



## ■ TURN SIGNAL LED REARVIEW MIRROR GLASS

With the scientific and technological advances, economic development, and declining production costs, means of private transportation become readily available to more people.

Private vehicles bring convenience and shorten the distance between people i.e. fulfilling the transportation needs.

According to statistics, the number of the registered motor vehicles in Taiwan has exceeded over 17 million.

Every day there are a huge number of motor vehicles on the roads, making traffic order a problem. Traffic accidents are also on the rise.

Safety problems have become an increasing concern for the use of vehicles.

It is important that a vehicle is equipped with a variety of safety equipment to ensure the safety of the passengers. Generally, vehicles are equipped with directional lights, installed on both sides of the motor vehicles at the front and at the rear.

It is originally intended to indicate change of lanes or directions to

the vehicles at the rear or to the incoming vehicles.

For drivers travelling next to each other, this configuration is not effective because the drivers are at a “blind spot” and can not see the turning lights.

Many accidents are the result of drivers failing to notice the vehicle next to them was turning or changing lane. To alleviate this problem, we have added LED lights to the rearview mirrors.

This product is called LED rearview mirrors. LED lights are added as additional directional lights for better visibility for the adjacent vehicles.

Our LED rearview mirrors function both as mirror viewing vehicles at the rear and the direction lights to the vehicle next to it.

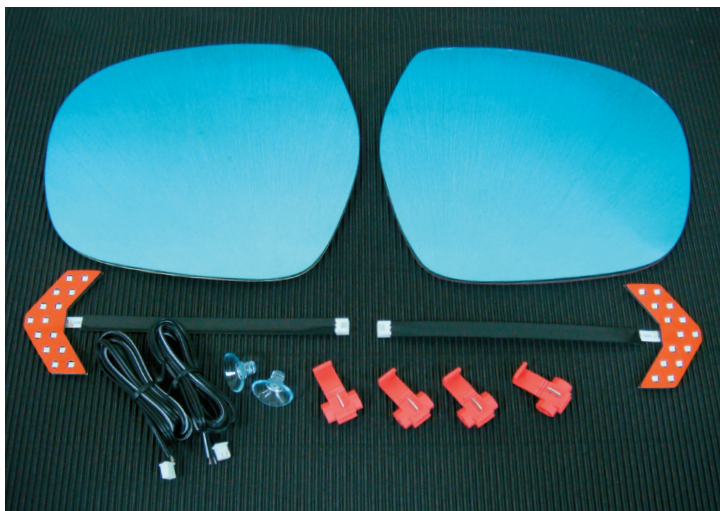
This device can very effectively reduce the possibility of accidents since the direction of the movement of the vehicle is clearly indicated to the vehicles around it.

## ■ Product Features

1. Easy installation
2. Do not change original vehicle circuitry
3. Effective warning indicating the direction the vehicle is moving
4. Concealed assembly. LED lights are behind the rear mirror.
5. LED lights are synchronous to the turning signal
6. Proper LED light intensity will not affect driver vision
7. No light dispersion.
8. Water repellent. Special treatment on the repels the water. Maintains mirror clarity.
9. Effective Signaling to drivers on both sides of the vehicle ( especially motor cycles)



## ■ LED Rear Mirror Models



### Technical Data

Peel Adhesion :	2.5 kg / 25 mm
Shear Strength :	Over 24hrs with 2.0kg sandwich stainless steel plate loading on 25mm x 25mm at 25°C
Normal Tensile Strength :	Over 16kg / 25 mm x 25 mm
Servicing Temperature :	-20°C ~ 100°C

### N Type

With high quality double tape in the back, this model can be glued directly onto the original rear mirror. Total mirror thickness is 5 mm. The lights are connected through a 2 stage-connector and high quality Flexible Flat Cables (FFC).

#### Product Included:

1. 1 pair of high quality mirrors (complete with double foam tape ) .
2. 1 set (2 pieces) of 14 LED super bright LED light..
3. 1 set (4 pieces) Mid -WAY WIRE CONNECTOR

#### FOAM TAPE INFORMATION

High shear adhesive system for secure long term bonding performance  
 Good resistance to solvent, chemical UV and heat.  
 Flexible yet thick foam tape compensates contour surface to improve product appearance



### PRO Type

This model mirror replaces the original mirror. No gluing is involved. After installation, you would not see the difference unless the light is activated



#### Product Included:

1. 1 pair of high quality LED mirrors (complete with mirror housing and LED inside ) .
2. 14 LED super bright LED.
3. 1 set (4 pieces) Mid -WAY WIRE CONNECTOR.

