



**BOSCH**

Invented for life

Driven by

# SEASONS



**Constant performance for  
high demands:** Bosch batteries

# Batteries

## Overview

**Modern cars** are equipped with more and more components running on electric energy. They need to be supplied by reliable sources of energy with high performance. Equipped with modern technology and featuring a corrosion-proof design, Bosch batteries provide different types of vehicles with the energy they need – over long periods.

### Passenger-car starter batteries since 1927

Back in 1922, Bosch produced early motorcycle batteries. The first battery for cars was launched in 1927.

### Increased energy demand of vehicles

The energy demand of today's motor vehicles is much higher. More and more vehicles – of almost all vehicle segments – are equipped with safety systems, convenience and comfort functions. The powerful Bosch batteries S5 A with AGM technology and S4 E with EFB technology are particularly well-suited for modern vehicles.

### Patented PowerFrame® (grid)

Compared to conventional grids, the special alloy of the PowerFrame® ensures a higher corrosion resistance and at the same time a particularly high conductivity – as has been proven by durability tests in line with the SAE J240 standard performed at 75 °C. Furthermore, the flow-optimized PowerFrame® grid design also generates continuously high starting power thus contributing to a long service life.

### Spare parts, diagnostics and services



Bosch provides workshops and retailers with full support for their battery business – from a single source. This includes a complete battery range, efficient diagnoses and reliable services.



# S5 A with AGM technology and PowerFrame®

## Product range & product details



	<b>S5 A</b>
	<b>The premium Bosch battery with AGM technology</b> provides enough power for frequent starts and stops, supports regenerative braking (recuperation) and is a reliable source of power for electrical consumers during the stop phase.
Technology	 <b>AGM:</b> Absorbent Glass Mat <sup>(1)</sup> , PowerFrame® <sup>(2)</sup>
Scope of application	 Recent vehicle models and upmarket models with start/stop systems and regenerative braking (recuperation)
Service life	● ● ●
Cold starting performance	● ● ●
Deep-cycle resistance	● ● ●
Number of electrical consumers	● ● ●
Suitability for short distances	● ● ●
Maintenance	100% maintenance-free
Installation inside the vehicle	Yes
Installation angle	Up to 90°
Shelf life	18 months

(1) AGM (Absorbent Glass Mat): acid absorbed by micro-fiberglass mat allows more energy to pass through  
(2) PowerFrame®: patented stamping process for optimized current flow, reduced corrosion and long service life

### Advantages at a glance

- ▶ **Constant power even for short trips, stop-and-go traffic or high consumption in stationary mode:** acid absorbed by micro-fiberglass mats allow higher amounts of energy to be provided
- ▶ **Longer service life and up to 4 times higher deep-cycle resistance than conventional starter batteries:** in case of AGM technology, the acid is absorbed by micro-fiberglass mats thus keeping the self-discharge rates low
- ▶ **Reliable starting even under extreme temperatures and with several electrical consumers:** ensured by even acid distribution preventing stratification
- ▶ **Excellent charge acceptance:** the patented PowerFrame® (grid) for optimized current flow and less corrosion increases the cold start performance
- ▶ **Particularly high corrosion resistance:** ensured by optimized production processes
- ▶ **100% maintenance-free:** the double lid with labyrinth design returns condensed water to the battery thus reducing the water consumption; and preventing sudden leaks of acid if tilted

