

Ultimate Guide To Window Films



Introduction

Whether it's in the office or at home, sometimes there is just too much sunlight. This can cause unwanted glare on screens and reflective surfaces. It can also make working and living environments uncomfortably warm.

The answer: window films.

Or how about a lack of privacy or security. How do you solve these issues?

That's right again. Window films.

Perhaps glare and heat isn't an issue but your expensive furniture and artwork is fading and starting to look a little worse for wear.

How can you stop this from happening?

Window films?

Correct!

Read on to discover everything you need to know about window films and how they can help solve your issues.

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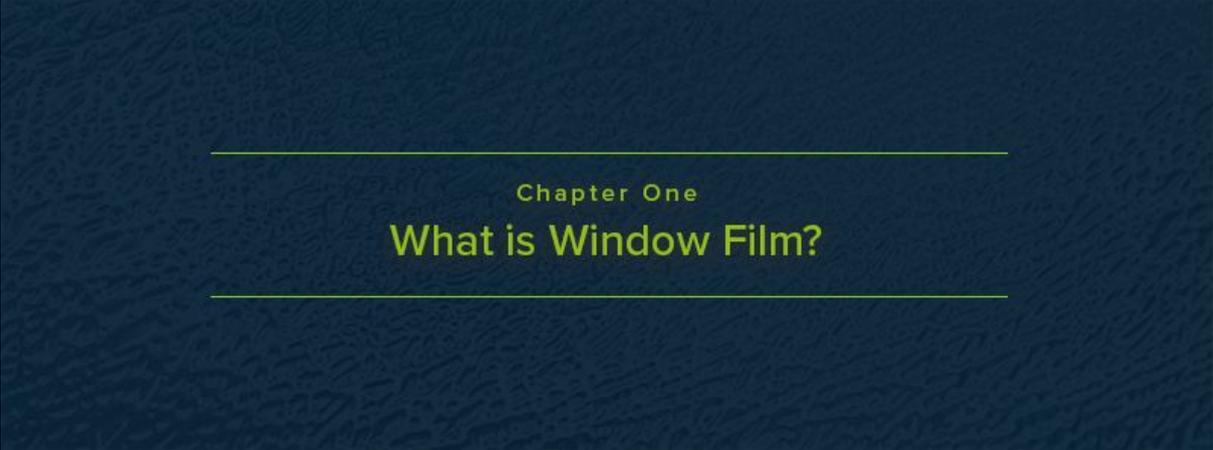
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Chapter One

What is Window Film?

Chapter One - What is Window Film?

So, what is window film?

A window film is a thin laminate film which is usually applied to the interior of glass surfaces.

Generally speaking it is used on vehicles, boats, homes and buildings.

This thin laminate film is actually made from polyethylene terephthalate or PET for short.

PET is a thermoplastic polymer resin of the polyester family.

PET is great for window film for these reasons:

1. Clarity

PET has great clarity, meaning you can easily see through it (if intended). This is ideal for a window film material as this is usually a requirement.

2. Tensile Strength

PET is also incredibly resilient when placed under tension. This means it's very unlikely to break during installation and also gives the film great safety benefits.

3. Dimensional stability

PET has great dimensional stability. This means it can maintain its original dimensions while being applied. This is obviously essential for a material being used to cover windows and helps to keep installed window films looking great for years.

4. Surface Treatments

PET has the ability to accept a variety of surface-applied or embedded treatments.

To help manage and govern window films, The International Window Film Association was founded in 1991.

There are many types of window film and as such can be categorised in a few different ways.

First of all they can be categorised based on their construction components.

These construction components are:

1. **Dyed**
These are window films which have been dyed specific colours. This is normally done for styling and design reasons.
2. **Pigmented**
These are window films which are pigmented to produce a tinting effect. Such as those used to tint the windows of vehicles.
3. **Metallized**
These are window films which have undergone treatment to be metallized to reduce incoming heat and UV light.
4. **Ceramic**
These are a new type of window film which block heat without being metallized.
5. **Nano**
Similar to ceramic window films, nano are high performing films which absorb more solar energy than traditional films.

They can also be categorised by their intended use. Some common uses include:

1. **Automotive**
Window films used in the automotive sector. Primarily for tinting the windows of vehicles. Increasingly common and now seen as a necessity rather than a luxury for sun protection, privacy, security and styling.
2. **Marine**
These are window films which are used in the marine sector. Primarily for boats such as yachts and motor cruisers.
3. **Architectural**
These are window films used for different buildings, normally homes and offices. Commonly used for heat, glare and fade reduction.