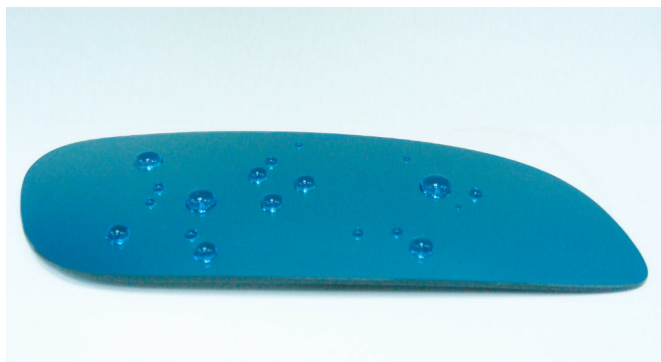


## ■ Water Repellent Treated

The effect of water repellent on the mirrors is essential. It provides drivers driving in the rain a clear view on the road, which is enviable for driving safely.

The mirror produced by our company have the feature of water repellent. This feature is processed during the manufacturing process.

The water repellent is not sprayed on the mirrors after the mirrors have been manufactured. Having the feature of water repellent, the mirror prevent most of the grease and dirty water from adhering on the mirrors. When the effect of water repellent is diminished, that is the indication the mirrors have to much grease built thereon. To remedy it, first you need to rinse the mirrors with sufficient water. Then gently wipe the mirrors by using noninvasive wipers followed



by rinsing off the dirty water off the mirror. After forgoing cleaning steps, the feature of water repellent is restored on the mirrors. You can once again drive with clear vision in the rain which enhancing driving safety.

## ■ Anti-Glare Effect

After treated with anti-glare technology, it effectively diminishes glare and also increase focus in the mirrors.

At night the strong beam lights reflected in the side view mirrors by rear cars greatly distract drivers, especially when the drivers switching lanes.

This easily risks the safety of the drivers on the road. The mirrors produced by our company have the feature of anti-glare, which diminishes the glare created by the rear cars.

Having this feature, the drivers can overcome the annoying glare and drive more safely



## ■ The Special Features of HSR So-Gel BLUE/GOLD MIRROR

### Blue /GOLD mirror SO-GEL NANO coating

#### Advantages:

- 1.Impossible for the coating to come off
- 2.Strong anti-corrosion
- 3.Uniform color
- 4.Strong coating hardness
- 5.Able to produce large-size glasses
- 6.High reliability of the products

#### Disadvantages:

- 1.High manufacturing costs
- 2.Advanced technologies required to manufacture
- 3.The formulas used to manufacture is trade secret
- 4.Stringent manufacturing environment

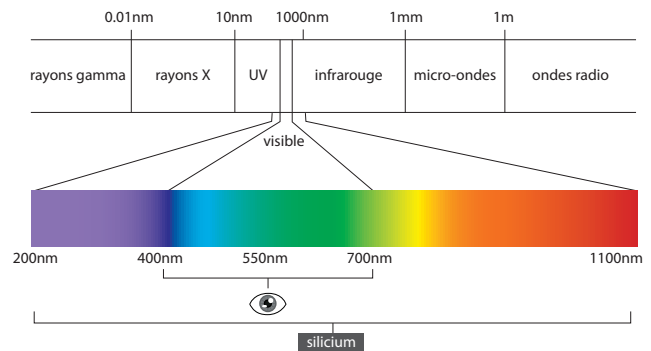
SO-GEL NANO is not used in the conventional metal coating process, rather used in the manufacturing process in producing blue mirrors, having the surface hardness as 7 H (, the average is 9H). The manufacturing environment for blue mirrors is very stringent. The equipment and the environment require an extremely high standard of cleanness to make sure there are no dirt and dusts. The humidity and temperature control, which is required to be precise and stable, is important. As a result, in order to manufacture blue mirrors that are high quality, it requires the state of the art equipment and the state of the art clean room.

Because SO-GEL NANO blue mirrors produce blue color that is perfectly uniform, people might mistakenly think that this perfectly uniform blue color is the result of coating the blue color directly onto the surface of the mirror. In contrast, the blue color is not the color of the coated mirror. Rather, the coated mirror does not have any colors at all. As a matter of fact, the blue color that you see is the reflection of spectrum that is seen by human eyes. As the back of the coated mirror processed with a layer of black color, it only allows the light entering the coated mirror to be reflected back out of the coated mirror as only the blue color.

