

Hankook & Company

2026 Product Catalogue

Passenger Car / Commercial Vehicle / Leisure



Official Partner of
FORMULA e



For decades, we've powered journeys across the globe with trusted lead-acid battery technology. Engineered for durability, built for performance – our batteries meet the demands of modern vehicles with excellence, reliability, and global compliance.

Contents

Product Overview

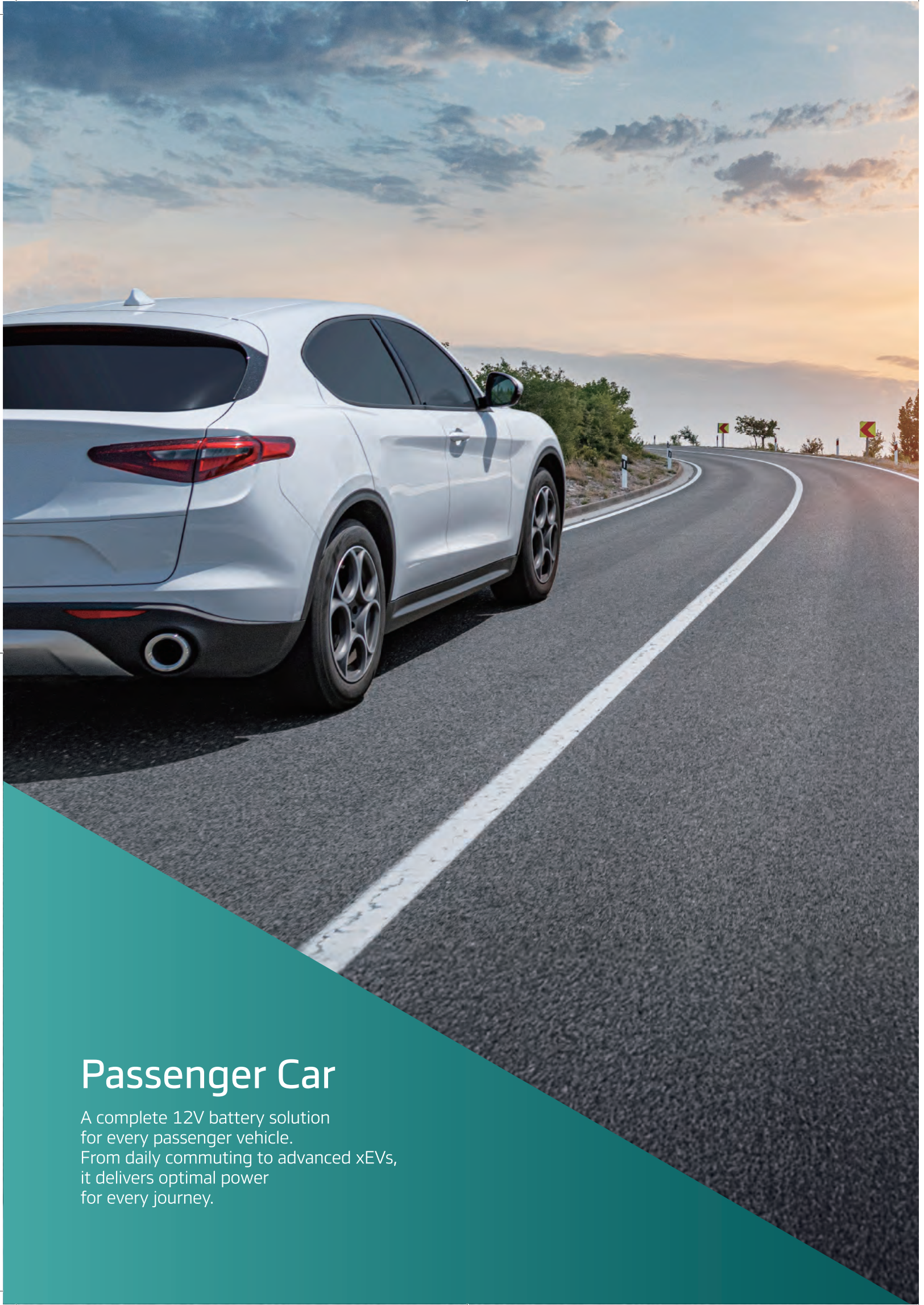
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Product Portfolio

		Passenger Car		
		 	 	 
		ICE	Start Stop	xEV
AGM 	Premium	SUPREME AGM SUPREME AGM (Heat-Durable Type)		
EFB  	Premium	SUPREME EFB PRIME		
	Standard	SUPREME EFB		
MF   	Premium	MF PRIME (General Durable Type, Basic Performance Type) TROPICAL MF PRIME		
	Standard	MF TROPICAL MF		
	Eco	TROPICAL MF ECO		

Commercial Vehicle		
 	 	 
Urban	Regional	Long Haul
SUPREME AGM		
SUPREME EFB		
MF PRIME (Basic Performance Type)		
MF		

Leisure Vehicle		
 	 	 
Standard	Mid-Load	High-Load
SUPREME AGM		
SUPREME EFB		
MF		



Passenger Car

A complete 12V battery solution
for every passenger vehicle.
From daily commuting to advanced xEVs,
it delivers optimal power
for every journey.

PASSENGER CAR BATTERIES

Full-spectrum 12V battery solutions for all passenger vehicles.

From ICE and ISS vehicles to the latest EV platforms, our products deliver excellent starting performance, long lifespan, and stable power supply to meet high energy demands and diverse driving conditions.

Premium	ISS applications	Standard	High-Temperature
SUPREME AGM	SUPREME EFB	MF	TROPICAL MF
For xEVs and premium ISS vehicles with high power demands	For ISS Vehicles Prioritizing Cost Efficiency and Reliability	For ICE Vehicles Requiring Reliable Starting Performance	For ICE Vehicles Requiring Reliable Starting Performance in High-Temperature Conditions
			

We provide batteries tailored for long-duration energy needs and deep discharge in leisure environments—from campervans and marine applications to caravans and off-grid activities.



General Durability

Supreme AGM 

Supreme EFB Prime
Supreme EFB 

MF Prime
MF 

ICE Entry Start Stop Premium Start Stop xEV



Heat Durability

Supreme AGM
(Heat-Durable Type) 

Tropical MF Prime
Tropical MF
Tropical MF Eco 

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

Sales Contact

SUPREME AGM

xEV & Start Stop system / Advanced absorbent glass mat battery tech.

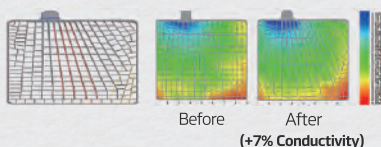
Hankook & Company's Automotive Supreme AGM series is a premium battery trusted by leading global OEMs. It is engineered to meet and exceed the demanding requirements of advanced start-stop vehicles and xEVs equipped with cutting-edge electronic systems. The AGM lineup offers tailored solutions for a wide range of applications from standard and high-temperature durability specifications to xEV and auxiliary power support.



About Our Supreme AGM Technology

① Enhanced Low-Resistance Grid Design

With the application of a low-resistance grid design, starting performance is stabilized and high-efficiency discharge characteristics are enhanced.



② Optimized Curing & Formation Design



By refining curing and formation conditions, the active material structure is optimized, resulting in enhanced durability.

③ Application of Specialized Active Material

Through the addition of TBLS and special carbon, active material efficiency and charging performance are enhanced.



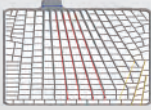
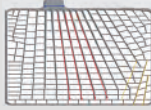
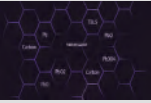
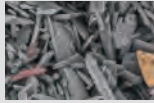
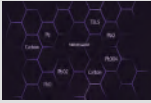
④ Optimization of Interfacial Layer Bonding

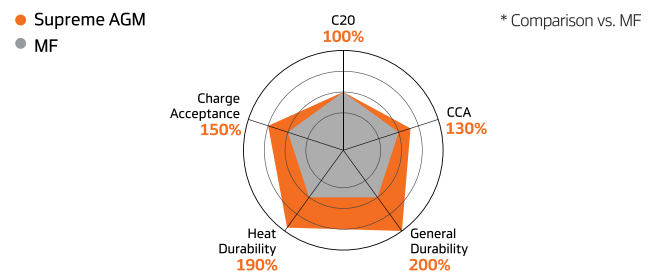
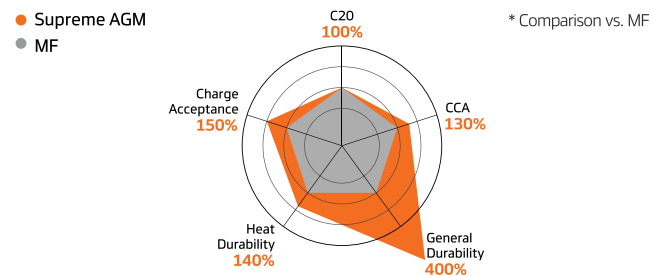
Enhanced adhesion between the grid and the active material reinforces the interfacial layer, leading to improved durability.



Why Choose Our Supreme AGM?

Equipped with Premium Core AGM Technology

Supreme AGM		Supreme AGM (Heat-Durable Type)	
Charging Efficiency Tech.	General Durability Tech.	Charging Efficiency Tech.	Heat Durability Tech.
 Low-Resistance Grid Design	 Optimization of Interfacial Layer Bonding	 Low-Resistance Grid Design	 High-Temperature Optimized Plate Design
 Specialized Active Material	 Optimized Curing & Formation Design	 Specialized Active Material	 Optimized Curing & Formation Design
 Max. +50% Charging Efficiency	 Max. +300% General Durability	 Max. +50% Charging Efficiency	 Max. +90% Heat Durability



Product Line-up



Supreme AGM

- EN-Standard AGM Optimized for General Durability
- 4x Durability vs. MF
- EN/JIS/BCI Type



**Supreme AGM
(Heat-Durable Type)**

- North American Standard AGM Reinforced for High-Temperature Durability
- 2x Heat Durability vs. MF

We offer an AGM lineup that includes both standard-durability products and enhanced high-temperature durability products, in line with the latest driving environments and installation trends in modern vehicles.

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

Sales Contact

SUPREME EFB

Start Stop system / Advanced enhanced flooded battery tech.

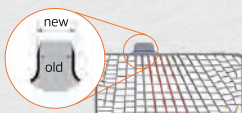
Hankook & Company's Automotive Supreme EFB series is a trusted solution for global automotive manufacturers. It is engineered to meet and exceed the performance demands of start-stop vehicles with increasing electrical loads. Optimized for today's efficiency-focused mobility environment, it is the ideal choice for delivering a smart and stable driving experience.



About Our Supreme EFB Technology

① Robust Low-Resistance Grid Design

With a thick plate alloy that enhances high-temperature durability and an advanced low-resistance grid structure, starting performance is upgraded.



② Special Electrolyte Additives

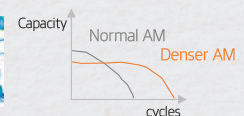


By incorporating specialized ionic additives into the electrolyte, cycle life is extended.



③ High-Density Positive Active Material

The use of high-density active material suppresses material shedding during operation, improving cycle life.



④ Special Additive: TBLS

By adding TBLS to the positive active material, both performance and cycle life are improved.



Big 4BS (Non-Added)



Small 4BS (Added)

Why Choose Our Supreme EFB?

Applied with High-Efficiency, ISS-Dedicated Design Technology

Supreme EFB

Heat Durability Tech.

Robust Low-Resistance Grid Design

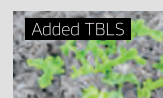


General Durability Tech.

Special Electrolyte Additives



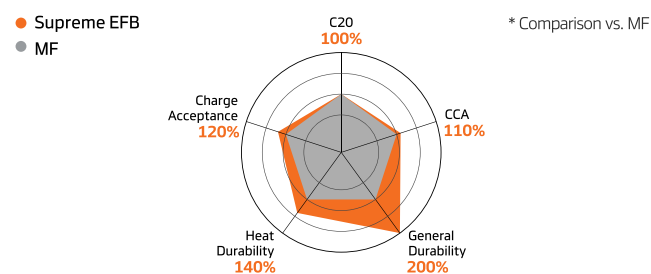
Application of Special Additives (TBLS) & Active Material





Max. +40% Heat Durability

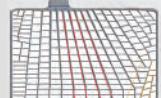
Max. +100% General Durability



Supreme EFB Prime

Heat Durability Tech.

Robust Low-Resistance Grid Design

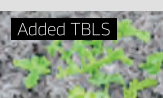


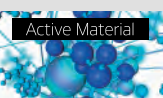
General Durability Tech.

High-Durability Negative Grid Design



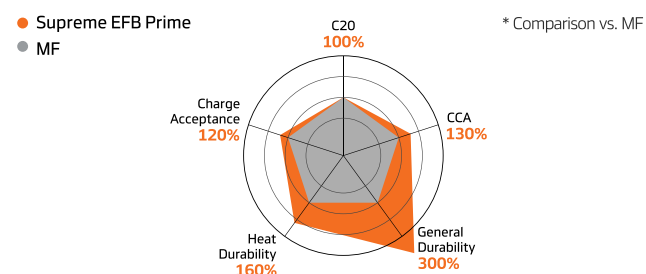
Application of Special Additives (TBLS) & Active Material





Max. +60% Heat Durability

Max. +200% General Durability



Product Line-up



Supreme EFB

- EN Standard EFB Specialized for General Durability
- 2x Durability vs. MF
- EN/JIS Type



Supreme EFB Prime

- EN Standard EFB Specialized for General Durability
- 3x Durability vs. MF
- EN/JIS Type

We operate our EFB lineup to include standard-durability products as well as enhanced standard-durability and high-temperature durability models. This approach reflects regional performance requirements and our commitment to ongoing technological advancement.