Further categorisation is based on the substrate type. These are:

1. **Glass**
Perhaps unsurprisingly the most common substrate for window films is glass. As the majority of windows are glass, this makes sense!

2. Polycarbonate

The alternative substrate to glass is polycarbonate. Polycarbonate is sometimes used in buildings as an alternative to glass. It can be used for windows, skylights, wall panels and roof domes. Due to this use, there are certain window films which are produced specifically for polycarbonate substrates rather than glass.

And the final method of window film categorisation is technical performance.

This includes:

1. Privacy

Privacy window films designed to increase privacy for business and home use. These can take the shape of tinted, frosted or even styled designs which obscure vision into rooms for added privacy.

2. Solar Control

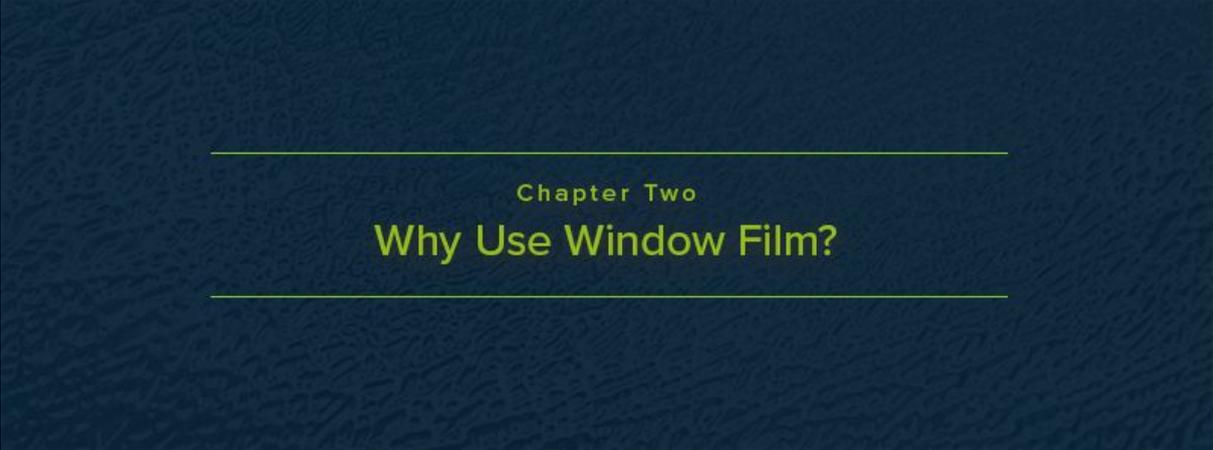
Solar control window films are another common type of window film. They are designed to absorb and reflect sun energy. This helps to reduce heat, glare and fading. These are common in office environments and large buildings such as hospitals and homes.

3. Safety

Another common type is safety. These are window films that are created specifically to improve safety in offices and homes. This is usually achieved through tinting and strengthening.

4. Security

Similar to safety, these are window films that are primarily for increasing security and offer increased protection from burglary and bomb-blasts. These can also include window films designed to specifically resist vandalism such as graffiti and gauging.

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Chapter Two

Why Use Window Film?

Chapter Two - Why Use Window Film?

As alluded to above, there are many different uses for window films and reasons for having them installed in your office or home.

Most commonly, window films are applied as a retrofit to upgrade existing glass. Window film is generally used in this context to address various issues and problems.

You can use window film in this way to help improve the following:

1. Heat and Glare Reduction

Perhaps you've had a new conservatory built. But instead of a relaxing space to unwind it's turned into a greenhouse from the heat and glare of the sun.

Simply applying a sun control or anti glare window film would quickly and easily solve this problem!

Your conservatory can turn back into a comfortable place to relax in the evening.

2. Eliminate Cold/Hot Spots

If your home or office is subject to uncomfortable or random changes in temperature, then a solar control window film could be the answer.

These are usually applied as a retrofit upgrade which help buildings create a comfortable, even internal temperature.

3. UV Filtration

UV light is considered one of the most significant causes of fading, damaging furniture, artwork, signage and flooring.

If this sounds familiar you'll want to invest in a fade-reduction window film.

This blocks UV rays which can help slow down fading (more on this later).

Keep your important possessions looking newer for longer.

4. Safety and Security

If you're concerned about the safety and security of your business, employees, home and family then there is a whole range of window films designed to tackle this.

There are many variations which can improve safety and security of buildings through different applications.

Ask your supplier to help you decide which is the right type for you and your building.

5. Privacy

If you're holding important confidential meetings then you likely want a certain level of privacy.

Or you have expensive and sensitive IT equipment that needs protection from prying eyes.

