING	Cadillac V-Series.R	BOURDAIS/VAN DER ZANDE/DIXON	
<b>N°4</b>	FLOYD VANWALL RACING TEAM	Vanwall Vandervell 680	DILLMAN/GUERRIERI/VAUTIER	
<b>N°5</b>	PORSCHE PENSKE MOTORSPORT	Porsche 963	CAMERON/CHRISTENSEN/MAKOWIECKI	
<b>N°6</b>	PORSCHE PENSKE MOTORSPORT	Porsche 963	ESTRE/LOTTERER/VANTHOOR	
<b>N°7</b>	TOYOTA GAZOO RACING	Toyota GR010 Hybrid	CONWAY/KOBAYASHI/LOPEZ	
<b>N°8</b>	TOYOTA GAZOO RACING	Toyota GR010 Hybrid	BUEMI/HARTLEY/HIRAKAWA	
<b>N°38</b>	HERTZ TEAM JOTA	Porsche 963	DA COSTA/STEVENS/YE	
<b>N°50</b>	FERRARI AF CORSE	Ferrari 499P	FUOCO/MOLINA/NIELSEN	
<b>N°51</b>	FERRARI AF CORSE	Ferrari 499P	PIER GUIDI/CALADO/GIOVINAZZI	
<b>N°75</b>	PORSCHE PENSKE MOTORSPORT	Porsche 963	NASR/JAMINET/TANDY	
<b>N°93</b>	PEUGEOT TOTALENERGIES	Peugeot 9X8	DI RESTA/JENSEN/VERGNE	
<b>N°94</b>	PEUGEOT TOTALENERGIES	Peugeot 9X8	DUVAL/MENEZES/MULLER	
<b>N°311</b>	ACTION EXPRESS RACING	Cadillac V-Series.R	DERANI/SIMS/AITKEN	
<b>N°708</b>	GLICKENHAUS RACING	Glickenhaus 007 LMH	DUMAS/PLA/BRISCOE	
<b>N°709</b>	GLICKENHAUS RACING	Glickenhaus 007 LMH	MAILLEUX/BERTHON/GUTIERREZ	

### HYPERCAR PROTOTYPES

**Two types:**  
**LMH** (*Le Mans Hypercar*)  
**and LMDh** (*Le Mans Daytona h*)

COMPARABLE PERFORMANCE

CLOSED COCKPITS


















HYBRID OR NON-HYBRID



POWER:  
**500kW**  
 (680HP)

  
 MINIMUM WEIGHT:  
**1,030KG**

### LM GTE AM

<b>N°16</b>	PROTON COMPETITION	Porsche 911 RSR-19	HARDWICK/ROBICHON/HEYLEN	
<b>N°21</b>	AF CORSE	Ferrari 488 GTE Evo	MANN/PIGUET/DE PAW	
<b>N°25</b>	ORT BY TF	Aston Martin Vantage AMR	HARTHY/DINAN/EASTWOOD	
<b>N°33</b>	CORVETTE RACING	Corvette C8.R	CATSBURG/KEATING/VARRONE	
<b>N°54</b>	AF CORSE	Ferrari 488 GTE Evo	FLOHR/CASTELLACCI/RIGON	
<b>N°55</b>	GMB MOTORSPORT	Aston Martin Vantage AMR	BIRCH/SORENSEN/MOLLER	
<b>N°56</b>	TEAM PROJECT 1	Porsche 911 RSR-19	HYETT/JEANNETTE/CAIROLI	
<b>N°57</b>	KESSEL RACING	Ferrari 488 GTE Evo	KIMURA/HUFFAKER/SERRA	
<b>N°60</b>	IRON LYNX	Porsche 911 RSR-19	SCHIAVONI/CRESSONI/PICARIELLO	
<b>N°66</b>	JMW MOTORSPORT	Ferrari 488 GTE Evo	NEUBAUER/PRETTE/PETROBELLI	
<b>N°72</b>	TF SPORT	Aston Martin Vantage AMR	ROBIN/ROBIN/HASSE-CLOT	
<b>N°74</b>	KESSEL RACING	Ferrari 488 GTE Evo	COZZOLINO/TSUJIKO/YOKOMIZO	
<b>N°77</b>	DEMPSEY-PROTON RACING	Porsche 911 RSR-19	RIED/PEDERSEN/ANDLAUER	
<b>N°83</b>	RICHARD MILLE AF CORSE	Ferrari 488 GTE Evo	PEREZ-COMPANC/ROVERA/WADOUX	
<b>N°85</b>	IRON DAMES	Porsche 911 RSR619	BOVY/GATTING/FREY	
<b>N°86</b>	GR RACING	Porsche 911 RSR-19	WAINWRIGHT/BARKER/PERA	
<b>N°88</b>	PROTON COMPETITION	Porsche 911 RSR-19	TINCKNELL/RIED/YOUNT	
<b>N°98</b>	NORTHWEST AMR	Aston Martin Vantage AMR	JAMES/MANCINELLI/RIBERAS	
<b>N°100</b>	WALKENHORST MOTORSPORT	Ferrari 488 GTE Evo	HULL/HARYANTO/SEGAL	
<b>N°777</b>	D'STATION RACING	Aston Martin Vantage AMR	HOSHINO/STEVENSON/FUJII	
<b>N°911</b>	PROTON COMPETITION	Porsche 911 RSR-19	FASSBENDER/RUMP/LIETZ	