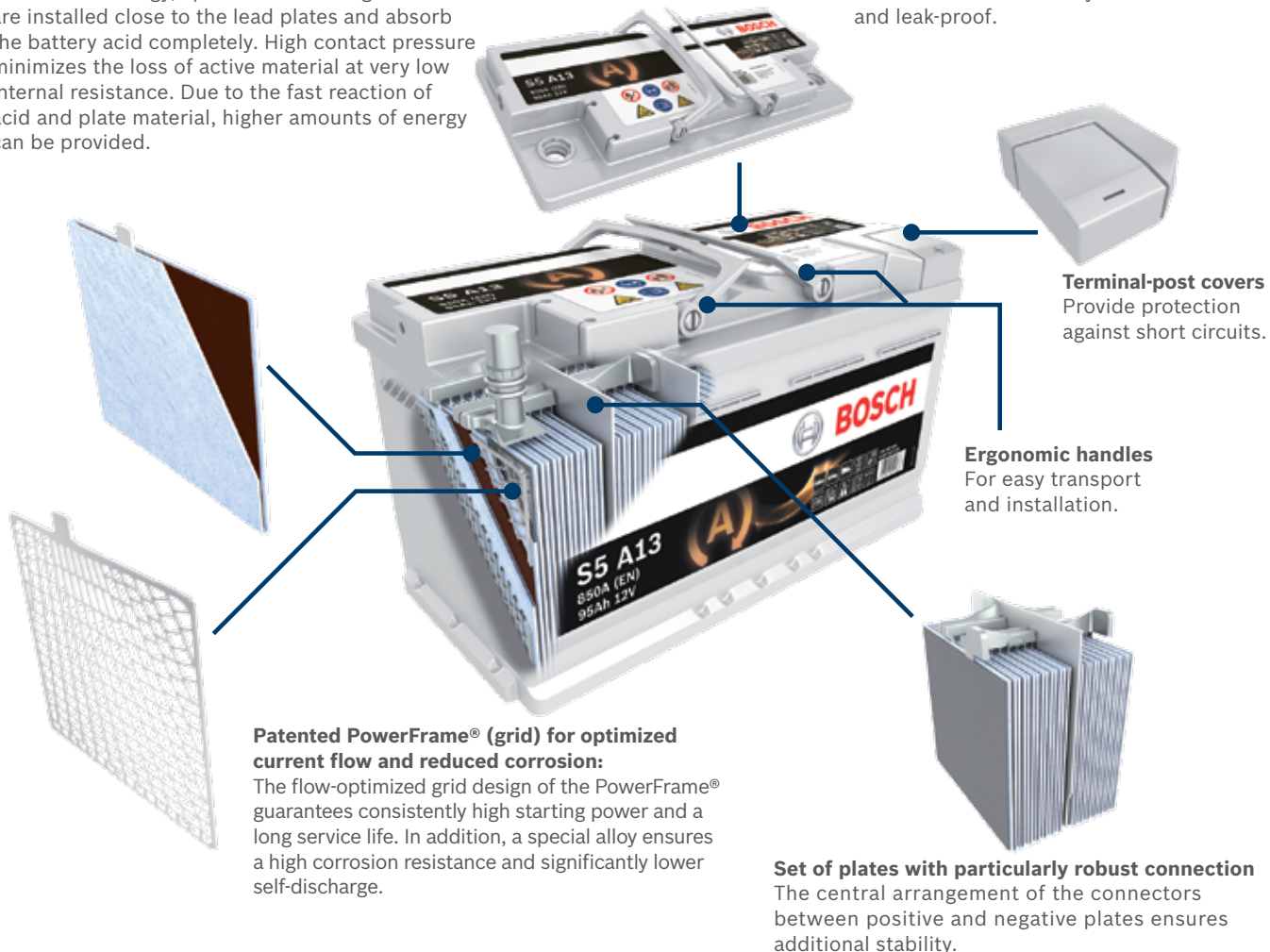
# S5 A with AGM technology and PowerFrame® Technology

## AGM (Absorbent Glass Mat) – acid absorbed by micro-fiberglass mats

In AGM technology, special micro-fiberglass mats are installed close to the lead plates and absorb the battery acid completely. High contact pressure minimizes the loss of active material at very low internal resistance. Due to the fast reaction of acid and plate material, higher amounts of energy can be provided.

## Special lid design for high operational safety

The safety valve and the central degassing make the S5 A absolutely maintenance-free and leak-proof.



## Patented PowerFrame® (grid) for optimized current flow and reduced corrosion:

The flow-optimized grid design of the PowerFrame® guarantees consistently high starting power and a long service life. In addition, a special alloy ensures a high corrosion resistance and significantly lower self-discharge.

## Ergonomic handles

For easy transport and installation.

## Set of plates with particularly robust connection

The central arrangement of the connectors between positive and negative plates ensures additional stability.