These are applications where window films are a great solution.

There are many colours, styles and levels of opaqueness that can be used to improve privacy without sacrificing style or aesthetics.

6. Decoration, Signage and Branding

If you want to personalise your environment, or add a touch of style, then window films are a great tool.

With many styles, colours and thicknesses available you can create a stylish and appealing environment.

7. Protection From Graffiti

If you're in a location where graffiti is rife you're probably trying to think of a solution to stop this.

So you'll be pleased to hear you can now get window films which actually protect against graffiti as well as other forms of vandalism such as scratches, gauges and acid etching.

8. Automotive Styling

In addition to using window films to style homes and offices it is now common to apply various window films to vehicles for styling reasons, as well as all the other benefits they provide such as protection from heat, harmful UV and privacy.

Window films are also a very cost effective method for reducing heating and cooling costs in existing buildings. We'll dig further into this later, however window films essentially reduce the heat transferred through glazing.

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Chapter Three

Window Film Application Tips

Chapter Three - Window Film Application Tips

So you've identified the problem.

There's too much sunlight in your office and its becoming a real issue for employees.

Or perhaps everyone can see into your confidential meetings.

Or maybe you've had some break ins and need to tighten security.

And now you know the solution.

Window films.

But how are window films installed?

For most installations it is only recommended using a professional company to install window films. However, for smaller areas or temporary installations it is possible to go down the DIY route, providing you follow the right procedure and have the correct tools.

1. Surface Temperature

The first thing to bear in mind is picking the right day.

By which I mean making sure the day isn't too hot or too cold.

Ideally the window film installation should take place when the temperature is between 12 and 18 degrees celsius.

So if its a particularly cold or hot day you might be better off postponing until the weather changes.

If you live in a particularly hot climate you may need to think about installing in the morning or evening once temperatures have dropped to a suitable level.

2. Surface Preparation

The second important thing to factor in is surface cleanliness.

It's vital that the glass and surrounding frame be meticulously clean before application. Take time to clean not just the surface you're applying film to, but also the working environment.

A clean surface free of dust, dirt, bugs etc. will make for an improved finished product.

If you apply to a dusty or unclean surface you will likely get a poor finish.

3. Tools

You will need a good, firm squeegee, DIY knife, spray-water bottle (filled with clear water and a few drops of washing-up liquid), straight-edge and absorbent towel.

4. Installation

Window film has a release-liner which protects the adhesive surface.

After preparation, the window surface is sprayed with the water solution.

Film is cut just over-size and applied to the glass.

The surface facing you is sprayed with the water solution and then the film is firmly squeegeed, removing all the bubbles and excess water.

Edges are cut, leaving a gap of approximately 2-3mm.

Finally, the surface is dried and cleaned using a soft cloth.

Chapter Four

How Does Window Film Reduce Heat?

Chapter Four - How Does Window Film Reduce Heat?

One of the primary uses of window film is to reduce heat. For instance, it's not uncommon for office buildings or home conservatories to get uncomfortably hot due to excessive sunlight.

The number one reason for excess heat in a room or building is energy from the sun passing through window glass into the room.

This excess solar energy then heats the room making it uncomfortable.

The solution to this problem is heat reducing window film also known as solar control film.

Heat reducing window film is usually applied to the interior of flat glass to reduce the amount of infrared, visible light and ultraviolet radiation which enters through glass.

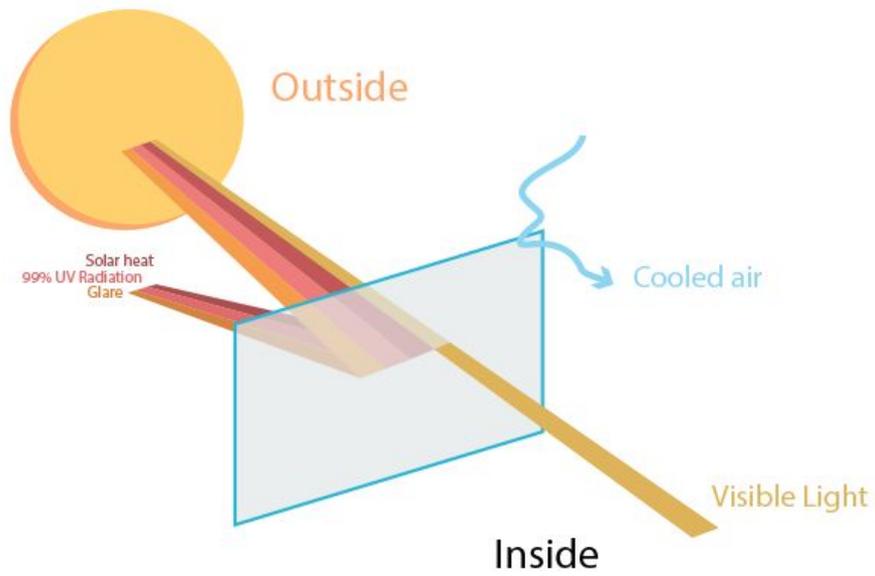
This infrared radiation is then rejected back through the glass to the exterior.