### LMGTE AM PROTOTYPES

DERIVED FROM PRODUCTION  
GT CARS.

FINAL APPEARANCE  
OF LMGTE AM CARS  
AT LE MANS

PRO-AM DRIVER-CREWS



ENGINE: NORMALLY-ASPIRATED :

**5,500cc**  
/ TURBO: 4,300ss























MINIMUM WEIGHT:

**1,245KG**



**HYPERCAR**
**FIA WORLD ENDURANCE HYPERCAR CHAMPIONSHIP**

<b>MANUFACTURERS</b>		 17/03	 16/04	 29/04	 10-11/06	 9/07	 10/10	 4/11	TOTAL
1 <sup>st</sup>	TOYOTA 	38	26	26					90
2 <sup>nd</sup>	FERRARI 	24	18	15					57
3 <sup>rd</sup>	PORSCHE 	15	15	12					42

<b>DRIVERS</b>		 17/03	 16/04	 29/04	 10-11/06	 9/07	 10/10	 4/11	TOTAL
1 <sup>st</sup>	BRENDON HARTLEY 	27	26	18					71
1 <sup>st</sup>	KAZUKI NAKAJIMA 	27	26	18					71
1 <sup>st</sup>	SÉBASTIEN BUEMI 	27	26	18					71
2 <sup>nd</sup>	JOSE MARIA LOPEZ 	38	2	26					66
2 <sup>nd</sup>	KAMUI KOBAYASHI 	38	2	26					66
2 <sup>nd</sup>	MIKE CONWAY 	38	2	26					66
3 <sup>rd</sup>	ANTONIO FUOCO 	24	18	0					42
3 <sup>rd</sup>	MIGUEL MOLINA 	24	18	0					42
3 <sup>rd</sup>	NICKLAS NIELSEN 	24	18	0					42

**LM GTE AM**
**FIA ENDURANCE TROPHY - LMGT E AM**

<b>TEAMS</b>		 17/03	 16/04	 29/04	 10-11/06	 9/07	 10/10	 4/11	TOTAL
1 <sup>st</sup>	CORVETTE RACING 	38	26	18					82
2 <sup>nd</sup>	RICHARD MILLE AF CORSE 	0	18	25					43
3 <sup>rd</sup>	AF CORSE 	18	10	8					36

<b>DRIVERS</b>		 17/03	 16/04	 29/04	 10-11/06	 9/07	 10/10	 4/11	TOTAL
1 <sup>st</sup>	BEN KEATING 	38	26	18					82
1 <sup>st</sup>	NICKY CATSBURG 	38	26	18					82
1 <sup>st</sup>	NICOLAS VARRONE 	38	26	18					82
2 <sup>nd</sup>	ALESSIO ROVERA 	0	18	25					43
2 <sup>nd</sup>	LILOU WADOUX 	0	18	25					43
2 <sup>nd</sup>	LUIS PEREZ COMPANC 	0	18	25					43
3 <sup>rd</sup>	SIMON MANN 	18	10	8					36
3 <sup>rd</sup>	ULYSSE DE PAUW 	18	10	8					36