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

Sales Contact

MF

SLI system / Maintenance free battery tech.

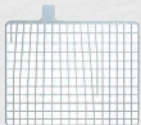
Hankook & Company's Automotive MF series is a reliable solution optimized for the electrical demands of general vehicles. With a maintenance-free structure and stable power supply, it delivers consistent performance across diverse driving conditions and ensures uniform quality for all customers.



About Our MF Technology

① Advanced X-Frame Plus

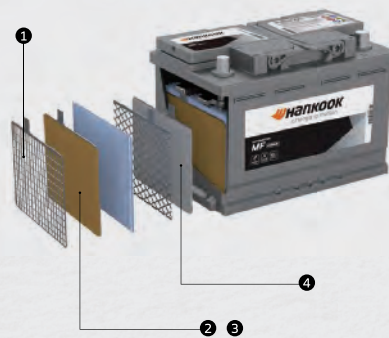
With a full-frame stamped structure manufactured through advanced cooling and rolling processes, it delivers stable and powerful starting performance.



② Special Electrolyte Additives



By incorporating specialized ionic additives into the electrolyte, cycle life is extended



③ Special Additive: TBLS

By adding TBLS to the positive active material, both performance and cycle life are improved.



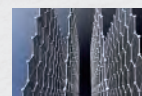
Big 4BS (Non-Added)



Small 4BS (Added)

*TBLS : Tetrabasic Lead Sulfate

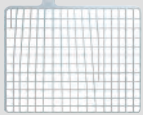
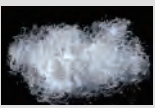
④ Special Additive: Carbon



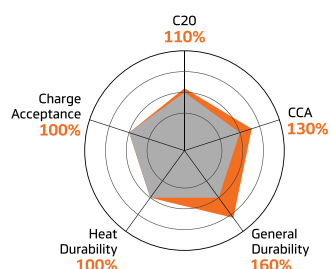
By incorporating advanced premium carbon material into the negative active material, charge acceptance is improved.

Why Choose Our MF?

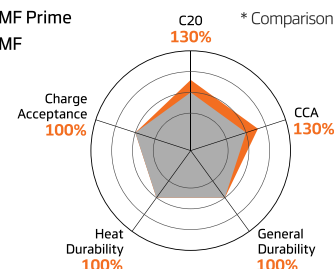
Applied with Stable Standard Design Technology

MF	MF Prime (General Durable Type)	MF Prime (Basic Performance Type)
Standard Cranking Tech.	General Durability Tech.	Enhanced Basic Performance Tech.
Advanced X-Frame Plus 	Special Electrolyte Additives 	MultiPlate Technology 
Microfiber Added for Improved Active Material Structure 	Special Additive : TBLS 	Special Additive : TBLS 
 Stable Power Supply and Strong Starting Performance	 Max. +60% General Durability	 Max. +30% Basic Performance

● MF Prime
● MF



● MF Prime
● MF



Product Line-up



MF

- Standard Battery for ICE with Reliable Starting Performance
- EN/JIS/BCI Type



MF Prime
(General Durable Type)

- EN Standard MF with Enhanced Standard Durability
- 1.6x Durability vs. MF
- EN/JIS/BCI Type



MF Prime
(Basic Performance Type)

- MF Specialized for Basic Performance
- Max. 1.3x Basic Performance vs. MF
- EN/JIS/BCI Type

We operate our MF Prime lineup not only with standard MF products, but also with enhanced standard-durability and upgraded basic-performance models. This structure reflects regional performance requirements and our continued response to evolving advanced technologies.

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

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TROPICAL MF

SLI system / Maintenance free battery tech.

Hankook & Company's Automotive Tropical MF series is an ideal solution for ICE vehicles operating in high-temperature environments. Developed based on durability testing conducted under extreme heat conditions, the Tropical MF delivers significantly longer service life than standard MF batteries, offering superior endurance across various hot climates.



About Our TROPICAL MF Technology

① High Tin & Robust Grid Design

High-temperature durability is enhanced through the application of a thick full-frame design and a high-tin plate alloy.

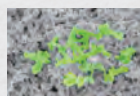


② Special Additive: TBLS

By adding TBLS to the positive active material, both performance and cycle life are improved.



Big 4BS (Non-Added)



Small 4BS (Added)

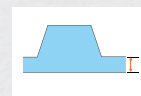
③ Special Electrolyte Additives

By incorporating specialized ionic additives into the electrolyte, cycle life is extended.

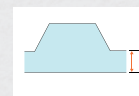


④ High-Temperature Dedicated Separator

High-temperature durability is increased by applying a thicker, low-resistance separator compared to conventional designs.



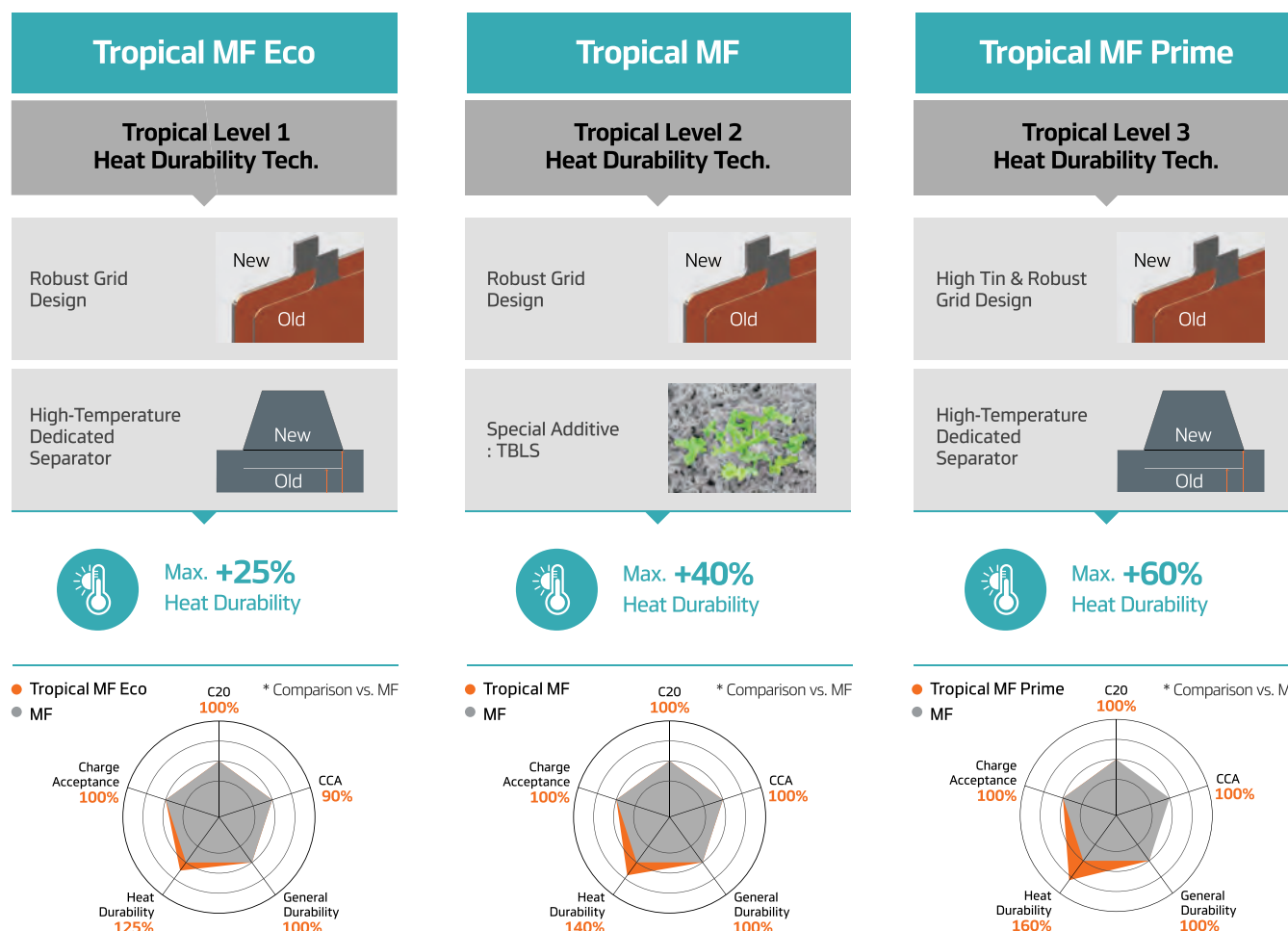
Old



New

Why Choose Our Tropical MF?

Applied with High-Temperature Optimized Design Technology



Product Line-up



Tropical MF Eco

- Heat Durable MF
- 1.25x Heat Durability vs. MF
- EN/JIS Type



Tropical MF

- Heat Durable MF
- 1.4x Heat Durability vs. MF
- EN/JIS Type



Tropical MF Prime

- Enhanced Heat Durable MF
- 1.6x Heat Durability vs. MF
- EN/JIS Type

We operate a diversified lineup to address the performance needs of different hot-climate markets. In addition to our high-temperature durability MF products, we provide the Prime range with enhanced heat resistance and the Eco range with moderately reduced high-temperature performance.

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

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Automotive Type List

12V Automotive / Hankook Supreme AGM											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L1	AGM 55020	50	540	208	174	190	190	0	A	B13	Light Gray
L2	AGM 56020	60	680	242	174	190	190	0	A	B13	Light Gray
L3	AGM 57020	70	760	277	174	190	190	0	A	B13	Light Gray
L4	AGM 58020	80	800	314	174	190	190	0	A	B13	Light Gray
L5	AGM 59520	95	850	352	174	190	190	0	A	B13	Light Gray
L6	AGM 60520	105	950	393	174	190	190	0	A	B13	Light Gray
JIS											
B20	AGM S34B20R	35	340	196	127	201	220	1	A(B)	B0	Light Gray
B24	AGM S46B24R	45	370	236	127	200	224	1	A(B)	B0	Light Gray
	AGM 60B24R	45	450	236	127	200	224	1	A(B)	B0	Light Gray
D23	AGM S55D23R	50	550	220	170	200	220	1	A	B0(B1)	Light Gray
	AGM 90D23R	55	650	245	174	200	220	1	A	B0(B1)	Light Gray
D26	AGM 65D26R	75	750	260	174	200	220	1	A	B0(B1)	Light Gray
	AGM S65D26R	75	750	260	174	200	220	1	A	B0(B1)	Light Gray
D31	AGM 115D31R	90	750	302	174	200	220	1	A	B0(B1)	Light Gray
	AGM S115D31R	90	800	302	174	200	220	1	A	B0(B1)	Light Gray
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
BCI											
U1	AGM U1-450LS (*1)	55	450	197	131	172	186	0	A	B0	Light Gray
51	AGM 51-450	75	450	236	127	200	224	1	A(B)	B0	Light Gray
25	AGM 25-650	100	650	245	174	200	220	1	A	B1	Light Gray
24	AGM 24-750	140	750	260	174	200	220	1	A	B0(B1)	Light Gray
27	AGM 27-750	175	750	302	174	200	220	1	A	B0(B1)	Light Gray
34	AGM 34-750	120	750	260	173	181	201	1	A	B1	Light Gray
35	AGM 35-550	85	550	220	170	200	220	0	A	B0(B1)	Light Gray
	AGM 35-650	100	650	245	174	200	220	0	A	B0(B1)	Light Gray
65	AGM 65-750	150	750	306	189	171	191	1	A	B8	Light Gray
78	AGM 78-775	120	775	260	186	180	180	1	SIDE	B1	Light Gray

* 1 : For T EV models.