## Battery straining in case of frequent starts and stops



Battery straining in case of start/stop with regenerative braking



## Bosch Automotive eCat-online catalog

The quick way to find the matching product

- ▶ Free-of-charge online spare-parts catalog
- ▶ With a wealth of additional information and 360° product images
- ▶ Available in 28 languages











[www.bosch-automotive-catalog.com](http://www.bosch-automotive-catalog.com)

# S4 E with EFB technology and PowerFrame®

## Product range & product details



	<b>S4 E</b>
	<b>The powerful Bosch battery with EFB technology</b> is customized to meet the requirements of cars with start/stop systems. It ensures safe starting – even if the vehicle operates several electrical consumers.
Technology	 <b>EFB:</b> Enhanced Flooded Battery <sup>(1)</sup> , PowerFrame® <sup>(2)</sup>
Scope of application	       Recent vehicle models and upmarket models with start/stop systems and several electrical consumers
Service life	● ● ●
Cold starting performance	● ●
Deep-cycle resistance	● ● ●
Number of electrical consumers	● ●
Suitability for short distances	● ● ●
Maintenance and water consumption	100 % maintenance-free
Installation inside the vehicle	Yes
Installation angle	0°
Shelf life	18 month

(1) EFB (Enhanced Flooded Battery): positive plate coated with polyester scrim ensures additional retention of the active material and a high deep-cycle resistance

(2) PowerFrame®: patented stamping process for optimized current flow, reduced corrosion and long service life

### Advantages at a glance

- ▶ **Longer service life and twice the deep-cycle resistance of conventional starter batteries:** in case of EFB technology, the positive plate is coated with a polyester scrim, providing additional hold for the active material thus keeping the self-discharge rates low
- ▶ **Reliable starting even under extreme temperatures and with several electrical consumers:** thanks to optimized active material
- ▶ **Excellent charge acceptance:** the patented PowerFrame® (grid) for optimized current flow and less corrosion increases the cold start performance
- ▶ **Particularly high corrosion resistance:** ensured by optimized production processes
- ▶ **100% maintenance-free:** the double lid with labyrinth design returns condensed water to the battery thus reducing the water consumption; and preventing sudden leaks of acid if tilted

# S4 E with EFB technology and PowerFrame® Technology

## Set of plates with particularly robust connection

The central arrangement of the connectors between positive and negative plates ensures additional stability.

## Labyrinth lid for high operational safety

The double lid with labyrinth design ensures that evaporated liquid remains inside the battery. This makes the S4 E battery absolutely maintenance-free and leak-proof.

## Terminal-post covers

Provide protection against short circuits.

## Ergonomic handles

For easy transport and installation.

## EFB (Enhanced Flooded Battery) – positive plate coated with polyester scrim

In EFB technology, the positive plate is coated with a so-called polyester scrim providing additional retention of the active material on the plate. The S4 E battery therefore features an improved deep-cycle resistance compared to conventional batteries and remains operational even if there are strong vibrations.

## Patented PowerFrame® (grid) for optimized current flow and reduced corrosion:

The flow-optimized grid design of the PowerFrame® guarantees consistently high starting power and a long service life. In addition, a special alloy ensures a high corrosion resistance and significantly lower self-discharge.

## Universal adapter bottom rail with high degree of vehicle compatibility

For safe, precisely fitting installation.

## Ion-permeable pocket separator

Prevents contact between positive and negative plate – for longer service life and higher starting power.



## Battery straining in case of frequent starts and stops



## ESI[tronic] 2.0 software for diagnoses and servicing

By means of ESI[tronic] 2.0 software, Bosch offers workshops an excellent solution for effective and efficient vehicle diagnoses for repair or servicing.

Advantages:





- ▶ Easy operation
- ▶ Standardized system
- ▶ Comprehensive vehicle coverage
- ▶ Modular design



# S5/S4/S3 with PowerFrame®

## Product range & product details



	S5	S4	S3
	<b>Efficient Bosch quality for a wide range of requirements and vehicle types – that is what Bosch SLI batteries stand out for.</b> The patented grid with special PowerFrame® technology is crucial for performance and reliability.		
Technology	 <b>Lead-acid SLI:</b> Starting-lighting-ignition/starter battery with PowerFrame® <sup>(1)</sup> and labyrinth lid <sup>(2)</sup>		
Scope of application	 Recent vehicle models and upmarket models	 All vehicles, also for Asian models	 Older vehicles with fewer electrical consumers
Service life	● ● ●	● ● ●	● ●
Cold starting performance	● ● ●	● ●	●
Deep-cycle resistance	● ●	● ●	●
Number of electrical consumers	● ●	●	●
Suitability for short distances	● ●	●	●
Maintenance and water consumption	100% maintenance-free	100% maintenance-free	100% maintenance-free
Installation inside the vehicle	Yes	Yes	No
Installation angle	0°	0°	0°
Shelf life	18 months	15 months	12 months