# MICHELIN AND ENDURANCE RACING TRIVIA

- » Around **200 different 'ingredients'** go into the 20 semi-finished assemblies that make up each MICHELIN Pilot Sport.
- » MICHELIN Pilot Sport tires are made by hand. The process takes around **30 minutes**, plus a further 20 minutes for them to be cured at 180°C.
- » Each MICHELIN Pilot Sport rotates **6,500 times** during a single lap of Le Mans.
- » The running temperature of a MICHELIN Pilot Sport slick can reach as high as **130°C**
- » At **335kph**, the diameter a MICHELIN Pilot Sport tire increases by **1,5cm**.
- » MICHELIN Pilot Sport slicks undergo a lateral deformation of **5cm** through the Porsche Curves.
- » A MICHELIN Pilot Sport can withstand a mass of **100 times** its own weight, equivalent to a family hatchback like the Renault Clio.
- » At **200kph**, a set of MICHELIN Pilot Sport rain tires can clear up to **120 liters of water every second**.
- » In 2008, a single set of MICHELIN Pilot Sport Rain tires completed **1,231 kilometers** on an Aston Martin Vantage.



## ENDURANCE RACING: AN ACCELERATOR OF INNOVATION FOR MICHELIN



Michelin has long seen motorsport in general, and Le Mans in particular, as a valuable way to speed up innovative development. The first win of a slick tire at Le Mans was in 1978.

It was in 1951 that Michelin first raced its revolutionary radial tire (on a Lancia Aurelia B20 GT) at the Le Mans 24 Hours. The construction stood out as a major innovation and a real game-

changer because of the superior road-holding, longer tire life and lower fuel consumption it permitted. It was only once it had fully mastered the blend of metal, textiles and rubber it necessitated that Michelin sought to patent the technology which featured metal belts laid at an angle of 45 degrees, thereby isolating the jobs of the casing and the tread. Thanks to motorsport, radial technology progressed and, in 1967, Michelin provided the first radial slick to compete at Le Mans. Eleven years later, in 1978, the Michelin-equipped Renault-Alpine A442B of Pironi/Jaussaud was the first car to win the famous race on slicks.

## MICHELIN'S WINNING RECORD

- 2022** Buemi/Hartley/Hirakawa  
Toyota GR010 Hybrid
- 2021** Conway/Kobayashi/Lopez  
Toyota GR010 HYBRID
- 2020** Nakajima/Buemi/Hartley  
Toyota TS050 Hybrid
- 2019** Nakajima/Buemi/Alonso  
Toyota TS050 Hybrid
- 2018** Buemi/Nakajima/Alonso  
Toyota TS050 Hybrid
- 2017** Bernhard/Hartley/Bamber  
Porsche 919 Hybrid
- 2016** Jani/Lieb/Dumas  
Porsche 919 Hybrid
- 2015** Hulkenberg/Bamber/Tandy  
Porsche 919 Hybrid
- 2014** Tréluyer/Fassler/Lotterer  
Audi R18 e-tron quattro
- 2013** Kristensen/McNish/Duval  
Audi R18 e-tron quattro
- 2012** Tréluyer/Fassler/Lotterer  
Audi R18 e-tron quattro
- 2011** Tréluyer/Fassler/Lotterer  
Audi R18 TDi
- 2010** Dumas/Bernhard/Rockenfeller  
Audi R15 TDi
- 2009** Brabham/Gené/Wurz  
Peugeot 908 HDi FAP
- 2008** Capello/Kristensen/McNish  
Audi R10 TDi
- 2007** Biela/Pirro/Werner  
Audi R10 TDi
- 2006** Biela/Pirro/Werner  
Audi R10 TDi
- 2005** Kristensen/Lehto/Werner  
Audi R8
- 2004** Kristensen/Ara/Capello  
Audi R8
- 2003** Kristensen/Capello/Smith  
Bentley Speed 8
- 2002** Biela/Kristensen/Pirro  
Audi R8
- 2001** Biela/Kristensen/Pirro  
Audi R8
- 2000** Biela/Kristensen/Pirro  
Audi R8
- 1999** Winkelhock/Martini/Dalmas  
BMW V12 LMR
- 1998** McNish/Aiello/Ortelli  
Porsche 911 GT1
- 1995** Dalmas/Lehto/Sekiya  
McLaren F1 GTR
- 1993** Brabham/Bouchut/Hélary  
Peugeot 905
- 1992** Warwick/Dalmas/Blundell  
Peugeot 905
- 1989** Mass/Dickens/Reuter  
Sauber C9-Mercedes-Benz
- 1978** Pironi/Jaussaud  
Renault-Alpine A442b
- 1923** Lagache/Léonard  
Chenard & Walcker Sport