12V Automotive / Hankook Supreme EFB Prime											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L2	EFB 56030	60	640	242	174	190	190	0	A	B13	Dark Gray
LB3	EFB 56530	65	650	277	174	175	175	0	A	B13	Dark Gray
L3	EFB 57030	70	760	277	174	190	190	0	A	B13	Dark Gray
LB4	EFB 57530	75	730	315	174	175	175	0	A	B13	Dark Gray
L4	EFB 58030	80	800	315	174	190	190	0	A	B13	Dark Gray
L5	EFB 59530	95	900	354	174	190	190	0	A	B13	Dark Gray
L6	EFB 61030	110	950	393	174	190	190	0	A	B13	Dark Gray
JIS											
B20	EFB 60B20L(M42)	40	420	196	127	200	220	0	A(B)	B0	Dark Gray
	EFB 60B20R(M42R)	40	420	196	127	200	220	1	A(B)	B0	Dark Gray
B24	EFB 80B24L(N55)	51	500	234	127	200	220	0	A(B)	B0(B1)	Dark Gray
	EFB 80B24R(N55R)	51	500	234	127	200	220	1	A(B)	B0(B1)	Dark Gray
D23	EFB 115D23L(Q85)	70	670	230	172	200	220	0	A	B0(B1)	Dark Gray
	EFB 115D23R(Q85R)	70	670	230	172	200	220	1	A	B0(B1)	Dark Gray
D26	EFB 130D26L(S95)	75	760	257	172	200	220	0	A	B0(B1)	Dark Gray
	EFB 130D26R(S95R)	75	760	257	172	200	220	1	A	B0(B1)	Dark Gray
D31	EFB 145D31L(T110)	90	820	302	172	200	220	0	A	B0(B1)	Dark Gray
	EFB 145D31R(T110R)	90	820	302	172	200	220	1	A	B0(B1)	Dark Gray
12V Automotive / Hankook Supreme EFB											
EN (DIN)											
L1	EFB 55010	50	480	207	174	190	190	0	A	B13	Dark Gray
L2	EFB 56010	60	560	242	174	190	190	0	A	B13	Dark Gray
LB3	EFB 56510	65	650	277	174	175	175	0	A	B13	Dark Gray
L3	EFB 57010	70	650	277	174	190	190	0	A	B13	Dark Gray
LB4	EFB 57510	75	730	315	174	175	175	0	A	B13	Dark Gray
L4	EFB 58010	80	730	315	174	190	190	0	A	B13	Dark Gray
L5	EFB 59510	95	900	354	174	190	190	0	A	B13	Dark Gray
L6	EFB 61010	110	950	393	174	190	190	0	A	B13	Dark Gray
JIS											
B20	EFB M42(55B20L)	40	420	196	127	200	220	0	A(B)	B0	Dark Gray
B20	EFB M42R(55B20R)	40	420	196	127	200	220	1	A(B)	B0	Dark Gray
B24	EFB N55(70B24L)	45	460	234	127	200	220	0	A(B)	B0(B1)	Dark Gray
	EFB N55R(70B24R)	45	460	234	127	200	220	1	A(B)	B0(B1)	Dark Gray
D23	EFB Q85(90D23L)	65	670	230	172	200	220	0	A	B0(B1)	Dark Gray
	EFB Q85R(90D23R)	65	670	230	172	200	220	1	A	B0(B1)	Dark Gray
D26	EFB S95(100D26L)	68	730	257	172	200	220	0	A	B0(B1)	Dark Gray
	EFB S95R(100D26R)	68	730	257	172	200	220	1	A	B0(B1)	Dark Gray
D31	EFB T110(115D31L)	80	800	302	172	200	220	0	A	B0(B1)	Dark Gray
	EFB T110R(115D31R)	80	800	302	172	200	220	1	A	B0(B1)	Dark Gray

Type List

12V Automotive / Hankook MF Prime (General Durable Type)											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
LB1	PMF55205	52	520	208	174	175	175	O	A	B13	Light Gray
L1	PMF55405	54	530	208	174	190	190	O	A	B13	Light Gray
LB2	PMF56005	61	600	242	174	175	175	O	A	B13	Light Gray
L2	PMF56305	63	610	242	174	190	190	O	A	B13	Light Gray
LB3	PMF57405	74	750	277	174	175	175	O	A	B13	Light Gray
L3	PMF57705	77	780	277	174	190	190	O	A	B13	Light Gray
LB4	PMF58005	80	800	315	174	175	175	O	A	B13	Light Gray
L4	PMF58505	85	800	315	174	190	190	O	A	B13	Light Gray
L5	PMF60005	100	830	354	174	190	190	O	A	B13	Light Gray
12V Automotive / Hankook MF Prime (Basic Performance Type)											
EN (DIN)											
L1	UMF55600	56	570	207	174	190	190	0	A	B13	Light Gray
LB2	UMF56000	60	600	242	174	175	175	0	A	B13	Light Gray
L2	UMF56800	68	600	242	174	190	190	0	A	B13	Light Gray
	UMF56801	68	600	242	174	190	190	1	A	B13	Light Gray
LB3	UMF57400	74	750	277	174	175	175	0	A	B13	Light Gray
	UMF57401	74	750	277	174	175	175	1	A	B13	Light Gray
L3	UMF57800	78	780	277	174	190	190	0	A	B13	Light Gray
LB4	UMF58000	80	800	315	174	175	175	0	A	B13	Light Gray
L4	UMF59000	90	800	315	174	190	190	0	A	B13	Light Gray
	UMF59001	90	800	315	174	190	190	1	A	B13	Light Gray
L5	UMF60500	105	850	354	174	190	190	0	A	B13	Light Gray
L6	UMF61000	110	950	393	174	190	190	0	A	B13	Light Gray
JIS											
B19	UMF55B19R	45	400	187	127	200	220	1	B	B0(B1)	Light Gray
	UMF55B19L	45	400	187	127	200	220	0	B	B0(B1)	Light Gray
	UMF55B19RS	45	400	187	127	200	220	1	A	B0(B1)	Light Gray
	UMF55B19LS	45	400	187	127	200	220	0	A	B0(B1)	Light Gray
B24	UMF75B24R	55	500	234	127	200	220	1	B	B0(B1)	Light Gray
	UMF75B24L	55	500	234	127	200	220	0	B	B0(B1)	Light Gray
	UMF75B24RS	55	500	234	127	200	220	1	A	B0(B1)	Light Gray
	UMF75B24LS	55	500	234	127	200	220	0	A	B0(B1)	Light Gray
D23	UMF95D23R	75	700	230	172	200	220	1	A	B0(B1)	Light Gray
	UMF95D23L	75	700	230	172	200	220	0	A	B0(B1)	Light Gray
D26	UMF115D26R	85	750	257	172	200	220	1	A	B0(B1)	Light Gray
	UMF115D26L	85	750	257	172	200	220	0	A	B0(B1)	Light Gray
D31	UMF135D31R	100	850	302	172	200	220	1	A	B0(B1)	Light Gray
	UMF135D31L	100	850	302	172	200	220	0	A	B0(B1)	Light Gray
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
BCI											
65	UMF65-850	160	850	294	187	172	192	1	A	B8	Light Gray
78	UMF78-800	140	800	260	179	181	181	1	SIDE	B1	Light Gray

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L0	MF54080	40	340	174	174	190	190	0	A	B13	Black
LB1	MF53646	36	330	208	174	175	175	0	A	B13	Black
	MF54321	45	450	208	174	175	175	0	A	B13	Black
	MF54322	45	450	208	174	175	175	1	A	B13	Black
L1	MF54459	44	390	208	174	190	190	0	A	B13	Black
	MF54464	44	390	208	174	190	190	1	A	B13	Black
	MF55054	50	420	208	174	190	190	0	A	B13	Black
LB2	MF54519	45	390	242	174	175	175	0	A	B13	Black
	MF55046	50	450	242	174	175	175	0	A	B13	Black
	MF55457	54	480	242	174	175	175	0	A	B13	Black
	MF55459	54	480	242	174	175	175	1	A	B13	Black
	MF55427	54	480	242	174	175	175	0	4F	B13	Black
	MF56077	60	510	242	174	175	175	0	A	B13	Black
L2	MF55559	55	480	242	174	190	190	0	A	B13	Black
	MF55565	55	480	242	174	190	190	1	A	B13	Black
	MF55531	55	480	242	174	190	190	0	4F	B13	Black
	MF56219	62	540	242	174	190	190	0	A	B13	Black
	MF56220	62	540	242	174	190	190	1	A	B13	Black
LB3	MF56318	63	540	277	174	175	175	0	A	B13	Black
	MF56828	68	570	277	174	175	175	0	A	B13	Black
	MF56821	68	570	277	174	175	175	1	A	B13	Black
	MF57113	72	640	277	174	175	175	0	A	B13	Black
L3	MF56638	66	540	277	174	190	190	0	A	B13	Black
	MF56633	66	540	277	174	190	190	1	A	B13	Black
	MF57220	72	610	277	174	190	190	0	A	B13	Black
	MF57219	72	610	277	174	190	190	1	A	B13	Black
	MF57412	74	680	277	174	190	190	0	A	B13	Black
	MF57413	74	680	277	174	190	190	1	A	B13	Black
LB4	MF57539	75	640	315	174	175	175	0	A	B13	Black
L4	MF58043	80	640	315	174	190	190	0	A	B13	Black
	MF58590	85	750	315	174	190	190	0	A	B13	Black
	MF58591	85	750	315	174	190	190	1	A	B13	Black
LB5	MF58515	85	720	354	174	175	175	0	A	B13	Black
L5	MF58827	88	680	354	174	190	190	0	A	B13	Black
	MF58821	88	680	354	174	190	190	1	A	B13	Black
	MF60038	100	850	354	174	190	190	0	A	B13	Black
B19	MF53520	35	330	187	127	200	220	0	B	B0	Black
	MF53522	35	330	187	127	200	220	1	B	B0	Black

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
B19	MF53504	35	330	187	136	200	220	0	B	B1	Black
	MF54026	40	360	187	127	200	220	0	B	B0	Black
	MF54027	40	360	187	127	200	220	1	B	B0	Black
B24	MF54523	45	360	234	127	200	220	0	A	B0	Black
	MF54524	45	360	234	127	200	220	1	A	B0	Black
	MF54584	45	360	234	127	200	220	0	B	B0	Black
	MF54551	45	360	234	127	200	220	1	B	B0	Black
D20	MF55041	50	390	200	172	200	220	0	A	B1	Black
	MF55042	50	390	200	172	200	220	1	A	B1	Black
D23	MF56068	60	480	230	172	200	220	0	A	B1	Black
	MF56069	60	480	230	172	200	220	1	A	B1	Black
D26	MF56048	60	480	257	172	200	220	0	A	B1	Black
	MF56049	60	480	257	172	200	220	1	A	B1	Black
	MF57024	70	540	257	172	200	220	1	A	B1	Black
	MF57029	70	540	257	172	200	220	0	A	B1	Black
D31	MF57512	75	600	302	172	200	220	0	A	B1	Black
	MF57513	75	600	302	172	200	220	1	A	B1	Black
	MF58513	85	680	302	172	200	220	0	A	B1	Black
	MF58514	85	680	302	172	200	220	1	A	B1	Black
	MF59518	95	720	302	172	200	220	0	A	B1	Black
	MF59519	95	720	302	172	200	220	1	A	B1	Black
JIS											
B19	MF40B19L	35	330	187	127	200	220	0	B	B0	Black
	MF40B19R	35	330	187	127	200	220	1	B	B0	Black
	MF40B19LS	35	330	187	127	200	220	0	A	B0	Black
	MF40B19RS	35	330	187	127	200	220	1	A	B0	Black
	MF40B19FL	35	330	187	136	200	220	0	B	B1	Black
	MF42B19L	38	350	187	127	200	220	0	B	B0	Black
	MF42B19R	38	350	187	127	200	220	1	B	B0	Black
	MF42B19LS	38	350	187	127	200	220	0	A	B0	Black
	MF42B19RS	38	350	187	127	200	220	1	A	B0	Black
	MF42B19FL	38	350	187	136	200	220	0	B	B1	Black
	MF44B19L	40	370	187	127	200	220	0	B	B0	Black
	MF44B19R	40	370	187	127	200	220	1	B	B0	Black
	MF44B19FL	40	370	187	136	200	220	0	B	B1	Black
	MF50B19L	42	380	187	127	200	220	0	B	B0	Black
	MF50B19R	42	380	187	127	200	220	1	B	B0	Black
	MF60B19RS(*1)	40	450	187	127	200	220	1	A	B0	Black
B24	MF50B24L	45	400	234	127	200	220	0	B	B0	Black

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
B24	MF50B24R	45	400	234	127	200	220	1	B	B0	Black
	MF50B24LS	45	400	234	127	200	220	0	A	B0	Black
	MF50B24RS	45	400	234	127	200	220	1	A	B0	Black
	MF55B24L	45	430	234	127	200	220	0	B	B0	Black
	MF55B24R	45	430	234	127	200	220	1	B	B0	Black
	MF55B24LS	45	430	234	127	200	220	0	A	B0	Black
	MF55B24RS	45	430	234	127	200	220	1	A	B0	Black
	MF60B24L	48	460	234	127	200	220	0	B	B0	Black
	MF60B24R	48	460	234	127	200	220	1	B	B0	Black
	MF60B24LS	48	460	234	127	200	220	0	A	B0	Black
	MF60B24RS	48	460	234	127	200	220	1	A	B0	Black
	MF65B24L	52	480	234	127	200	220	0	B	B0	Black
	MF65B24R	52	480	234	127	200	220	1	B	B0	Black
	MF85B24LS(*1)	45	625	234	127	200	220	0	A	B0	Black
D20	MF50D20L	50	450	200	172	200	220	0	A	B1	Black
	MF50D20R	50	450	200	172	200	220	1	A	B1	Black
D23	MF55D23L	60	550	230	172	200	220	0	A	B0	Black
	MF55D23R	60	550	230	172	200	220	1	A	B0	Black
	MF55D23FL	60	550	230	172	200	220	0	A	B1	Black
	MF55D23FR	60	550	230	172	200	220	1	A	B1	Black
	MF75D23L	65	580	230	172	200	220	0	A	B0	Black
	MF75D23R	65	580	230	172	200	220	1	A	B0	Black
	MF75D23FL	65	580	230	172	200	220	0	A	B1	Black
	MF75D23FR	65	580	230	172	200	220	1	A	B1	Black
	MF90D23L	68	630	230	172	200	220	0	A	B0	Black
	MF90D23R	68	630	230	172	200	220	1	A	B0	Black
	MF90D23FL	68	630	230	172	200	220	0	A	B1	Black
	MF90D23FR	68	630	230	172	200	220	1	A	B1	Black
D26	MF48D26L	50	450	257	172	200	220	0	A	B0	Black
	MF48D26R	50	450	257	172	200	220	1	A	B0	Black
	MF48D26FL	50	450	257	172	200	220	0	A	B1	Black
	MF48D26FR	50	450	257	172	200	220	1	A	B1	Black
	MF55D26L	60	550	257	172	200	220	0	A	B0	Black
	MF55D26R	60	550	257	172	200	220	1	A	B0	Black
	MF55D26FL	60	550	257	172	200	220	0	A	B1	Black
	MF55D26FR	60	550	257	172	200	220	1	A	B1	Black
	MF75D26L	65	580	257	172	200	220	0	A	B0	Black