In order to produce this perfectly uniform blue color, the selection of a right type of mirrors that is high quality is critical. For this type of high quality mirrors, we use optical glass because it allows producing clean and spotless mirrors required by the coating process.

SO-GEL NANO coating process uses immersion method. Specifically, the process uses the state of the art equipment to immerse the mirrors in a tank filled with SO-GEL. This allows SO-GEL and the mirrors to have direct chemical reaction. This immersion process is repeated three times but each time a different type of SO-GEL is used in order to get the perfectly uniform blue color. The immersed mirrors also baked and sintered in high temperate to solidify the chemical reaction between the mirrors and the SO-GEL. The hardness of the coated mirrors can reach 7H (the average is 9H)In contrast, here is the vacuum coating process; unprocessed mirror – cleaning – baking (making the mirror curvature) – coating chrome – coating blue color onto the glasses.

SO-GEL blue mirror process: unprocessed mirror – cleaning (using brushes) – cleaning (using ultrasound) – coating 1 – baking – cleaning (using ultrasound) – coating 2 – baking – cleaning (using ultrasound) – coating 3 – baking – high temperature sintering ( around 550°C ) – baking (making the mirror curvature more than 700°C)



### Blue mirror special features

Light spectrum is made of three major colors (red, green, blue), the soft color that human eyes can easily accept is the blue color. Thus, the development of blue mirrors exists. The blue mirrors that we produce are capable of reflecting about 60% of the blue light, lowering the yellow and red lights that are glaring to human eyes. This provides a great benefit of greatly reducing the strong light coming from the rear cars that produces glaring to drivers who is driving at night. Thus, it reduces danger and increases safety in driving.

Human eyes have limited sensitivity toward light spectrum. There is only a portion of the light spectrum that human eyes can see. For the portion that can be seen, it consists of red, orange, yellow, green, blue, indigo, and purple. The sensitivity of human eyes varies toward these various colors. The sensitivity is low toward blue and purple colors. The sensitivity is high toward the orange and yellow colors, especially in strong light or poor light. For example, the flame that is orange and yellow colors can be seen from 20 to 30 meters away. In contrast, the flame that is blue and purple colors can be ignored within 1 meter.

Blue rear mirrors have the feature of strengthening the blue and purple colors that greatly lowering the sensitivity of human eyes and weakening the orange and yellow lights that human eyes are very sensitivity of. Thus, it creates the color of blue for the rear mirrors, called blue rear mirrors. Blue mirrors that has the feature of lowering glaring and increasing clarity is commonly used in European cars, such as BMW, Mercedes, VW, AUDI, etc. that are considered high end cars.The majority of cars using halogen light bulbs produce yellow light. SO-GEL NANO blue mirrors are capable of reducing the intensity of yellow light, and thus reducing the glaring to create the dimming effect.

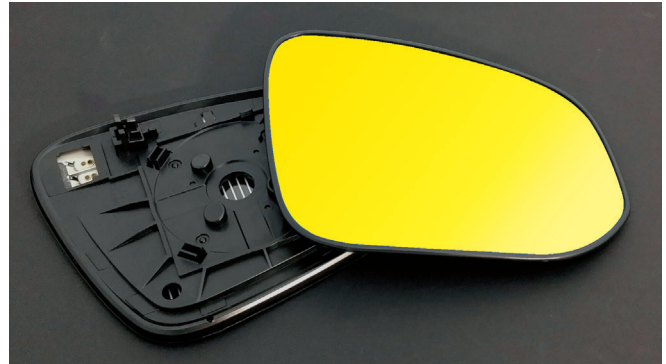
Driving a long period of time under the strong sun, the regular rear mirrors create strong glaring that hurts the human eyes. In contrast, the blue mirrors create clear image that is gentle to human eyes, no glaring. As a result, SO-GEL NANO blue mirrors are very suitable for driving either during the day or night.

#### The advantages of HSR SO-GEL NANO mirrors :

- 1.Low reflection and glaring during day or night.
- 2.Clear images.
- 3.Hard surface with anti-erosion that does not change color.
- 4.Perfectly uniform color that provides high quality.



## ■ Background on SOL-GEL NANO Mirrors



The SO-GEL NANO technology is currently being internationally recognized as the most promising and valuable in new materials development and product development. This technology allows small particles (each is smaller than 100 nm) chemically bonded. The chemically bonded particles have the ability to suspend in the liquid to provide the characteristic of being transparent to the eyes, called SO-GEL NANO.