**31**

Michelin victories

(including a record-breaking run of 25 in-a-row since 1998)

**89**

podium finishes

**32**

pole positions



## MICHELIN LE MANS

### ANNIVERSARIES

#### 10 YEARS AGO...

"Mister Le Mans" Tom Kristensen steered the Audi R18 e-tron quattro/Michelin he shared with Allan McNish and Loic Duval to the last of his record nine Le Mans wins.

#### 20 YEARS AGO...

Michelin monopolized the top two places with the splendid Bentley Speed 8 LMGTP prototypes. It was the British make's first win since 1930.



#### 30 YEARS AGO...

Peugeot and Michelin locked out the top-three places with the Peugeot 905 Evo 1B, led by the #3 car (Hélary/Bouchut/Brabham). Toyota finished one-place shy of the podium.

#### 50 YEARS AGO...

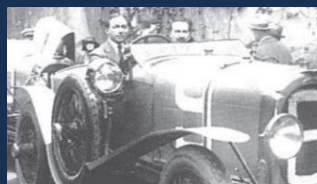
Ferrari and Michelin secured their first GTS win at Le Mans with the Ferrari 365 GTB/4 of Claude Ballot-Lena/Vic Elford. They completed the race in an impressive sixth-place overall.

#### 100 YEARS AGO...

Michelin filled the top two places with the Chenard & Walcker Sport, a car made in the Paris suburb of Gennevilliers. Sadly, the make's founders Ernest Chenard and Henry Walcker died in 1923.

## MICHELIN LE MANS HIGHLIGHTS

### 1923: MICHELIN CLAIMS INAUGURAL LE MANS 24 HOURS



On May 26, 1923, a field of 33 cars set off in pouring rain to contest the very first Le Mans 24 Hours, known at the time as the Grand Prix d'Endurance de 24 Heures. The race featured a 17-kilometer dirt circuit and produced a one-two finish for Chenard & Walcker/Michelin, led by the Lagache/Léonard car which averaged 92kph. Only three cars failed to finish.

### NEW DISTANCE RECORD

The 2010 Le Mans 24 Hours saw Michelin and Audi establish a new distance record at Le Mans, with Rockenfeller/Dumas/Bernhard's Audi R15 TDi completing 5,410.713km (397 laps). The former record (5,335km) dated back to 1971 when the circuit layout was much faster. Michelin also holds the LMP2, LMGTE Pro and Am distance records.

### A DECISIVE FIFTH STINT CLINCHES 2011 WIN BY 13 SECONDS!



In 2011, the N°2 Audi R18 TDi/Michelin won Le Mans by a margin of just 13.854 seconds

after Benoît Tréluyer chose to go out for a fifth stint on the same set of tires following the car's final pit stop. The 30 or so seconds saved by not changing his Michelins allowed the Frenchman to shrug off the late pressure applied by a trio of charging Peugeot 908 HDIs to the finish line!

### NEW AVERAGE-SPEED RECORD



Japan's Kamui Kobayashi established a new record for Le Mans when qualifying his Toyota TS050 Hybrid/Michelin for the 2017 race. His pole-winning time of 3m14.791s equated to an average speed of 251.88kph, making it the fastest lap ever clocked in La Sarthe. The previous record dated back to 1985 (251.81kph). The 2017 race also saw Michelin post new lap records in LMP2, LMGTE Pro and LMGTE Am.

### MORE THAN TWO F1 GRANDS PRIX ON THE SAME FOUR TIRES



In 2018, the 2009 F1 world champion Jenson Button covered 55 laps (750km) at an average speed of more than 220kph on the same set

of Michelin tires in his BR1-AER LMP1 prototype. That's equivalent to contesting more than two F1 grands prix without changing tires. Button posted the fastest lap of his quintuple stint (average speed: 242kph) 30th time around, 400km into his landmark run.