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
D26	MF75D26R	65	580	257	172	200	220	1	A	B0	Black
	MF75D26FL	65	580	257	172	200	220	0	A	B1	Black
	MF75D26FR	65	580	257	172	200	220	1	A	B1	Black
	MF80D26L	70	600	257	172	200	220	0	A	B0	Black
	MF80D26R	70	600	257	172	200	220	1	A	B0	Black
	MF80D26FL	70	600	257	172	200	220	0	A	B1	Black
	MF80D26FR	70	600	257	172	200	220	1	A	B1	Black
	MF95D26L	80	700	257	172	200	220	0	A	B0	Black
	MF95D26R	80	700	257	172	200	220	1	A	B0	Black
D31	MF65D31L	70	600	302	172	200	220	0	A	B0	Black
	MF65D31R	70	600	302	172	200	220	1	A	B0	Black
	MF65D31FL	70	600	302	172	200	220	0	A	B1	Black
	MF65D31FR	70	600	302	172	200	220	1	A	B1	Black
	MF75D31L	75	660	302	172	200	220	0	A	B0	Black
	MF75D31R	75	660	302	172	200	220	1	A	B0	Black
	MF75D31FL	75	660	302	172	200	220	0	A	B1	Black
	MF75D31FR	75	660	302	172	200	220	1	A	B1	Black
	MF95D31L	80	670	302	172	200	220	0	A	B0	Black
	MF95D31R	80	670	302	172	200	220	1	A	B0	Black
	MF95D31FL	80	670	302	172	200	220	0	A	B1	Black
	MF95D31FR	80	670	302	172	200	220	1	A	B1	Black
	MF105D31L	90	750	302	172	200	220	0	A	B0	Black
	MF105D31R	90	750	302	172	200	220	1	A	B0	Black
	MF105D31FL	90	750	302	172	200	220	0	A	B1	Black
	MF105D31FR	90	750	302	172	200	220	1	A	B1	Black
	MF115D31L	95	830	302	172	200	220	0	A	B0	Black
	MF115D31R	95	830	302	172	200	220	1	A	B0	Black
	MF115D31FL	95	830	302	172	200	220	0	A	B1	Black
	MF115D31FR	95	830	302	172	200	220	1	A	B1	Black
CARNIVAL	MF100L	100	830	325	172	200	220	0	A	B1	Black
E41	MF95E41L	100	830	405	173	211	231	0	A	B0	Black
	MF95E41R	100	830	405	173	211	231	1	A	B0	Black
	MF115E41L	110	900	405	173	211	231	0	A	B0	Black
	MF115E41R	110	900	405	173	211	231	1	A	B0	Black
	MF130E41L	115	920	405	173	211	231	0	A	B0	Black
	MF130E41R	115	920	405	173	211	231	1	A	B0	Black

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Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold- Down	BCI Assembly Figure No	Color
				L	W	H	TH					
BCI												
51	MF51-430	71	430	234	136	200	220	1	A	B1	10	Black
	MF51-460	78	460	234	136	200	220	1	A	B1	10	Black
51R	MF51R-430	71	430	234	136	200	220	0	A	B1	11	Black
	MF51R-460	78	460	234	136	200	220	0	A	B1	11	Black
21	MF21-450	80	450	200	172	200	220	1	A	B1	10	Black
21R	MF21R-450	80	450	200	172	200	220	0	A	B1	11	Black
26	MF26-450	80	450	208	172	180	200	1	A	B1	10	Black
	MF26-550	100	550	208	172	180	200	1	A	B1	10	Black
26R	MF26R-450	80	450	208	172	180	200	0	A	B1	11	Black
	MF26R-550	100	550	208	172	180	200	0	A	B1	11	Black
85	MF85-500	85	500	230	172	180	200	0	A	B1	11	Black
	MF85-550	90	550	230	172	180	200	0	A	B1	11	Black
86(85R)	MF85R-500	85	500	230	172	180	200	1	A	B1	10	Black
	MF85R-550	90	550	230	172	180	200	1	A	B1	10	Black
34	MF34-550	100	550	260	172	180	200	1	A	B1	10	Black
	MF34-630	125	630	260	172	180	200	1	A	B1	10	Black
	MF34-670	130	670	260	172	180	200	1	A	B1	10	Black
	MF34-710	140	710	260	172	180	200	1	A	B1	10	Black
	MF34-750	155	750	260	172	180	200	1	A	B1	10	Black
34R	MF34R-550	100	550	260	172	180	200	0	A	B1	11	Black
	MF34R-630	125	630	260	172	180	200	0	A	B1	11	Black
	MF34R-710	140	710	260	172	180	200	0	A	B1	11	Black
	MF34R-750	155	750	260	172	180	200	0	A	B1	11	Black
25	MF25-550	100	550	230	172	200	220	1	A	B1	10	Black
35	MF35-550	100	550	230	172	200	220	0	A	B1	11	Black
	MF35-580	110	580	230	172	200	220	0	A	B1	11	Black
36	MF36R-650	130	650	260	183	180	200	0	A	B1	11	Black
24	MF24-500	90	500	257	172	200	220	1	A	B1	10	Black
	MF24-550	100	550	257	172	200	220	1	A	B1	10	Black
	MF24-600	113	600	257	172	200	220	1	A	B1	10	Black
	MF24-630	130	630	257	172	200	220	1	A	B1	10	Black
	MF24-750	155	750	257	172	200	220	1	A	B1	10	Black
24R	MF24R-500	90	500	257	172	200	220	0	A	B1	11	Black
	MF24R-550	100	550	257	172	200	220	0	A	B1	11	Black
	MF24R-600	113	600	257	172	200	220	0	A	B1	11	Black
	MF24R-630	130	630	257	172	200	220	0	A	B1	11	Black
	MF24R-750	155	750	257	172	200	220	0	A	B1	11	Black
24F	MF24F-500	90	500	266	172	200	220	0	A	B5(B9)	11F	Black
	MF24F-550	100	550	266	172	200	220	0	A	B5(B9)	11F	Black
	MF24F-600	113	600	266	172	200	220	0	A	B5(B9)	11F	Black
	MF24F-630	130	630	266	172	200	220	0	A	B5(B9)	11F	Black
	MF24F-680	140	680	266	172	200	220	0	A	B5(B9)	11F	Black
	MF24F-750	155	750	266	172	200	220	0	A	B5(B9)	11F	Black

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				L	W	H	TH					
27	MF27-630	130	630	302	172	200	220	1	A	B1	10	Black
	MF27-670	140	670	302	172	200	220	1	A	B1	10	Black
	MF27-750	155	750	302	172	200	220	1	A	B1	10	Black
	MF27-840	190	840	302	172	200	220	1	A	B1	10	Black
27R	MF27R-630	130	630	302	172	200	220	0	A	B1	11	Black
	MF27R-670	140	670	302	172	200	220	0	A	B1	11	Black
	MF27R-750	155	750	302	172	200	220	0	A	B1	11	Black
27F	MF27F-630	130	630	311	172	200	220	0	A	B9	11F	Black
	MF27F-670	140	670	311	172	200	220	0	A	B9	11F	Black
	MF27F-750	155	750	311	172	200	220	0	A	B9	11F	Black
	MF27F-810	180	810	311	172	200	220	0	A	B9	11F	Black
	MF27F-840	190	840	311	172	200	220	0	A	B9	11F	Black
30H	MF30H-900	182	830	325	172	200	220	1	A	B1	10	Black
31	MF31-630	130	630	330	172	218	242	1	A	B0	18	Black
	MF31-700	150	700	330	172	218	242	1	A	B0	18	Black
	MF31-750	160	750	330	172	218	242	1	A	B0	18	Black
	MF31-800	170	800	330	172	218	242	1	A	B0	18	Black
	MF31-850	180	850	330	172	218	242	1	A	B0	18	Black
	MF31-950	185	950	330	172	218	242	1	A	B0	18	Black
	MF31-1000	190	1000	330	172	218	242	1	A	B0	18	Black
31S	MF31S-630	130	630	330	172	218	242	1	STUD	B0	18	Black
	MF31S-700	150	700	330	172	218	242	1	STUD	B0	18	Black
	MF31S-750	160	750	330	172	218	242	1	STUD	B0	18	Black
	MF31S-800	170	800	330	172	218	242	1	STUD	B0	18	Black
	MF31S-850	180	850	330	172	218	242	1	STUD	B0	18	Black
	MF31S-950	185	950	330	172	218	242	1	STUD	B0	18	Black
	MF31S-1000	190	1000	330	172	218	242	1	STUD	B0	18	Black
90	MF90-450	80	450	242	174	175	175	0	A	B13	24	Black
	MF90-500	90	500	242	174	175	175	0	A	B13	24	Black
	MF90-550	100	550	242	174	175	175	0	A	B13	24	Black
47	MF47-500	90	500	242	174	190	190	0	A	B13	24	Black
	MF47-600	110	600	242	174	190	190	0	A	B13	24	Black
91	MF91-580	100	580	277	174	175	175	0	A	B13	24	Black
	MF91-630	110	630	277	174	175	175	0	A	B13	24	Black
	MF91-690	130	690	277	174	175	175	0	A	B13	24	Black
48	MF48-580	100	580	277	174	190	190	0	A	B13	24	Black
	MF48-630	110	630	277	174	190	190	0	A	B13	24	Black
	MF48-690	130	690	277	174	190	190	0	A	B13	24	Black
49	MF49-750	160	750	354	174	190	190	0	A	B13	24	Black
	MF49-850	180	850	354	174	190	190	0	A	B13	24	Black
56	MF56-590	95	590	256	150	191	211	0	A	B1	11	Black
58	MF58-460	75	460	254	182	157	178	1	A	B8	26	Black
	MF58-500	90	500	254	182	157	178	1	A	B8	26	Black
	MF58-560	100	560	254	182	157	178	1	A	B8	26	Black

12V Automotive / Hankook MF												
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold- Down	BCI Assembly Figure No	Color
				L	W	H	TH					
58R	MF58R-460	75	460	254	182	157	178	0	A	B8	19	Black
	MF58R-500	90	500	254	182	157	178	0	A	B8	19	Black
	MF58R-560	100	560	254	182	157	178	0	A	B8	19	Black
65	MF65-650	130	650	305	187	171	191	1	A	B8	10	Black
	MF65-750	140	750	305	187	171	191	1	A	B8	10	Black
65R	MF65R-650	130	650	305	187	171	191	0	A	B8	11	Black
	MF65R-750	140	750	305	187	171	191	0	A	B8	11	Black
70	MF70-450	80	450	208	179	180	180	1	SIDE	B1	17	Black
	MF70-500	90	500	208	179	180	180	1	SIDE	B1	17	Black
	MF70-550	100	550	208	179	180	180	1	SIDE	B1	17	Black
70DT	MF70DT-400	71	400	208	179	180	200	1	DT	B1	17	Black
	MF70DT-550	100	550	208	179	180	200	1	DT	B1	17	Black
75	MF75-500	90	500	230	179	180	180	1	SIDE	B1	17	Black
	MF75-550	100	550	230	179	180	180	1	SIDE	B1	17	Black
	MF75-600	113	600	230	179	180	180	1	SIDE	B1	17	Black
	MF75-630	125	630	230	179	180	180	1	SIDE	B1	17	Black
	MF75-650	130	650	230	179	180	180	1	SIDE	B1	17	Black
75DT	MF75DT-550	100	550	230	179	180	200	1	DT	B1	17	Black
	MF75DT-600	113	600	230	179	180	200	1	DT	B1	17	Black
	MF75DT-630	125	630	230	179	180	200	1	DT	B1	17	Black
	MF75DT-650	130	650	230	179	180	200	1	DT	B1	17	Black
78	MF78-550	100	550	260	179	180	180	1	SIDE	B1	17	Black
	MF78-600	113	600	260	179	180	180	1	SIDE	B1	17	Black
	MF78-630	125	630	260	179	180	180	1	SIDE	B1	17	Black
	MF78-670	130	670	260	179	180	180	1	SIDE	B1	17	Black
	MF78-750	155	750	260	179	180	180	1	SIDE	B1	17	Black
78DT	MF78DT-600	113	600	260	179	180	200	1	DT	B1	17	Black
	MF78DT-710	140	710	260	179	180	200	1	DT	B1	17	Black
	MF78DT-750	155	750	260	179	180	200	1	DT	B1	17	Black
79	MF79-840	140	840	306	179	184	184	1	SIDE	B1	17	Black
MINI	MFMINIFIT R	65	400	243	127	180	200	1	A	B6		Black
	MFMINIFIT L	65	400	243	127	180	200	0	A	B6		Black
22F	MF22F-450	75	450	240	172	180	205	0	DUAL FIT	B9	11F	Black
	MF22F-500	90	500	240	172	180	205	0	DUAL FIT	B9	11F	Black
	MF22F-550	95	550	240	172	180	205	0	DUAL FIT	B9	11F	Black
94R	MF94R-680	140	680	315	174	190	190	0	A	B13	24	Black
92	MF92-650	125	650	315	174	175	175	0	A	B13	24	Black
93	MF93-800	140	800	354	174	175	175	0	A	B13	24	Black
59	MF59-590	100	590	242	188	169	189	1	A	B8	10	Black

* 1 : For T EV models.

