



## Automotive Light Bulbs



**BOSCH**

Invented for life

# Automotive Lighting Program

Bosch automotive bulbs stand for reliability and durability. They enhance road safety and improve driving comfort by providing excellent road illumination without blinding oncoming traffic.

The Bosch light bulb program includes multiple product lines with a wide variety of bulbs covering nearly every vehicle application. Bosch light bulbs provide more light for better visibility – even in extreme weather and at night.

## More Light, Better Visibility, Added Safety

### Making the Right Decision

Understanding the characteristics that each bulb offers plays a key role in choosing the right Bosch bulbs. For instance, while the Bright White, Optic Select, Optic Plus and Optic Edge light bulbs provide the brightest light, their service life is not as long as Standard and Long Life bulbs.

The following diagrams show the life and brightness range variances between the different bulb types:

### Miniature Light Bulbs

	Long Life	Bright White
Life	★	★
Brightness/Range	★	★



#### Long Life

Longer replacement intervals; lasts up to 2X longer than conventional bulbs



#### Bright White

Brighter and whiter light for enhanced vision and safety

### Forward/Halogen Light Bulbs

	Standard	Optic Select	Optic Plus	Optic Edge
Life	★	★	★	★
Brightness/Range	★	★	★	★
Down Road Vision		★	★	★
Side Road Vision			★	★
Night Vision	★	★	★	★



#### Standard

Original Equipment (OE) quality; direct replacement for easy installation



#### Optic Select

Enhanced illumination and down road vision



#### Optic Plus

Superior down and side road vision



#### Optic Edge

Best-in-class illumination and night vision

## Testing & Materials

Bosch automotive bulbs are 100% tested, ensuring they meet SAE\* specification standards for quality – because when it comes to repairs we believe a properly functioning lighting system is a top priority.

All Bosch bulbs contain a proprietary mix of tungsten and gasses, which are two key components for light bulb energy efficiency and longer life. Tungsten is a chemical element that can reach a high temperature before melting, which means it can emit a brighter light.

\*Society of Automotive Engineers

Our light bulbs must meet five qualification standards related to the inspection of all components, including:

1. Tests of all filaments, contacts and bases
2. Strength tests in the filaments and glass
3. In-process inspections (soldering and position of filament(s))
4. Regulation of gas disbursement
5. Final inspection and long-life testing per lot



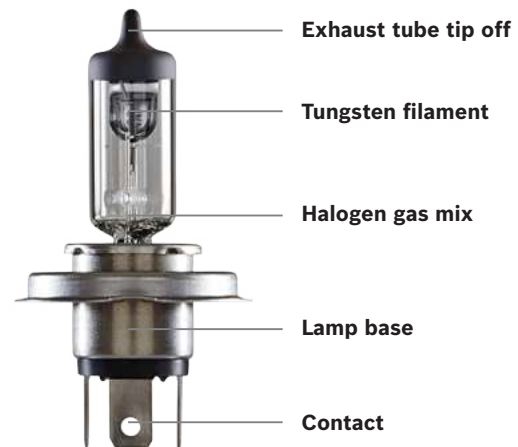
## Forward Lighting Bulb Technology

### Halogen technology

As electric current is passed through the tungsten wire filament, the filament heats up and glows, thereby producing light.

The tungsten material evaporates in this process, but is redeposited on the filament after contact with the inert halogen gas.

This evaporation and re-deposition cycle eventually deteriorates the filament and causes the bulb to “burn out.”

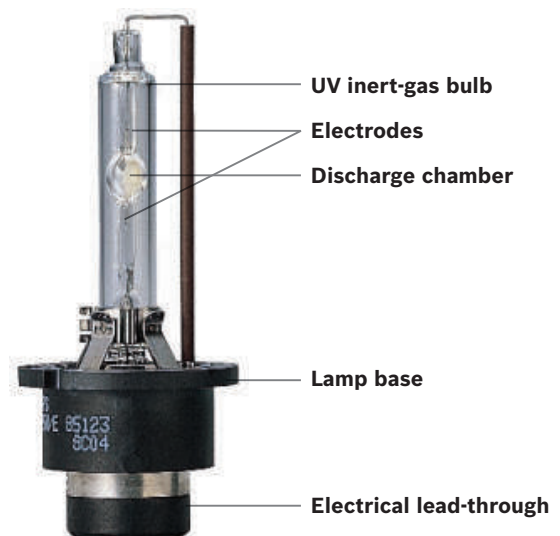


### High Intensity Discharge (HID) technology

HID is a more superior lighting technology that produces a much more powerful beam compared to halogen technology.

When an electric current is applied, the highly-pressurized xenon gas within ionizes between the electrodes, creating an “arc.”

This arc generates an extremely high temperature, causing the metallic elements within the gas atmosphere to vaporize and release large amounts of visible radiant energy. The result is the vivid and bright light output we see.



## FAQs Useful Tips

### What do the codes like H4, H7, HB4, P21W, etc. mean?

These are universal short codes indicating the bulb type and dimensions. Different vehicles use different bulb types depending on the original lamp design.

Bosch light bulbs feature a complete collection of bulb types, and most of our ranges cover the popular headlamp and fog lamp applications.

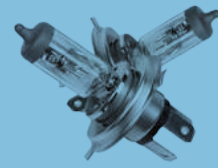
### Why can't I touch the bulb glass with my fingers? What happens if I do?