### 25 CONSECUTIVE WINS - A RECORD

Michelin holds the record for the longest unbroken winning spell at Le Mans (24 victories since 1998). In the course of this ongoing run, the French manufacturer has had to adapt its range frequently as a function of shifting technical regulations and technologies employed by the successive cars. The record for the highest number of Le Mans wins is currently held by Dunlop (34), ahead of Michelin (31) and Goodyear (14).

### A HYDROGEN PROTOTYPE AND SUSTAINABLE TIRES



As part of the build-up to the 2022 Le Mans 24 Hours, and in keeping with Michelin's commitment to more sustainable, low-carbon motorsport, the hydrogen-fueled H24 prototype completed a lap of the circuit on Michelin tires containing 53% recycled, biosourced or renewable raw materials.

## MICHELIN RECORDS AT LE MANS

**25**

The highest number of consecutive wins (since 1998)

**251.88KPH**

Fastest ever average speed over one lap (with Toyota, in 2017)

**5,410.713km**

Distance record over 24 hours (with Audi, in 2010)

**225.22KPH**

Fastest average speed over 24 hours (with Audi, in 2010)

**54**

The highest number of cars to contest Le Mans on Michelin rubber (2020)

**8**

The highest number of Le Mans wins with the same driver (Tom Kristensen)

**5**

The highest number of wins with the same car (Audi R8)

**15**

The highest number of overall places at the finish monopolized by cars equipped by the same tire manufacture (2009)

**32**

The highest number of pole positions (since 1963)

## LANDMARK DATES

### 1923: MICHELIN WINS INAUGURAL LE MANS

Michelin wins the very first edition of the Le Mans 24 Hours with André Lagache and René Leonard driving a Chenard & Walcker. They completed the race at an average speed of more than 92kph around the original 17-kilometer circuit.

### 1951: MICHELIN RETURNS TO LE MANS

Michelin returns to Le Mans with radial tires for a Lancia Aurelia B20GT. In addition to topping its class, the car came 12<sup>th</sup> overall after completing 3,000km on the same set of tires.

### 1967: SLICKS

Michelin innovates with the introduction of the first radial slicks to contest the Le Mans 24 Hours, fitted to an Alpine-Renault A210.

### 1978: AN ALL-FRENCH VICTORY

Victory for Didier Pironi and Jean-Pierre Jaussaud in a Renault-Alpine A442B on Michelin tires.

### 1989: A MICHELIN ONE-TWO

Michelin takes a one-two finish with the Sauber-Mercedes of Mass/Reuter/Dickens and Baldi/Acheson/Brancatelli.

### 1993: MICHELIN LOCKS OUT THE PODIUM

Peugeot and Michelin monopolized the podium with the 905 (winners: Brabham/Bouchut/Hélary).

### 1999: A MICHELIN TOP-FOUR

Michelin dominates the race to earn a one-two-three-four finish in association with BMW, Toyota and two Audis. It also secures top spot in the GTS class with Chrysler.

### 2000: FIRST WIN FOR AUDI-MICHELIN

Michelin and its partner Audi score a one-two-three finish in La Sarthe, with the win going to Kristensen/Biela/Pirro.

### 2003: BENTLEY-MICHELIN, 79 YEARS LATER

Two years after returning to endurance racing, Bentley scores a one-two finish and its fifth overall win, 79 years after the last. Michelin tops every class.

### 2006: THE FIRST DIESEL WIN AT LE MANS

Audi achieves success with diesel technology at Le Mans on Michelin tires developed specifically to deal with the high forces generated by the R10 TDi prototypes.

### 2007: TEN IN A ROW FOR MICHELIN

Michelin takes victory for the tenth consecutive year at Le Mans. It's the French manufacturer's 16<sup>th</sup> win at the legendary race.

### 2009: PEUGEOT-MICHELIN: 16 YEARS LATER

Peugeot and Michelin secure a one-two finish at Le Mans, 16 years after their last success together in 1993. Michelin once again wins all four classes and locks out the top 15 positions in the overall standings.

### 2010: ONE-TWO-THREE FOR AUDI-MICHELIN

The three works Audi R15 TDIs lock out the podium to notch up a ninth Le Mans victory for the Audi-Michelin partnership. The N°9 Audi sets a new distance record after covering 5,410.71km on just 11 sets of tires!