(1) PowerFrame®: patented stamping process for optimized current flow, reduced corrosion and long service life

(2) Labyrinth lid: returns condensed water to the battery; integrated central degassing, backfire protection and an additional sealing ring ensure high operational safety

### Advantages at a glance

- ▶ **Outstanding starting power and a long service life:** the patented PowerFrame® (grid) for optimized current flow and less corrosion increases the cold start performance
- ▶ **Particularly high corrosion resistance:** ensured by optimized production processes
- ▶ **100% maintenance-free:** the double lid with labyrinth design returns condensed water to the battery thus reducing the water consumption; and preventing sudden leaks of acid if tilted
- ▶ **High safety:** ensured by double backfire protection and integrated central degassing

# S5/S4/S3 with PowerFrame® Technology

## Set of plates with particularly robust connection

The central arrangement of the connectors between positive and negative plates ensures additional stability.

## Labyrinth lid for high operational safety

The double lid with labyrinth design ensures that evaporated liquid remains inside the battery. This makes the SLI batteries absolutely maintenance-free and leak-proof.

## Terminal-post covers

Provide protection against short circuits.

## Ergonomic handles

For easy transport and installation.

## Ion-permeable pocket separator

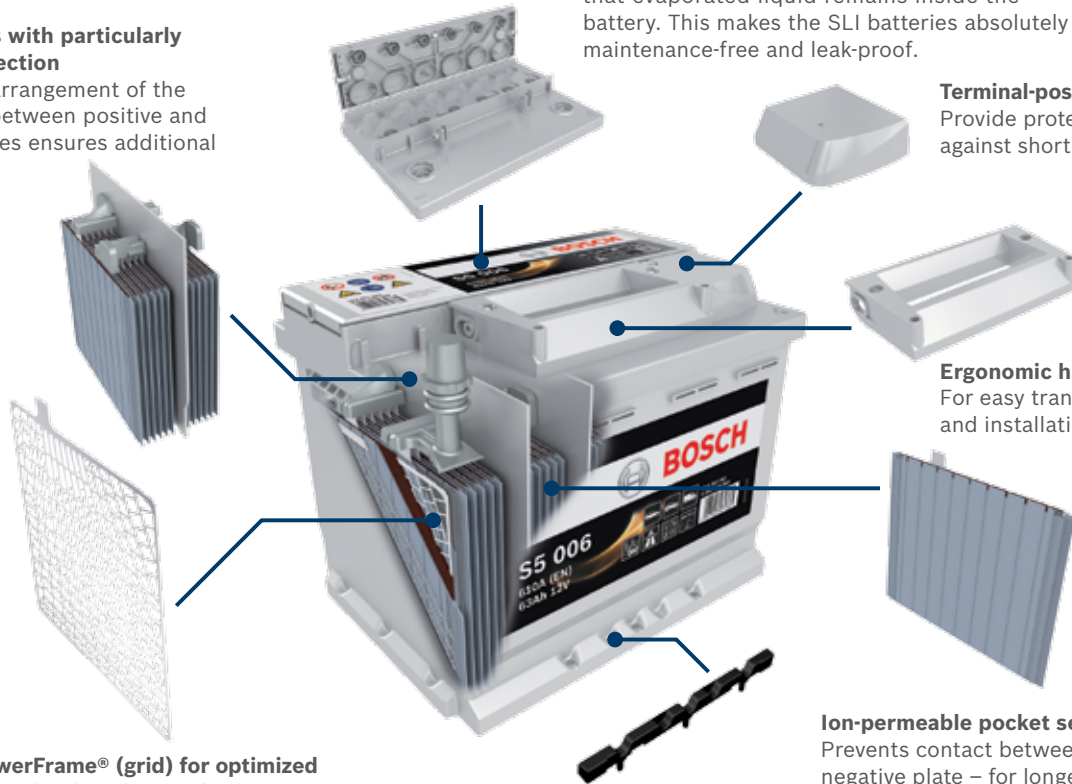
Prevents contact between positive and negative plate – for longer service life and higher starting power.