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L1	ETF54470	44	390	208	174	190	190	0	A	B13	Black
	ETF55070	50	420	208	174	190	190	0	A	B13	Black
L2	ETF55570	55	480	242	174	190	190	0	A	B13	Black
	ETF56270	62	540	242	174	190	190	0	A	B13	Black
L3	ETF56670	66	540	277	174	190	190	0	A	B13	Black
	ETF57270	72	610	277	174	190	190	0	A	B13	Black
L4	ETF58070	80	640	315	174	190	190	0	A	B13	Black
L5	ETF60070	100	850	354	175	190	190	0	A	B13	Black
LB1	ETF54573	45	450	208	174	175	175	0	A	B13	Black
LB2	ETF55573	55	510	242	174	175	175	0	A	B13	Black
LB3	ETF56673	66	620	277	174	175	175	0	A	B13	Black
LB4	ETF57673	76	640	315	174	175	175	0	A	B13	Black
JIS											
B19	ETF40B19L	35	330	187	127	200	220	0	B	B0	Black
	ETF40B19R	35	330	187	127	200	220	1	B	B0	Black
	ETF40B19FL	35	330	187	127	200	220	0	B	B1	Black
	ETF40B19LS	35	330	187	127	200	220	0	A	B0	Black
	ETF40B19RS	35	330	187	127	200	220	1	A	B0	Black
	ETF44B19L	40	370	187	127	200	220	0	B	B0	Black
	ETF44B19R	40	370	187	127	200	220	1	B	B0	Black
	ETF44B19FL	40	370	187	127	200	220	0	B	B1	Black
	ETF44B19LS	40	370	187	127	200	220	0	A	B0	Black
	ETF44B19RS	40	370	187	127	200	220	1	A	B0	Black
B24	ETF50B24L	45	400	234	136	200	220	0	B	B0	Black
	ETF50B24R	45	400	234	136	200	220	1	B	B0	Black
	ETF50B24LS	45	400	234	136	200	220	0	A	B0	Black
	ETF50B24RS	45	400	234	136	200	220	1	A	B0	Black
	ETF55B24L	45	430	234	136	200	220	0	B	B0	Black
	ETF55B24R	45	430	234	136	200	220	1	B	B0	Black
	ETF55B24LS	45	430	234	136	200	220	0	A	B0	Black
	ETF55B24RS	45	430	234	136	200	220	1	A	B0	Black
D23	ETF55D23L	60	550	230	172	200	220	0	A	B0	Black
	ETF55D23R	60	550	230	172	200	220	1	A	B0	Black
	ETF55D23FL	60	550	230	172	200	220	0	A	B1	Black
	ETF55D23FR	60	550	230	172	200	220	1	A	B1	Black
	ETF75D23L	65	580	230	172	200	220	0	A	B0	Black
	ETF75D23R	65	580	230	172	200	220	1	A	B0	Black

12V Automotive / Hankook Tropical MF Prime											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
JIS											
D23	ETF75D23FL	65	580	230	172	200	220	0	A	B1	Black
	ETF75D23FR	65	580	230	172	200	220	1	A	B1	Black
D26	ETF80D26L	70	600	257	172	200	220	0	A	B0	Black
	ETF80D26R	70	600	257	172	200	220	1	A	B0	Black
	ETF80D26FL	70	600	257	172	200	220	0	A	B1	Black
	ETF80D26FR	70	600	257	172	200	220	1	A	B1	Black
D31	ETF105D31L	90	750	302	172	200	220	0	A	B0	Black
	ETF105D31R	90	750	302	172	200	220	1	A	B0	Black
	ETF105D31FL	90	750	302	172	200	220	0	A	B1	Black
	ETF105D31FR	90	750	302	172	200	220	1	A	B1	Black

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Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L2	TMF55559	55	480	242	174	190	190	0	A	B13	Black
	TMF55565	55	480	242	174	190	190	1	A	B13	Black
	TMF56219	62	540	242	174	190	190	0	A	B13	Black
	TMF56220	62	540	242	174	190	190	1	A	B13	Black
L3	TMF56633	66	540	277	174	190	190	1	A	B13	Black
	TMF56638	66	540	277	174	190	190	0	A	B13	Black
	TMF57412	74	680	277	174	190	190	0	A	B13	Black
L4	TMF58024	80	640	315	174	190	190	0	A	B13	Black
	TMF58025	80	640	315	174	190	190	1	A	B13	Black
L5	TMF60038	100	850	354	174	190	190	0	A	B13	Black
JIS											
B19	TMF40B19FL	35	330	187	136	200	220	0	B	B1	Black
	TMF40B19L	35	330	187	127	200	220	0	B	B0	Black
	TMF40B19L	35	330	187	127	200	220	0	B	B0	Black
	TMF40B19R	35	330	187	127	200	220	1	B	B0	Black
	TMF40B19RS	35	330	187	127	200	220	1	A	B0	Black
	TMF44B19FL	40	370	187	136	200	220	0	B	B1	Black
	TMF44B19L	40	370	187	127	200	220	0	B	B0	Black
	TMF44B19LS	40	370	187	127	200	220	0	A	B0	Black
B24	TMF50B24L	45	400	234	127	200	220	0	B	B0	Black
	TMF50B24LS	45	400	234	127	200	220	0	A	B0	Black
	TMF50B24R	45	400	234	127	200	220	1	B	B0	Black
	TMF50B24RS	45	400	234	127	200	220	1	A	B0	Black
	TMF55B24FLS	45	400	234	127	200	220	0	A	B1	Black
	TMF55B24L	45	430	234	127	200	220	0	B	B0	Black
	TMF55B24LS	45	430	234	127	200	220	0	A	B0	Black
	TMF55B24R	45	430	234	127	200	220	1	B	B0	Black
	TMF55B24RS	45	430	234	127	200	220	1	A	B0	Black
	TMF60B24FLS	48	460	234	127	200	220	0	A	B1	Black
	TMF60B24L	48	460	234	127	200	220	0	B	B0	Black
	TMF60B24LS	48	460	234	127	200	220	0	A	B0	Black
	TMF60B24R	48	460	234	127	200	220	1	B	B0	Black
	TMF60B24RS	48	460	234	127	200	220	1	A	B0	Black
	TMF65B24L	52	480	234	127	200	220	0	B	B0	Black
	TMF65B24LS	52	480	234	127	200	220	0	A	B0	Black
D23	TMF55D23FL	60	550	230	172	200	220	0	A	B1	Black
	TMF55D23FR	60	550	230	172	200	220	1	A	B1	Black

12V Automotive / Hankook Tropical MF

Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color	
				L	W	H	TH					
JIS												
D23	TMF55D23L	60	550	230	172	200	220	0	A	B0	Black	
	TMF55D23R	60	550	230	172	200	220	1	A	B0	Black	
	TMF75D23FL	65	580	230	172	200	220	0	A	B1	Black	
	TMF75D23L	65	580	230	172	200	220	0	A	B0	Black	
	TMF75D23R	65	580	230	172	200	220	1	A	B0	Black	
	TMF90D23FL	68	630	230	172	200	220	0	A	B1	Black	
	TMF90D23FR	68	630	230	172	200	220	1	A	B1	Black	
	TMF90D23L	68	630	230	172	200	220	0	A	B0	Black	
	TMF90D23R	68	630	230	172	200	220	1	A	B0	Black	
D26	TMF55D26FL	60	550	257	172	200	220	0	A	B1	Black	
	TMF55D26FR	60	550	257	172	200	220	1	A	B1	Black	
	TMF55D26L	60	550	257	172	200	220	0	A	B0	Black	
	TMF55D26R	60	550	257	172	200	220	1	A	B0	Black	
	TMF80D26FL	70	600	257	172	200	220	0	A	B1	Black	
	TMF80D26FR	70	600	257	172	200	220	1	A	B1	Black	
	TMF80D26L	70	600	257	172	200	220	0	A	B0	Black	
	TMF80D26R	70	600	257	172	200	220	1	A	B0	Black	
	TMF90D26FL	72	630	257	172	200	220	0	A	B1	Black	
	TMF90D26FR	72	630	257	172	200	220	1	A	B1	Black	
	TMF90D26L	72	630	257	172	200	220	0	A	B0	Black	
	TMF90D26R	72	630	257	172	200	220	1	A	B0	Black	
D31	TMF105D31FL	90	750	302	172	200	220	0	A	B1	Black	
	TMF105D31FR	90	750	302	172	200	220	1	A	B1	Black	
	TMF105D31L	90	750	302	172	200	220	0	A	B0	Black	
	TMF105D31R	90	750	302	172	200	220	1	A	B0	Black	
	TMF115D31FL	95	830	302	172	200	220	0	A	B1	Black	
	TMF115D31FR	95	830	302	172	200	220	1	A	B1	Black	
	TMF115D31L	95	830	302	172	200	220	0	A	B0	Black	
	TMF115D31R	95	830	302	172	200	220	1	A	B0	Black	
BCI												
25	TMF25-580	110	580	230	172	200	220	1	A	B1	10	Black
35	TMF35-580	110	580	230	172	200	220	0	A	B1	11	Black
65	TMF65-750	140	750	305	187	171	191	1	A	B8	10	Black
78	TMF78-600	113	600	260	179	180	180	1	SIDE	B1	17	Black
78DT	TMF78DT-750	155	750	260	179	180	200	1	DT	B1	17	Black

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12V Automotive / Hankook Tropical MF Eco											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN (DIN)											
L1	TF54460	44	350	208	174	190	190	0	A	B13	Black
L2	TF55560	55	420	242	174	190	190	0	A	B13	Black
	TF56260	62	500	242	174	190	190	0	A	B13	Black
L3	TF56660	66	520	277	174	190	190	0	A	B13	Black
	TF57260	72	600	277	174	190	190	0	A	B13	Black
L4	TF58060	80	640	315	174	190	190	0	A	B13	Black
L5	TF60060	100	750	354	175	190	190	0	A	B13	Black
JIS											
B19	TF40B19L	34	300	187	127	200	220	0	B	B0	Black
	TF40B19R	34	300	187	127	200	220	1	B	B0	Black
	TF40B19FL	34	300	187	127	200	220	0	B	B1	Black
	TF40B19LS	34	300	187	127	200	220	0	A	B0	Black
	TF40B19RS	34	300	187	127	200	220	1	A	B0	Black
B24/51	TF50B24L	45	350	234	127	200	220	0	B	B1	Black
	TF50B24R	45	350	234	127	200	220	1	B	B1	Black
	TF50B24LS	45	350	234	127	200	220	0	A	B1	Black
	TF50B24RS	45	350	234	127	200	220	1	A	B1	Black
D23/35	TF55D23L	60	400	230	172	200	220	0	A	B1	Black
	TF55D23R	60	400	230	172	200	220	1	A	B1	Black
	TF75D23L	65	500	230	172	200	220	0	A	B1	Black
	TF75D23R	65	500	230	172	200	220	1	A	B1	Black
D26/24	TF48D26L	50	350	257	172	200	220	0	A	B1	Black
	TF48D26R	50	350	257	172	200	220	1	A	B1	Black
	TF80D26L	70	540	257	172	200	220	0	A	B1	Black
	TF80D26R	70	540	257	172	200	220	1	A	B1	Black
D31/27	TF65D31L	70	520	302	172	200	220	0	A	B1	Black
	TF65D31R	70	520	302	172	200	220	1	A	B1	Black
	TF105D31L	90	655	302	172	200	220	0	A	B1	Black
	TF105D31R	90	655	302	172	200	220	1	A	B1	Black

12V Automotive / Hankook Tropical MF Eco											
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
BCI											
65	TF65-750	140	750	305	187	171	191	1	A	B8	Black
78	TF78-600	100	600	260	179	180	180	1	SIDE	B1	Black
	TF78-720	140	720	260	179	180	180	1	SIDE	B1	Black
85	TF85-550	90	550	230	172	180	200	0	A	B1	Black

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A large white commercial truck is driving on a multi-lane highway. The truck is a semi-trailer type with a long white trailer. It is positioned in the right lane, moving towards the viewer. In the background, another similar truck is visible further down the road. The sky is bright blue with scattered white clouds. The highway has a concrete guardrail on the left and a metal guardrail on the right. The overall scene is bright and clear, suggesting a sunny day.

Commercial Vehicle

Optimized 12V Battery Solutions
for Commercial Vehicles in Demanding Environments.
From long-distance operations and extreme climates
to continuous vibration, shock, and high electrical loads—
our batteries deliver stable power across every transport condition.

COMMERCIAL VEHICLE BATTERIES

Optimized 12V Battery Solutions for Every Commercial Vehicle Operating Environment

We provide batteries engineered to withstand the harsh demands of commercial applications—such as long-distance driving, extreme temperatures, continuous vibration and shock, and high electrical loads—delivering powerful starting performance, long service life, and outstanding anti-vibration durability.