### 2011: 20<sup>TH</sup> MICHELIN VICTORY AT LE MANS

Michelin celebrates its 20<sup>th</sup> victory (its 14<sup>th</sup> in a row) at Le Mans and shares a tenth success with its partner Audi. The winning N°9 Audi completes five consecutive stints on the same Michelin tires.

### 2012: FIRST LE MANS SUCCESS FOR HYBRID POWER

Michelin secures its 15<sup>th</sup> straight win at Le Mans with the Audi R18 e-tron quattro. The Michelin-equipped car goes down in history as the first hybrid prototype (diesel/electricity) to win the French race. First Le Mans appearance for the Michelin Hybrid, a slick intermediate tire.

### 2015: PORSCHE-MICHELIN BACK ON TOP

Seventeen years after their last victory together at the Circuit de la Sarthe, Porsche and Michelin win the 2015 race with the 'third' Hybrid 919 in the hands of Le Mans novices Nico Hülkenberg, Earl Bamber and Nick Tandy. It is Michelin's 24<sup>th</sup> victory at the famous French race.

### 2016: A MEMORABLE START AND FINISH!

For the first time, the Le Mans 24 Hours starts behind a Safety Car following a heavy shower moments before the start. While leading, the N°5 Toyota suffers a cruel mechanical problem during the race's penultimate lap which hands victory to the N°2 Porsche 919 Hybrid/Michelin of Marc Lieb, Neel Jani and Romain Dumas.

### 2017: PORSCHE/MICHELIN WINS BUT TWO LM P2 CARS ON THE PODIUM

Once again, Toyota comes close to winning the Le Mans 24 Hours but glory escapes it yet again. Victory ends up in Porsche's hands for the third year running, while second and third places go to LM P2 prototypes.

### 2018: TOYOTA/MICHELIN'S FIRST LE MANS SUCCESS

Toyota celebrates its 20<sup>th</sup> attempt at the Le Mans 24 Hours with a one-two finish for the TS050 Hybrid/Michelin. First Le Mans win for F1 star Fernando Alonso.

### 2019: A MICHELIN GRAND SLAM

Michelin wins all four classes (LMP1, LMP2, LMGTE Pro, LMGTE Am) for the first time since 2010.

### 2020: NO SPECTATORS

Toyota and Michelin make it three wins in a row in front of empty grandstands due to the Covid-19 pandemic. Another grand-slam performance for Michelin whose partners top all four classes.

### 2021: MICHELIN'S 24<sup>TH</sup> STRAIGHT WIN

Michelin extends its unbeaten run at Le Mans to 24 victories since 1998. Its brand new tires for the Hypercar entries help Toyota and its GR010 Hybrid claim the first race of the race's Hypercar era.

### 2022: 5 IN-A-ROW FOR TOYOTA WITH MICHELIN

Toyota/Michelin claims its fifth straight Le Mans victory. Porsche and Michelin wins the last LMGTE Pro race at the Le Mans 24 Hours, establishing a new distance-record (4,769km) in the process.



# MICHELIN'S ENVIRONMENTAL COMMITMENT

Michelin sees endurance racing - and the Le Mans 24 Hours in particular - as an accelerator of innovation in its quest for increasingly environmentally-respectful raw materials and technologies that contribute to the Group's 'Everything Sustainable' target by 2050.

The centenary edition of the Le Mans 24 Hours coincides with the arrival of several new players in endurance racing's headlining Hypercar class, for which Michelin has developed a range of specific tires.

The use of CAD and simulator technology enabled Michelin to halve the time necessary for the development of these new tires, while slashing the cost of the process and the quantity of materials required by 75 percent. The longevity of Michelin's tires has long enabled its partners to run double, triple and even quadruple stints with a view to saving time during pit stops, with no detriment to performance. This, too, has contributed to

reducing the firm's environmental footprint at Le Mans over the years, since fewer tires raced means fewer tires to manufacture, ship and recycle, not to mention smaller quantities of raw materials.

Working in favor of sustainable mobility is central to the partnerships Michelin strikes in motorsport. In 2021, it revealed a new demonstration tire containing 46 percent renewable, biosourced or recycled materials. This year, that figure has been raised to 63 percent in the case of the tires fitted to the H24 hydrogen prototype. These genuine racing tires are capable of covering a complete lap of the Circuit de la Sarthe.