## Patented PowerFrame® (grid) for optimized current flow and reduced corrosion:

The flow-optimized grid design of the PowerFrame® guarantees consistently high starting power and a long service life. In addition, a special alloy ensures a high corrosion resistance and significantly lower self-discharge.

## Universal adapter bottom rail with high degree of vehicle compatibility

For safe, precisely fitting installation.



## Battery straining in case of conventional vehicles



Characteristic: A single start-up procedure followed by recharging



## Did you know?

# Battery expert since 1922

The first Bosch battery was produced in 1922 in Stuttgart-Feuerbach.





# What drives you, drives us

Bosch technologies are used worldwide in almost all vehicles. People, and assuring their mobility, is what we are focused on.

Therefore, we have dedicated the last 125 years of pioneering spirit and expertise in research and manufacturing to achieving this.

We continue to work on our unique combination of solutions for spare parts, diagnostic devices, workshop equipment and services:

- ▶ Solutions for efficient vehicle repairs
- ▶ Innovative workshop equipment and software
- ▶ The world's most comprehensive range of new and replacement parts
- ▶ Large network of wholesale customers, for quick and reliable parts supply
- ▶ Competent hotline support
- ▶ Comprehensive educational and training offers
- ▶ Targeted sales and marketing support

**Find out more at:**  
[www.bosch-automotive-aftermarket.com](http://www.bosch-automotive-aftermarket.com)

*Your local retailer:*

**Robert Bosch GmbH**  
Automotive Aftermarket

Auf der Breit 4  
76227 Karlsruhe  
Germany

[www.bosch.com](http://www.bosch.com)

# S5 A with AGM technology and PowerFrame®

## Product details

The premium Bosch battery with AGM technology provides enough power for frequent starts and stops, supports regenerative braking (recuperation) and is a reliable source of power for electrical consumers during the stop phase.



(1) AGM (Absorbent Glass Mat): acid absorbed by micro-fiberglass mat allows more energy to pass through

(2) PowerFrame®: patented stamping process for optimized current flow, reduced corrosion and long service life

### Advantages at a glance

- ▶ **Constant power even for short trips, stop-and-go traffic or high consumption in stationary mode:** acid absorbed by micro-fiberglass mats allow higher amounts of energy to be provided
- ▶ **Longer service life and up to 4 times higher deep-cycle resistance than conventional starter batteries:** in case of AGM technology<sup>(1)</sup>, the acid is absorbed by micro-fiberglass mats thus keeping the self-discharge rates low
- ▶ **Reliable starting even under extreme temperatures and with several electrical consumers:** ensured by even acid distribution preventing stratification
- ▶ **Excellent charge acceptance:** the patented PowerFrame®<sup>(2)</sup> (grid) for optimized current flow and less corrosion increases the cold start performance
- ▶ **Particularly high corrosion resistance:** ensured by optimized production processes
- ▶ **100% maintenance-free:** the double lid with labyrinth design returns condensed water to the battery thus reducing the water consumption; and preventing sudden leaks of acid if tilted

# S4 E with EFB technology and PowerFrame®

## Product details

The powerful Bosch battery with EFB technology is customized to meet the requirements of cars with start/stop systems. It ensures safe starting – even if the vehicle operates several electrical consumers.



(1) EFB (Enhanced Flooded Battery): positive plate coated with polyester scrim ensures additional retention of the active material and a high deep-cycle resistance  
(2) PowerFrame®: patented stamping process for optimized current flow, reduced corrosion and long service life

### Advantages at a glance

- ▶ **Longer service life and twice the deep-cycle resistance of conventional starter batteries:** in case of EFB technology<sup>(1)</sup>, the positive plate is coated with a polyester scrim, providing additional hold for the active material thus keeping the self-discharge rates low
- ▶ **Reliable starting even under extreme temperatures and with several electrical consumers:** thanks to optimized active material
- ▶ **Excellent charge acceptance:** the patented PowerFrame®<sup>(1)</sup> (grid) for optimized current flow and less corrosion increases the cold start performance
- ▶ **Particularly high corrosion resistance:** ensured by optimized production processes
- ▶ **100% maintenance-free:** the double lid with labyrinth design returns condensed water to the battery thus reducing the water consumption; and preventing sudden leaks of acid if tilted