The SO-GEL NANO technology is very mature. As a result, the application of this technology is widely used in various industries, such as optoelectronics, electronics, and chemical industries. Here are some specific products using this technology in the foregoing industries, such as transparent conductors, electrochromic glasses, light laser, etc.

The reason the SO-GEL NANO technology is widely used in the industries now is because it is able to provide a solution to a common issue of the conventional vacuum technology that cannot meet the industry demand, specifically for large, non-flat, surfaces and processed plastic materials. The SO-GEL NANO technology is able to satisfy the current market demand because it has the following qualities: It can create materials that having a variety of refractive index (e.g. 1.35 to 2.) The materials not only can absorb the ultraviolet, infrared reflection, the materials can also produce glasses coated for anti-reflection, anti-reflective, anti-UV, etc. To summarize the advantages of SO-GEL NANO technology over the conventional vacuum coating technology, the SO-GEL NANO technology can produce supreme products that the conventional vacuum coating technology is incapable of.

## ■ SOL-GEL NANO Blue Mirror

### The differences between Vacuum Coating Blue Mirror and SOL-GEL NANO Blue Mirror:

#### Advantages:

1. Mass production
2. Low cost
3. Less advanced technology

#### Disadvantages:

1. Easy to disintegrate
2. Weak corrosion resistance
3. Uneven color
4. Weak coating hardness
5. Limited to small sized material

Here describes problems of blue mirrors produced by a method called vacuum coating. Most of conventional blue rearview mirrors available in the market are produced via the method of vacuum coating. For this method, a first layer of chrome is coated on a mirror prior to a thin second layer of blue coating is coated on the first layer of chrome. Often time mirrors have dirt or dusts on thereof. As this method applies on these mirrors having dirt or dusts, adversely the dirt or dust is also coated on certain surface areas of these mirrors. As a result, the blue coating cannot be firmly coated on the surface areas of the mirrors where consisting of dirt or dusts. Consequently, after normal wears and tears, such as wiping and washing the mirrors, the blue coating disintegrates from the mirrors. This negative effect is called “pinholes” in the industry.

Furthermore, it is well known that corrosion resistance of blue mirrors, produced via the method of vacuum coating, is weak. As these mirrors under a long period of rain, sunshine, and treatment of chemical cleaning agent, the color of blue coating is easily faded, especially the LED portion of the mirrors. In addition, the LED portion is easily scratched because the LED portion has a thinner coating layer that allows light transmittance. Because of the thinner coating layer, the surface hardness of the LED portion becomes weaker, resulting in being easily scratched.

## ■ The Special Features of HSR So-Gel Gold Mirrors

Yellow mirrors are capable of capturing lights, absorbing 100% UV lights, allowing red lights and 83% visible lights to penetrate. As the sun lights shine through the atmosphere, the main color seen is blue (this explains the reason the sky is seen as blue). The main advantage of the yellow mirrors is to filter out the blue lights that have the negative effect of creating high contrast. After the yellow mirrors filter out the blue lights, it makes the objects seen more natural. The details of the objects are more clearly visible. This makes the yellow mirrors suitable for drivers who need quick responses in response to driving movements.

In general people think that yellow lights, such as the ones from the sun, are glaring to the human eyes. However, the yellow mirrors do not have this negative effect because the yellow mirrors are created with a special material. This special material is called So-Gel, unlike typical coated mirrors, that this have a multiple layers of coating such that as the lights enter the So-Gel yellow mirrors, the blue lights are effectively filtered out to create very crisp and visible objects

### During the Day

Yellow mirrors effectively filter out the sun lights to reduce the glare of lights

### At night

Driving at night as drivers eyes exposed to intense traffic lights, the eye pupils cannot adjust quickly to see and drive safely. The So-Gel yellow mirrors can effectively reduce the glare to overcome this driving safety concern. For a night driver who needs constantly checks the rear traffic, the So-Gel yellow mirrors reduce the fatigue on the eyes because the mirrors effectively filter out the glaring lights to increase the driving safety.

Based on actual road tests, the So-Gel yellow mirror is an effective solution to reduce glare created by the car traffic lights and inadequate street lights at night time, especially at night in the winding roads or driving on streets with inadequate street lights. This effective solution greatly reduces the glare to increase the safety of driving.

One again to emphasize the advantage of the SO-GEL Yellow Mirror, the benefit is the ability to effectively filter out the blue lights to create crisp and clear objects to enhance the driving safety.





■ **Wide angle side view mirror (refer to figures below)**



**Wide angle side view mirror**



**Original side view mirror**