The nature of motorsport may be evolving, but it continues to enable Michelin to accelerate the emergence of innovations aimed at helping the Group to meet its environmental pledges.



# 2023

## WEC CALENDAR



**MARCH 17**  
1,000 Miles of Sebring



**APRIL 16**  
6 Hours of Portimão



**APRIL 29**  
6 Hours  
of Spa-Francorchamps



**JUNE 10-11**  
Le Mans 24 Hours



**JULY 9**  
6 Hours of Monza



**SEPTEMBER 10**  
6 Hours of Fuji



**SEPTEMBER 4**  
8 Hours of Bahrain



## FIA WEC TIRE REGULATIONS

Michelin has been appointed as the exclusive tire supplier for the FIA WEC's Hypercar prototypes.

Teams competing in LMGTE Am may work with the tire manufacturer of their choice. Michelin has been nominated by all the competitors in this class.

### TIRE ALLOCATIONS

	Free Practice	Qualifying + Race	
		6-hour races	8-hour races
<b>HYPERCAR</b>	12	18	26
<b>LM GTE AM</b>	16	26	34

### LE MANS 24HOURS ALLOCATION

	Free Practice + Qualifying	Hyperpole	Race
<b>LM GTE AM</b>	28	8	60

### SLICKS

#### Hypercars:

Three types of slick for the season for all of the cars, with two types of slick to be nominated 48 hours before the Prologue test. Two types of slick to be nominated 48 hours at the latest before the start of scrutineering (three types for Le Mans).

- Tire manufacturers must draw up identical usage indications (tire pressures, camber) for all competitors. Non-compliance with these indications will result in the competitor being reported to the Sporting Stewards.
- In the case of 29/34 tires, tires will be allocated to each competitor at meetings by a random process carried out by the Technical Delegates. These tires to count for the Qualifying + Race allocation. Procedure established by the WEC Committee.
- In the case of 31/31 tires, a procedure to collect and redistribute tires established by the WEC Committee.
- The WEC Committee may make changes to the random tire allocation and/or tire collection/redistribution procedures at any point in the season.

#### LM GTE Am:

Only those tire specifications nominated for the 2022 championship may be used in 2023.

All the specifications for the season must be declared to the Technical Delegate before the start of the season.

Three types of slick for the season for all of the cars. Two types of slick for each race (three types for Le Mans).

### RAIN TIRES

Rain tires may only be used if Race Control declares the track to be wet (Free Practice, Qualifying, Race). No per-event quotas.

**LM GTE Am:** One type of rain tire and one type of intermediate tire per model entered 48 hours prior to the Prologue. The re-cutting of tread patterns is not authorized.

#### Number of authorized specifications

	Slick tires			Wet-weather tires
	Le Mans 24 Hours	Other races	Total for the season	
<b>HYPERCAR</b>	3	2	3	1
<b>LM GTE AM</b>	3	2	3	2

Altering the property of a tire by either chemical or mechanical means is not permitted, except for the removal of debris picked up on the track.

The tires' (fill ou) profile may not be modified or re-cut.

Processes involving a direct or indirect test aimed at modifying the temperature of a tire (in relation to ambient temperature) are not permitted (except at Le Mans).

In the course of the season, a competitor may change tire supplier no more than once.

**Infringement of the tire allowance:** Stop & Go of 2 minutes per tire.

**Breach of tire-warming rules:** three-minute Stop&Go during the race.

**A maximum of four mechanics and two tire guns** for wheel changes during pit stops. Tire changes are not authorized while the car is being refueled.

**1 tire technician** authorized to check tire temperatures and pressures.

Tire changes are only authorized a) on the grid up to the five-minute board, b) in front of the car's garage during a pit stop or inside the garage if more extensive work on the car is required, or c) on the track if the race is suspended.

Tires are identified by RFID chips and bar codes. All tire serial numbers must be provided to the Technical Delegates 48 hours in advance.



# #WeRace ForChange

*MICHELIN INVESTS IN MOTORSPORT  
TO DEVELOP SUSTAINABLE INNOVATION  
AND IMPROVE THE WAY WE ALL MOVE.*



**PHILIPPE**  
TIRE TECHNICIAN

**MOTION  
FOR  
LIFE**  **MICHELIN**