Premium

SUPREME AGM

Premium CVs Battery Optimized for High Power Demand & Extreme Conditions



Robust

SUPREME EFB

For CVs Requiring Both Vibration Resistance and Cost Efficiency



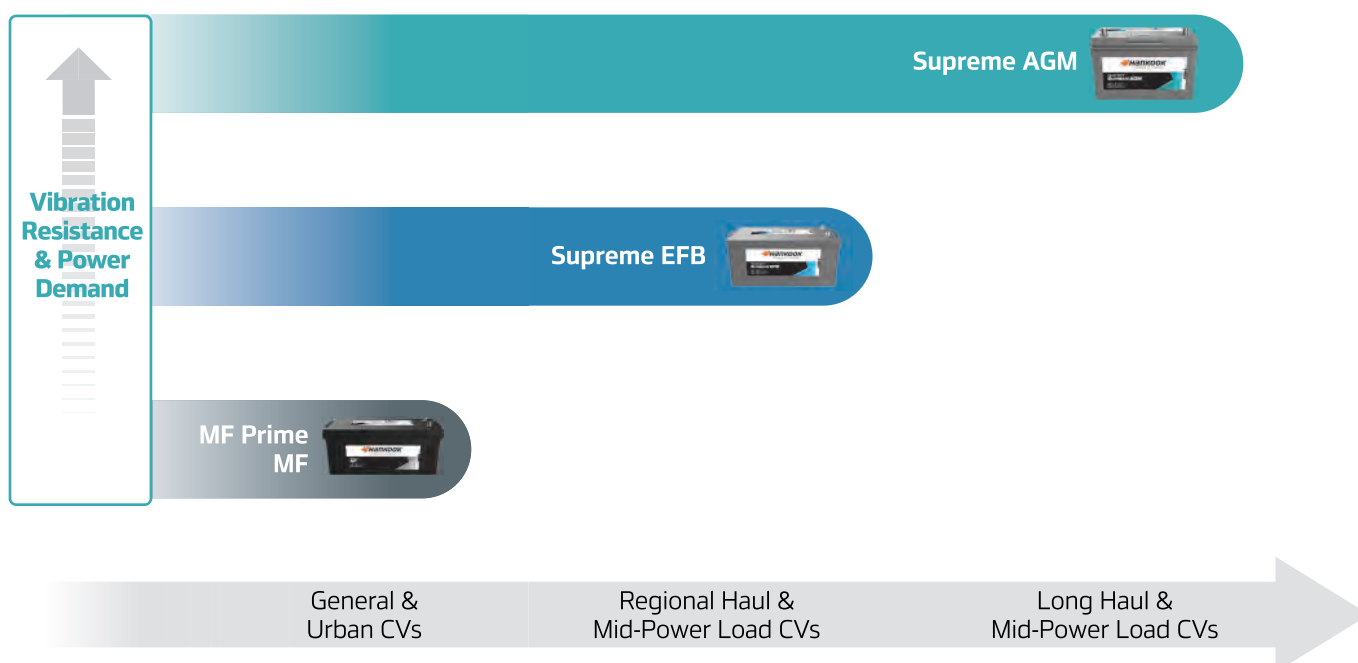
Standard

MF

For CVs Requiring Standard Performance and Reliability



We provide batteries tailored for long-duration energy needs and deep discharge in leisure environments—from campervans and marine applications to caravans and off-grid activities.



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SUPREME AGM

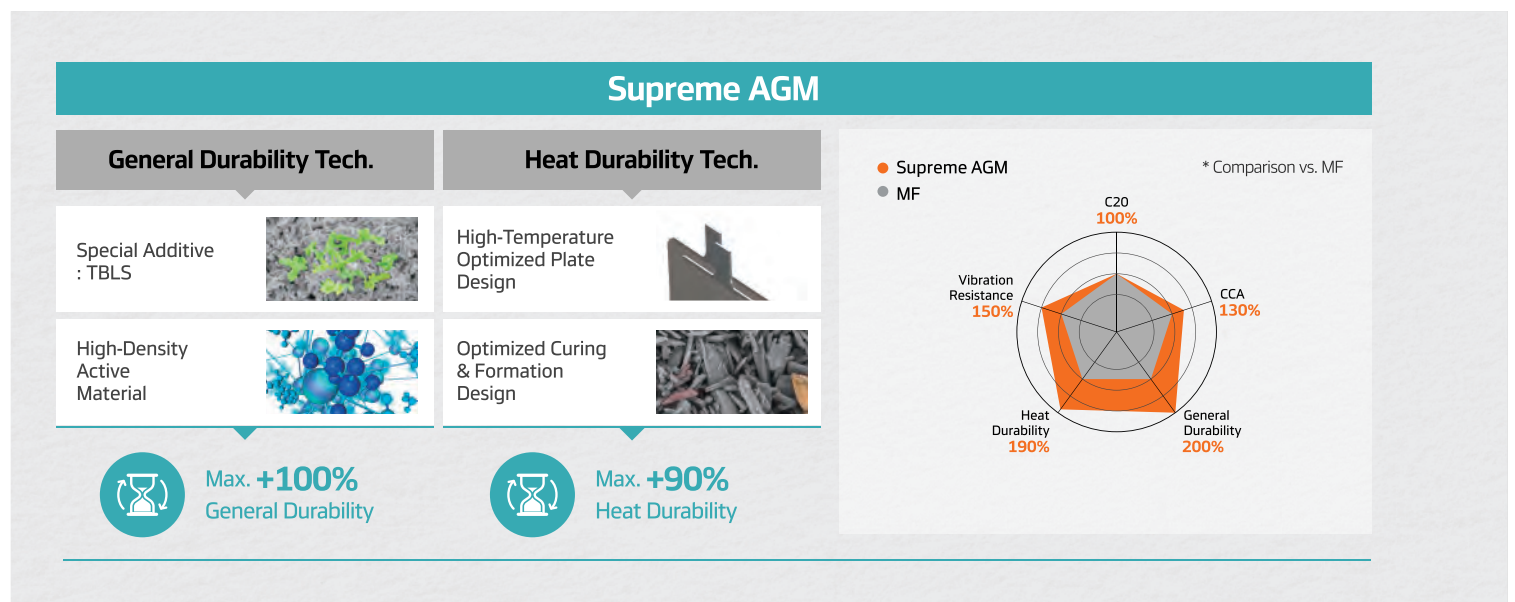
Commercial / Advanced absorbent glass mat battery tech.

Hankook & Company's Heavy Duty Supreme AGM series is a premium battery engineered exclusively for commercial vehicles, delivering stable performance even under extreme operating conditions. With powerful starting capability, ample reserve capacity, and strong deep-discharge endurance, it provides reliable energy for vehicles that demand high electrical loads and long-distance operation.



Why Choose Our Supreme AGM?

Equipped with Premium Core AGM Technology



SUPREME EFB

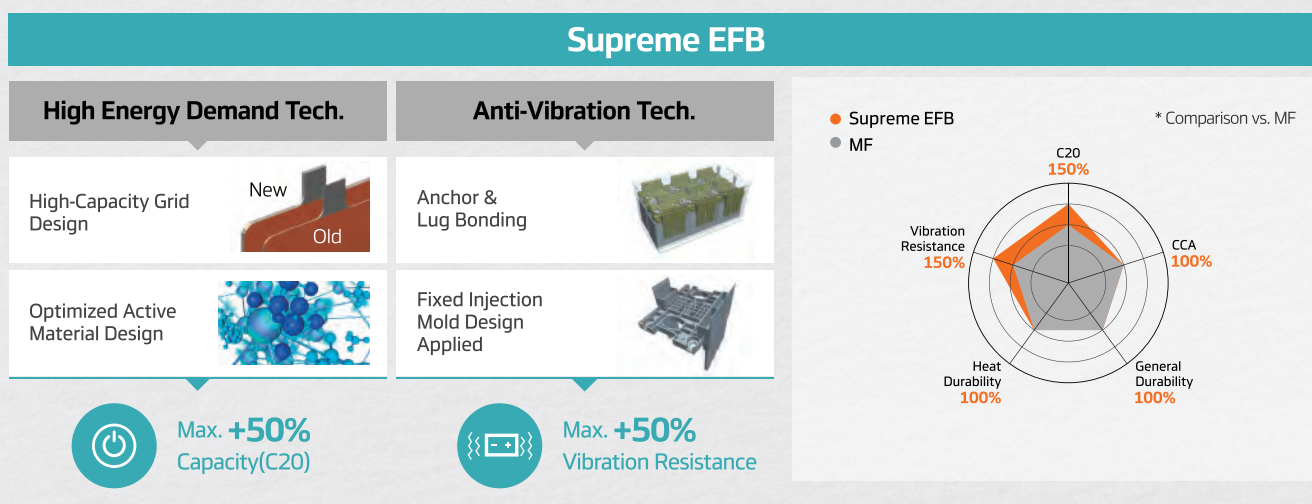
Commercial / Advanced enhanced flooded battery tech.

Hankook & Company's Heavy Duty Supreme EFB series is engineered for modern commercial vehicles that demand high starting performance and exceptional vibration resistance. With a reinforced plate structure and advanced carbon additive technology, it delivers improved charge acceptance, outstanding cycle life, and stable performance even under repeated driving conditions.



Why Choose Our Supreme EFB?

Applied with Technology for Stable High-Load Performance



MF

Commercial / Maintenance free battery tech.

Hankook & Company's Heavy Duty MF series is a reliable and cost-efficient battery designed for commercial vehicles and heavy-duty trucks with standard power demands. With its maintenance-free structure and stable power delivery, it ensures consistent performance across a wide range of operating conditions.



Product Line-up

Supreme AGM

- North American Standard AGM with Reinforced Durability
- 3x Durability vs. MF
- BCI Type



Supreme EFB

- European Standard with Enhanced Vibration Resistance
- 3x Vibration Resistance vs. MF
- ENType



MF

- Standard Battery for ICE with Reliable Starting Performance
- EN/JIS/BCI Type



MF Prime

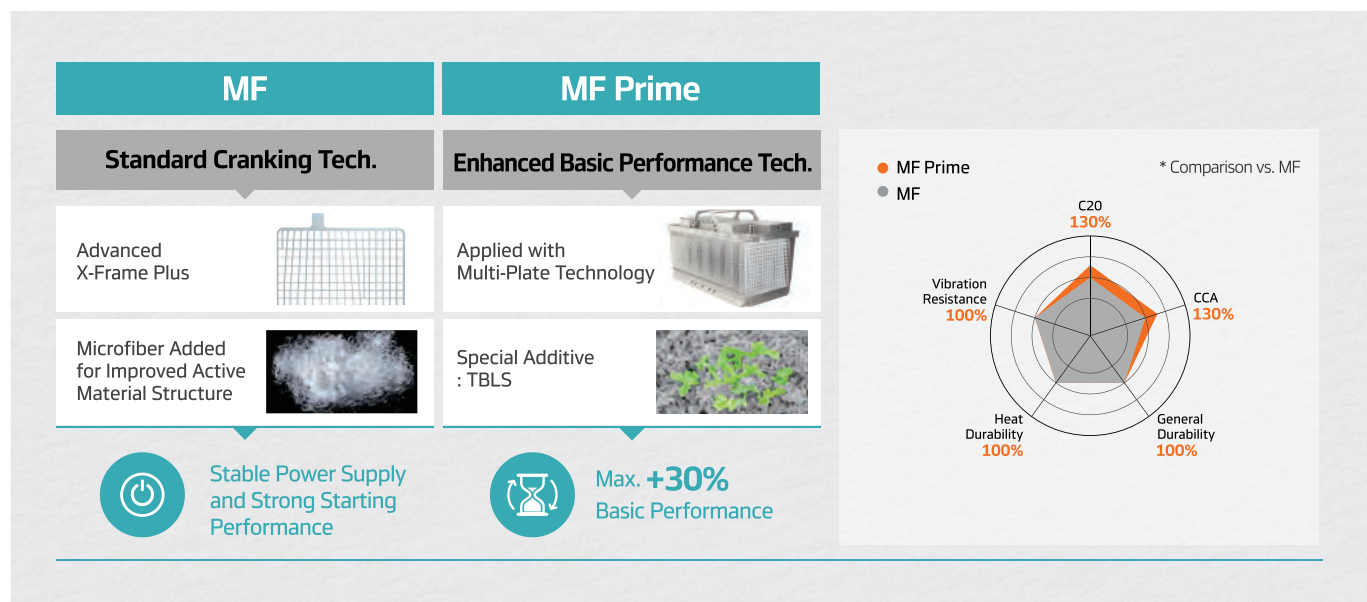
- Basic-Performance Focused MF
- Max. 1.3x Basic Performance vs. MF
- EN/JIS Type



We provide commercial vehicle-dedicated batteries that not only deliver essential performance but also offer excellent vibration resistance to withstand the harsh operating conditions of commercial applications.

Why Choose Our MF?