Thanks to modern technology there are now more sophisticated ceramic window films. These are non-metallic films which can also be dye free.

Whilst ceramic films cost slightly more than traditional films they provide very good performance without a mirrored finish.

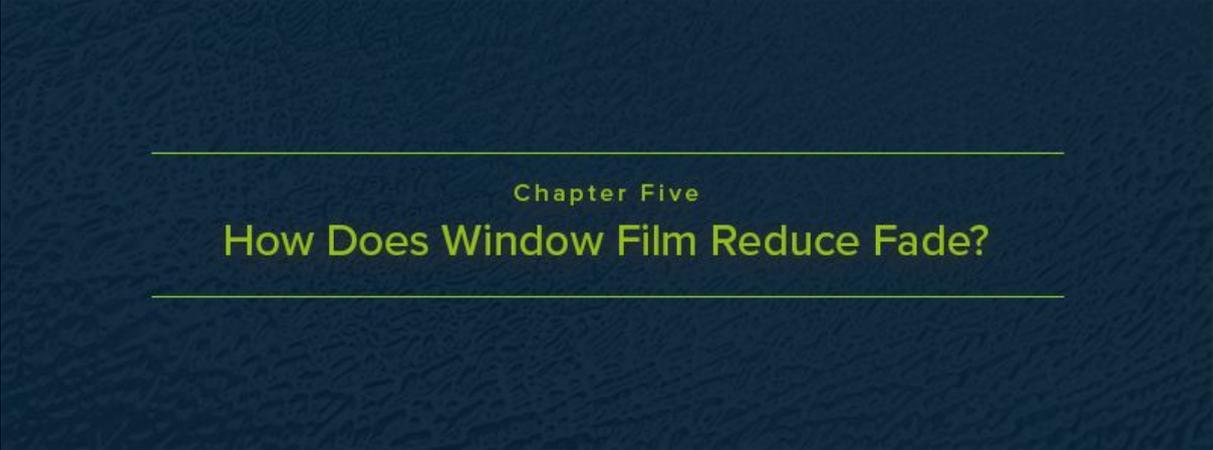
The latest advancement in the world of window films is spectrally selective films. These work by blocking certain wavelengths so they can reduce heat without also blocking or reducing sunlight. These window films are also known as IR films.

The following diagram clearly shows you how window films reduce heat.



So, in short, window films block the UV radiation and heat generated by the sun whilst continuing to let visible light in.

An ideal solution for creating an environment which is comfortable and well lit.

A dark blue rectangular graphic with a subtle, repeating pattern of the words 'fade' and 'reduce' in a light blue color. Two thin, horizontal light blue lines are positioned above and below the text.

Chapter Five
How Does Window Film Reduce Fade?

Chapter Five - How Does Window Film Reduce Fade?

Another common use of window films is fade reduction.

What exactly is fade reduction?

Quite simply fade reduction is the action of limiting the fading effect of the sun on items including furniture, artwork and flooring such as carpets or wood.

Harmful UV rays from the sun can cause items to fade in colour over a period of time.

You will have experienced this if you've ever left anything in direct sunlight for a length of time.

Say for instance you have a pot plant on your lounge floor which sits in direct sunlight.

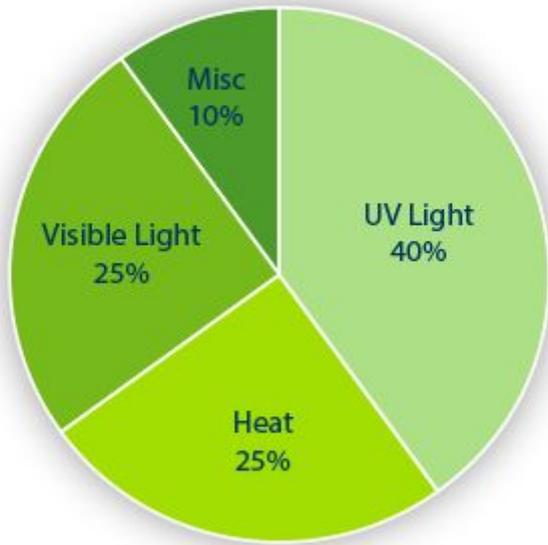
And imagine that pot plant stays there for a fair while and is then moved.