When your fingers come into contact with the bulb glass, alkaline compounds and oil residue are transferred onto the glass. When the bulb is in operation, these cause uneven heating at the contact spots, which can weaken the glass structure. As a result, bulb lifespan will be reduced, the glass may crack under uneven heat conditions — and in rare extreme cases — the bulb may even explode.






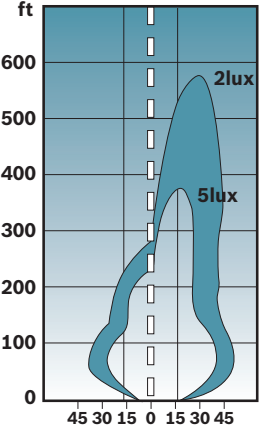
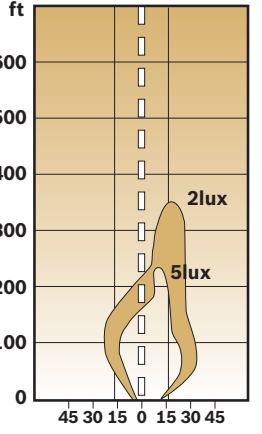
Therefore, always use gloves when handling bulbs — and avoid touching the glass with bare hands.

### Do I have to change the left and right bulbs at the same time?

We strongly recommend replacing bulbs as a pair, especially for headlamp and fog lamp applications. After a period of usage, bulbs will start to dim. Replacing only one bulb will lead to light imbalance.



## The Properties: A Comparison

Properties	HID	Halogen
 Power/Wattage	35W	55W
 Voltage	12V	12V
 Luminance	~3000	~1000
 Types	D1S, D2S, D2R, etc.	H1, H4, H7, 9005 etc.
 Light Beam Pattern	<p>HID Xenon light beam pattern</p> 	<p>Halogen light beam pattern</p> 

### Light

Standard gas-discharge lamps, or HID lamps, generate white light similar to daylight, whereas standard halogen types generally produce a comparative yellowish light output.

As HID lamps provide higher light emission, they are much more effective than halogen types in illuminating road areas.

### Energy Consumption and Service Life

HID lamps require lower energy consumption; only 35W as opposed to halogen types, which require 55W or more. This, coupled with its more advanced technology, allows an HID lamp to last 2000 hours or more. This is easily at least 4X longer than halogens, which usually average 400 to 500 hours for headlamp applications.

# Bosch Light Bulb Program



	Long Life	Bright White	Standard	Optic Select	Optic Plus	Optic Edge	HID
	168	168	9003	9003OS	9003OP	9003OE	D1R
<b>Numbering Explanation</b>	Industry # plus LL	Industry # plus BW	Industry # plus ST	Industry # plus OS	Industry # plus OP	Industry # Plus OE	Industry #
<b>Blister Pack Quantity</b>	Miniatures 2 per pack	Miniatures 2 per pack	Capsule -1 Miniature -2	Single & Double	Single & Double	Double only	Single Box

## Upgrade Options

### Miniatures



Base Number	Long Life	Bright White
<b>168</b>	168LL	168BW
<b>194</b>	194LL	194BW
<b>921</b>	921LL	921BW
<b>1156</b>	1156LL	1156BW
<b>1157</b>	1157LL	1157BW
<b>2057</b>	2057LL	2057BW
<b>3057</b>	3057LL	3057BW

Base Number	Long Life	Bright White
<b>3156</b>	3156LL	3156BW
<b>3157</b>	3157LL	3157BW
<b>7440</b>	7440LL	7440BW
<b>7443</b>	7443LL	7443BW
<b>3357-3457</b>	33573457L	33573457BW
<b>P21W</b>	P21WLL	P21WBW

### Head Lamps / Fog Lamps



Base Number	Standard	Optic Select	Optic Select 2 pack	Optic Plus	Optic Plus 2 pack	Optic Edge
<b>9003-H4</b>	9003ST	9003OS	9003OS2	9003OP	9003OP2	9003OE2
<b>9004</b>	9004ST	9004OS	9004OS2	9004OP	9004OP2	9004OE2
<b>9005</b>	9005ST	9005OS	9005OS2	9005OP	9005OP2	9005OE2
<b>9005XS</b>	9005XSST				9005XSOP2	
<b>9006</b>	9006ST	9006OS	9006OS2	9006OP	9006OP2	9006OE2
<b>9006XS</b>	9006XSST				9006XSOP2	
<b>9007</b>	9007ST	9007OS	9007OS2	9007OP	9007OP2	9007OE2
<b>9145</b>	9145ST	9145OS				
<b>H1</b>	H1ST			H1OP	H1OP2	
<b>H11</b>	H11ST	H11OS				
<b>H13-9008</b>	H139008ST		H139008OS2		H139008OP2	
<b>H3</b>	H3ST	H3OS				
<b>H7</b>	H7ST	H7OS	H7OS2	H7OP	H7OP2	H7OE2



**From standard OE replacement to high-quality upgrade options, the Bosch light bulb program offers something for every passenger car driver.**

- **Technology** – the latest bulb technology in miniature lighting, halogen forward lighting and HID bulbs
- **Safety** – testing in accordance with the highest industry standards
- **Coverage** – available for virtually every car
- **Service** – installation provided at Bosch Car Service centers in North America



Rely only on high-grade car bulbs offered on our virtual shelves.