Applied with Stable Standard Design Technology



Heavy Duty Type List

12V Commercial Vehicle / Hankook Heavy Duty Supreme AGM											
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
BCI											
31	AGM 31-925	200	925	332	172	210	231	1	A	B0	Light Gray
12V Commercial Vehicle / Hankook Heavy Duty Supreme EFB											
Gr.No	Type No.	C20	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
EN(DIN)											
C	EFB 72512	225	1150	516	274	216	238	3	A	B0/B13	Light Gray
12V Commercial Vehicle / Hankook Heavy Duty MF Prime											
EN(DIN)											
A	SHD63530	135	700	511	188	195	217	3	A	B0/B13	Light Gray
	SHD64589	145	800	511	188	195	217	3	A	B0/B13	Light Gray
B	SHD66514	165	900	511	222	195	217	3	A	B0/B13	Light Gray
	SHD68032	180	1000	511	222	195	217	3	A	B0/B13	Light Gray
C	SHD71014	210	1050	516	274	216	238	3	A	B0/B13	Light Gray
	SHD72512	225	1150	516	274	216	238	3	A	B0/B13	Light Gray
JIS											
F51	SHD175F51	140	800	506	182	210	233	4	A	B0	Light Gray
G51	SHD195G51	175	950	506	212	210	230	4	A	B0	Light Gray
H52	SHD245H52	220	1050	509	274	218	238	4	A	B0	Light Gray
12V Commercial Vehicle / Hankook Heavy Duty MF											
EN(DIN)											
A	MF62034	120	760	511	188	195	217	3	A	B0/B13	Black
B	MF65513	155	900	511	222	195	217	3	A	B0/B13	Black
C	MF70027	200	1050	516	274	216	238	3	A	B0/B13	Black
JIS											
F51	MF135F51	120	870	506	182	210	233	4	A	B0	Black
G51	MF160G51	150	1000	506	212	210	230	4	A	B0	Black
H52	MF210H52	200	1200	509	274	218	238	4	A	B0	Black
	MF245H52	220	1400	509	274	218	238	4	A	B0	Black
KS											
26H	MF110L	100	730	264	245	200	221	2	A	B0	Black
12V Commercial Vehicle / Hankook Heavy Duty MF (OPEN)											
EN(DIN)											
COM100	60527	105	680	342	172	214	236	1	A	B0	Natural/Black
	60528	105	680	342	172	214	236	0	A	B0	Natural/Black
COM125	62512	125	720	342	172	262	286	0	A	B0	Natural/Black
	62514	125	720	342	172	262	286	1	A	B0	Natural/Black
JIS											
F51	130F51	120	850	506	182	210	230	4	A	B0	Natural/Black
	150F51	135	930	506	182	210	230	4	A	B0	Natural/Black
	170F51	150	950	506	182	210	230	4	A	B0	Natural/Black
G51	155G51	150	950	506	220	210	230	4	A	B0	Natural/Black
	195G51	175	1000	506	220	210	230	4	A	B0	Natural/Black
H52	210H52	200	1200	519	277	218	240	4	A	B0	Natural/Black
	245H52	220	1300	519	277	218	240	4	A	B0	Natural/Black
Gr.No	Type No.	RC	CCA (JIS/BCI: SAE, EN: EN.)	Dimension(Inches)				Layout	Terminal	Hold-Down	Color
				L	W	H	TH				
BCI											
4DLT	4DLT-890	255	890	519	206	181	203	3	A	B0	Natural/Black
4D	4D-950	300	950	528	214	224	246	4	A	B0	Natural/Black
8D	8D-1300	370	1300	528	277	224	246	4	A	B0	Natural/Black



Leisure

The optimal 12V battery solution for leisure applications. From marine navigation and caravan camping to off-grid adventures, it delivers safe and reliable power anytime, anywhere.

LEISURE BATTERIES

All-in-One 12V Battery Solution for Leisure, Marine, and RV Applications

We offer batteries engineered to withstand the demanding conditions of leisure and marine environments—such as prolonged use, diverse climates, continuous vibration and shock, and high power consumption. With long-duration power delivery, excellent deep-discharge durability, and outstanding vibration resistance, our products ensure reliable performance in every situation.

Full Deep Cycle

SUPREME AGM

Premium Leisure Battery
Designed for Extreme Marine
and Recreational Environments



Semi Deep Cycle

SUPREME EFB

A cost-effective leisure
battery that emphasizes
durability and value



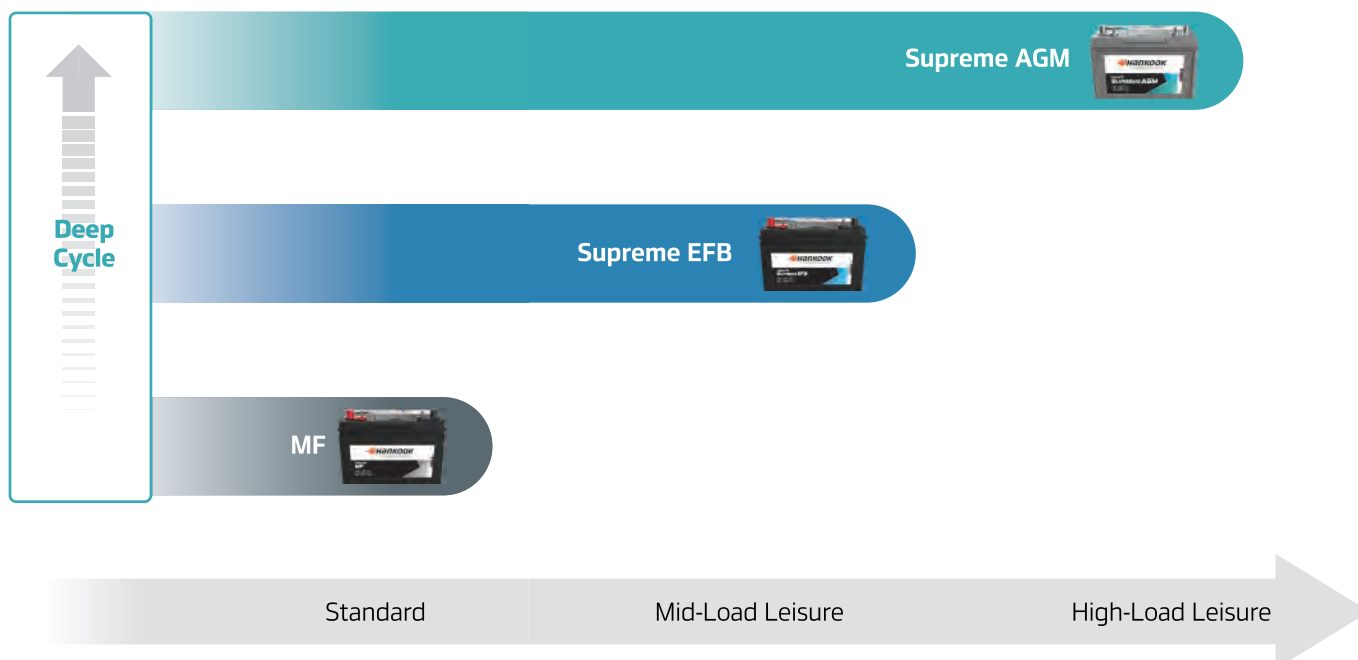
Deep Cycle

MF

Standard Leisure
Battery with Proven
Durability



We provide batteries tailored for long-duration energy needs and deep discharge in leisure environments—from campervans and marine applications to caravans and off-grid activities.



Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

Sales Contact

SUPREME AGM

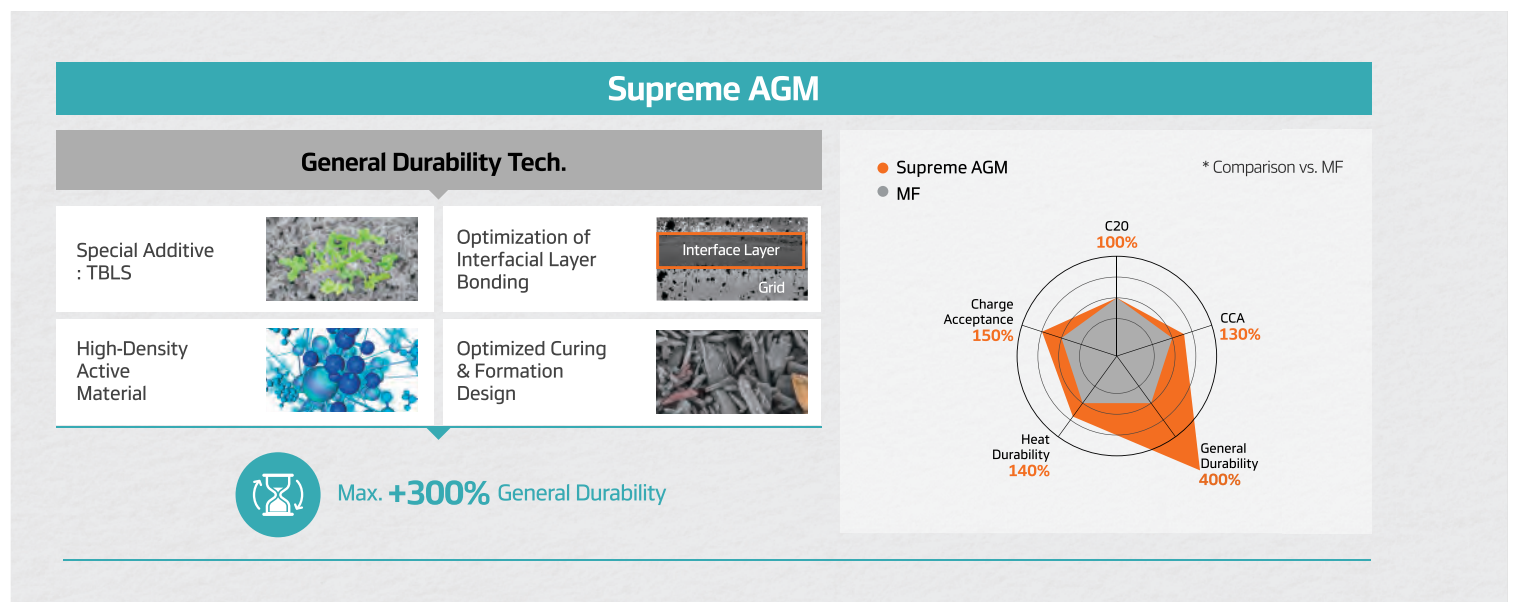
Leisure / Advanced absorbent glass mat battery tech.

Hankook & Company's Leisure DC Supreme AGM series is a premium battery engineered for stable performance across diverse leisure environments on both land and water. With excellent deep-discharge capability, long-duration power supply, and superior vibration resistance, it delivers reliable energy to high-demand equipment such as boats, caravans, and RVs—ensuring a seamless and dependable journey for every user.



Why Choose Our Supreme AGM?

Applied with Stable Full Deep Cycle Technology



SUPREME EFB

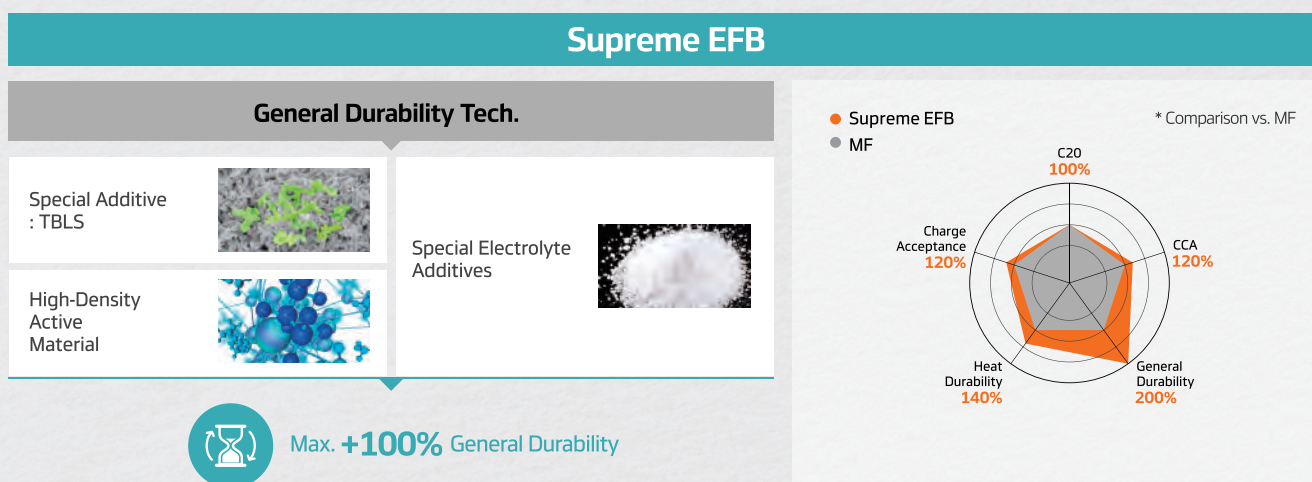
Leisure / Advanced enhanced flooded battery tech.

Hankook & Company's Leisure DC Supreme EFB series is engineered to deliver both cost efficiency and reliability across a wide range of leisure and marine environments. With solid baseline performance, enhanced durability, and resistance to high-temperature conditions, it provides stable energy for equipment requiring long-duration power supply, such as boats, caravans, and RVs.



Why Choose Our Supreme EFB?

Applied with Technology for Stable High-Load Performance



MF

Leisure / Maintenance free battery tech.

Hankook & Company's Leisure DC MF series is a maintenance-free battery designed to provide stable and convenient power across various leisure and marine environments. Proven in diverse global applications, the LS MF offers reliable performance at an economical cost, delivering a trusted power solution for everything from everyday recreational use to long-distance travel.



Product Line-up

Supreme AGM

- AGM (NCC Standard) with Enhanced Deep-Cycle Durability
- 4x Durability vs. MF
- EN/BCI Type



Supreme EFB

- EFB (NCC Standard) with Enhanced Deep-Cycle Durability
- 1.5x Durability vs. MF
- EN/BCI Type



MF

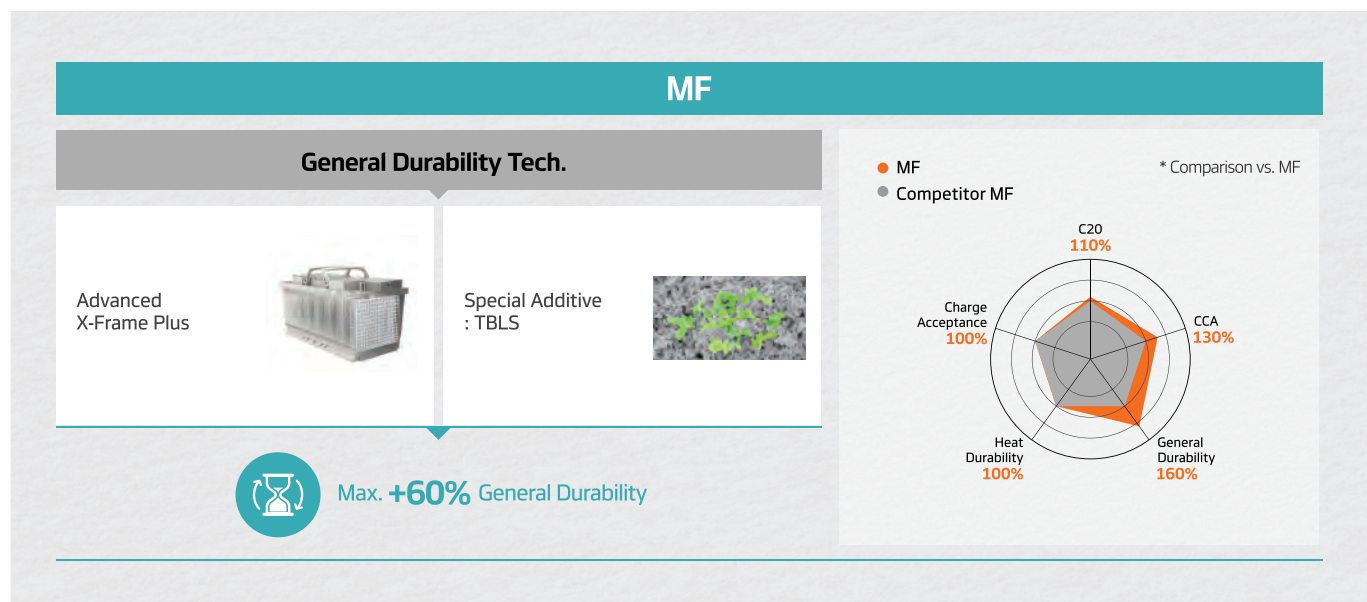
- NCC Standard MF with General Deep-Cycle Durability
- EN/BCI Type



We provide commercial vehicle-dedicated batteries that not only deliver essential performance, but also offer excellent vibration resistance to withstand harsh operating conditions.

Why Choose Our MF?

Applied with Stable Standard Design Technology



Leisure(Marine&RV) Type List

12V Leisure / Hankook Leisure DC Supreme AGM													
Gr.No	Type No.	C20 (AH)	CA (32°F/0°C)	CCA (0°F/-18°C)	RC (min)	Dimension(mm)				Layout	Terminal	Hold-Down	Color
						L	W	H	TH				
DIN													
L2	AGM L2	60	850	680	110	242	174	190	190	0	A	B13	Light Gray
L3	AGM L3	70	950	760	140	277	174	190	190	0	A	B13	Light Gray
L4	AGM L4	80	1000	800	160	314	174	190	190	0	A	B13	Light Gray
L5	AGM L5	95	1060	850	180	352	174	190	190	0	A	B13	Light Gray
BCI													
24	AGM M24-750	75	930	750	140	260	174	200	220	1	MARINE TWIN	B1	Light Gray
27	AGM M27-750	90	930	750	175	305	174	200	220	1	MARINE TWIN	B1	Light Gray
31	AGM M31-800	90	960	800	180	305	174	200	220	1	MARINE TWIN	B0	Light Gray
	AGM M31-925	100	1150	925	200	332	172	210	231	1	MARINE TWIN*	B0	Light Gray
12V Leisure / Hankook Leisure DC Supreme EFB													
EN(DIN)													
L2	EFB L60	60	700	560	120	242	174	190	190	1	A	B13	Dark Gray
L3	EFB L70	70	810	650	135	277	174	190	190	1	A	B13	Dark Gray
L4	EFB L80	80	910	730	160	315	174	190	190	1	A	B13	Dark Gray
L5	EFB L95	95	1060	850	180	354	174	190	190	1	A	B13	Dark Gray
BCI													
24	EFB M24-550	68	680	550	140	257	172	200	220	1	MARINE TWIN	B1	Dark Gray
27	EFB M27-600	80	750	600	180	302	172	200	220	1	MARINE TWIN	B1	Dark Gray
31	EFB M31-675	95	840	675	210	330	172	218	242	1	MARINE TWIN*	B0	Dark Gray
12V Leisure / Hankook Leisure DC MF													
EN(DIN)													
L2	DP L52	52	580	470	80	242	174	190	190	1	A	B13	Black
L3	DP L60	60	670	540	110	277	174	190	190	1	A	B13	Black
L4	DP L74	74	850	680	140	315	174	190	190	1	A	B13	Black
L5	DP L95	95	1000	800	180	354	174	190	190	1	A	B13	Black
BCI													
24	DP M24-500	52	620	500	95	257	172	200	220	1	MARINE TWIN	B1	Black
	DP M24-680	80	850	680	140	257	172	200	220	1	MARINE TWIN	B1	Black
27	DP M27-650	80	810	650	140	302	172	200	220	1	MARINE TWIN	B1	Black
	DP M27-750	90	930	750	180	302	172	200	220	1	MARINE TWIN	B1	Black
31	DP C31-800	100	1000	800	180	330	172	218	242	1	MARINE TWIN*	B0	Black
	DP C31-1000	110	1250	1000	210	330	172	218	242	1	MARINE TWIN*	B0	Black

MARINE TWIN* : STUD is available

Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

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Battery Design & Specifications

Layout

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1	
2	
3	
4	
5	

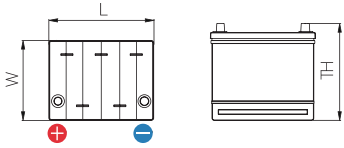
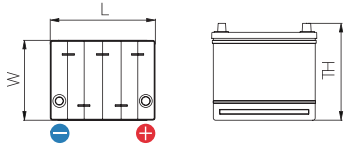
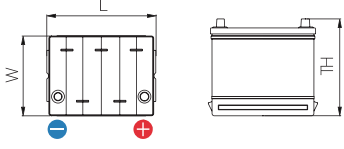
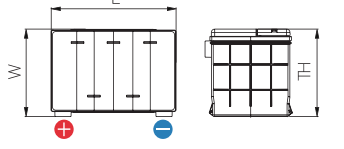
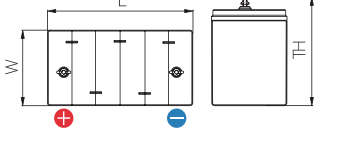
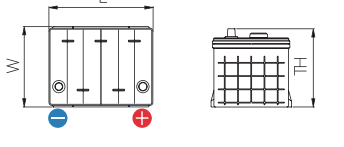
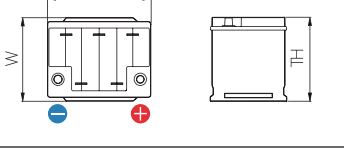
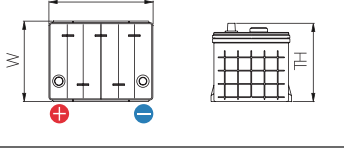
Hold-downs

B1	10.5mm on long sides only	B4	5 notches 19.0mm on long sides only
B5	29.0 slots on long sides, 29.0mm on short sides	B6	29.0 slots on long sides, 29.0mm on short sides
B8	13.5 13.5mm on long sides only	B9	29.0 slots on long sides, 29.0mm on short sides
B13	5 notches 10.5mm on all four sides	B14	5 notches 19.0mm on all long sides, 10.5mm on short sides

Terminals

Termial	A (Standard)	B (Small)	Dual Fit	4F	Stud	Side	Marine Twin	U1 Lug
Postive					 3/8"-16 Threads		 5/16"-18 Threads	
Negative					 3/8"-16 Threads		 5/16"-18 Threads	

BCI Assembly Figures

10		11	
11F		17	
18		19	
24		26	

How to Handle Battery

Precaution

If treated with care and taking the proper precautions, lead acid batteries can be handled safely with minimum risk. However, lead acid batteries contain sulfuric acid which is both poisonous and corrosive. This makes them potentially hazardous and it can cause serious injury when standard handling procedures and safety measures are not followed

Safety

- Always wear acid resistant clothing, protective goggles, PVC gloves and rubber boots.
- Avoid smoking, sparks and flames near operating or charging lead acid batteries.
- Keep metal objects away from terminals.
- Batteries are heavy. Lift carefully and do not place on unstable surfaces.
- Keep away from children.

Emergency Action

- Splashes in eyes : Wash out eyes with plenty of water for at least 15 minutes.
- Splashes on skin : Remove contaminated clothing carefully and wash the affected skin areas with plenty of water.
- Swallowed : Drink copious amounts of milk of magnesia, water or milk. Do not induce vomiting.

Storage

- Keep batteries upright.
- Batteries should not be directly exposed to the sun.
- Keep batteries clean and always store in a cool, dry place.
- Never stack over 4 layers.
- Never drop, never overthrow.
- In all cases, (First In, First Out) storage procedure should be applied.

Installation

- Check the vehicle's engine is turned off.
- Remove the negative terminal connection of the old battery.
- Remove the positive terminal connection, and then remove the hole-down bracket or clamp.
- Replace the old battery with the new battery and fix the new one in the tray.
- Prior to replacing the new one, inspect the tray for corrosion. Clean battery holder and battery terminals using a wire rush, if necessary.
- Connect the positive terminal first.
- Connect the negative terminal. The negative terminal should always be replaced last.

Disposal

- Batteries must NEVER be disposed of in household waste.
- Batteries are recyclable material.
- Do not throw away.



Never Drop
Never Overthrow



Never Stack
Over 4 Layers



Keep Upright



Never Tip
Over 45°



RECYCLE



Pb



No smoking,
no naked flames,
no sparks



Shield
eyes



Keep
away from
children



Battery
acid



Explosive
gas



Note
operating
instructions

Battery Testing Procedures

A. Visual Check

- Check the Container, Cover and Terminals.
Where physical damage is present, replace the battery.
- Check the Indicator (If the battery has the Indicator).
Always look right down when viewing the Indicator and lightly tap the Indicator on the battery to dislodge any air bubbles.



* Indicator Color Guide

B. Voltage Check

- If OCV is below 12.4V(Flooded) or 12.5V(AGM), recharge the battery immediately.

C. Discharge Test (Load Test)

- Connect the battery tester to battery terminals.
- Measure the temperature of the battery around.
- Set the battery tester ampere values for 1/2 of the CCA rating.
- Apply the load for 15 seconds and then read the voltage.
- Compare measured values with values in TABLE 2.
- If the values are outside of the table values, recharge the battery and test again.
- If the battery fails the load test twice, replace it.
- Sometimes, electronic testers such as MIDTRONICS, SNAP-ON and etc are used instead of load tester.
- Electronic testers are only suitable for batteries that have been in use for a certain time.
- They cannot rate the performance of new or unused batteries
- For this reason, Hankook & Company recommends the test defined in global standards to confirm rated specifications.

TABLE 1. State of Charge

Approx. State of Charge	OCV	
	Flooded	AGM
100%	> 12.75V	> 12.90V
> 75%	> 12.40V	> 12.50V
> 50%	> 12.20V	> 12.25V
> 25%	> 12.00V	> 12.00V
Discharged	< 11.99V	< 11.99V

* For Reference Only

TABLE 2. Load Test

Minimum Voltage	Temperature
9.6V	21°C & Above
9.4V	10°C
9.1V	-1°C
8.9V	-7°C
8.5V	-18°C

Battery Charge

If the battery is below 12.4V or fails to pass the load test, battery must be recharged as soon as possible to prevent lead sulfation. During charge, if the battery sprays electrolyte through the vent holes or gets hot (over 52°C), the charge must be stopped for a time to allow the battery to be cool down.

Constant Voltage Charge

Another method is to charge a battery at a specified voltage(Flooded : 16.0V or AGM : 14.4V) in below table. When charging starts, a high rate current flows into the battery. As the battery is being charged, the current is reduced. Generally this method needs more time than the constant-current-charge, but overcharge risk is lower

Constant Current charge

General guidelines for constant-current-charge are given in TABLE 3 and TABLE 4. TABLES summarize approximate and hours in need of charge according to 20Hr-rate capacity and OCV.

End of Charge

If a battery has been properly charged, voltage output across battery terminals on charge will be maintained for 2 hours.

TABLE 3. Constant Current Charge Condition - Flooded

OCV	Charging Time (Hours)	Charging Current (Amperes)																			
		31-40Ah	41-50Ah	51-60Ah	61-70Ah	71-80Ah	81-90Ah	91-100Ah	101-110Ah	111-120Ah	121-130Ah	131-140Ah	141-150Ah	151-160Ah	161-170Ah	171-180Ah	181-190Ah	191-200Ah	201-210Ah	211-220Ah	221-230Ah
12.4 - 12.49V	6 Hr.																				
12.3 - 12.39V	10 Hr.																				
12.2 - 12.29V	14 Hr.	2.0A	2.5A	3.0A	3.5A	4.0A	4.5A	5.0A	5.5A	6.0A	6.5A	7.0A	7.5A	8.0A	8.5A	9.0A	9.5A	10.0A	10.5A	11.0A	11.5A
12.1 - 12.19V	16 Hr.																				
12.0 - 12.09V	20 Hr.																				
Below 11.99V	24 Hr.																				

TABLE 4. Constant Current Charge Condition - AGM

OCV	Charging Time (Hours)	Charging Current (Amperes)							
		31-40Ah	41-50Ah	51-60Ah	61-70Ah	71-80Ah	81-90Ah	91-100Ah	101-110Ah
12.5 - 12.59V	6 Hr.								
12.4 - 12.49V	9 Hr.								
12.3 - 12.39V	12 Hr.								
12.2 - 12.29V	15 Hr.	2.0A	2.5A	3.0A	3.5A	4.0A	4.5A	5.0A	5.5A
12.1 - 12.19V	18 Hr.								
12.0 - 12.09V	21 Hr.								
Below 11.99V	24 Hr.								

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Product Portfolio

Passenger Car

Commercial Vehicle

Leisure

Design & Specifications

Maintenance Manual

Sales Contact



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