What will you see? A darker area in the shape of the pot.

Simply put, the sun rays have faded the carpet but the pot has protected that particular area, leaving it looking like new.

The majority of fading comes from the harmful UV rays of the sun. However, visible light and heat can also have an impact.

Causes of fading



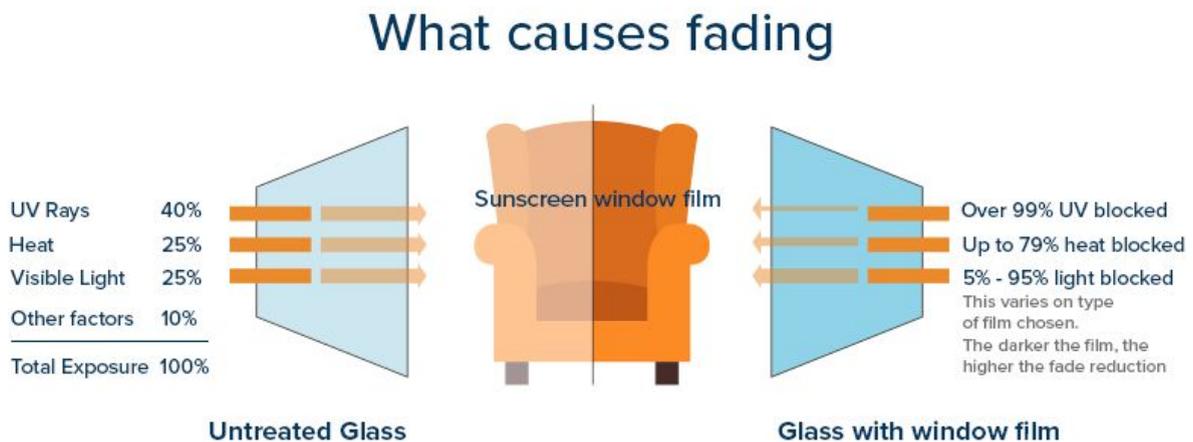
So if you're facing this issue you'll probably want to know what you can do to help it!

After all, you want your possessions to last and look good.

But how do window films accomplish this?

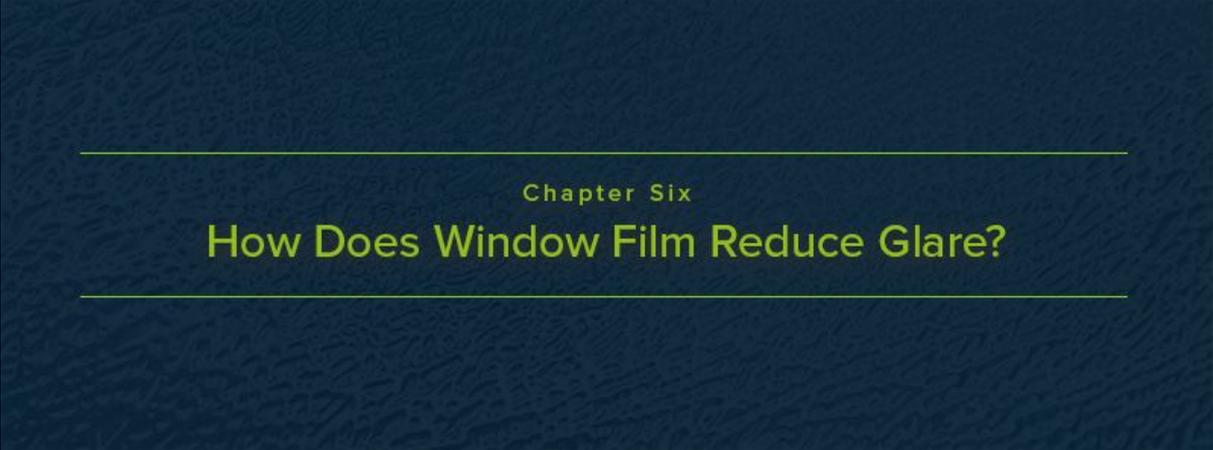
Window films for fade reduction are generally tinted or metallised. This allows window films to block the three main causes of fading:

1. UV rays
2. Heat
3. Visible Light



Depending on which film is selected, fading will be slowed down by a film installation. A clear UV film with no metal or dye will still offer protection but will not be as effective as a dyed, metalized film.

Spectrally selective, or IR films, are designed for shop fronts, museums and homes that need protection from the sun but also require clear vision both ways.

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Chapter Six

How Does Window Film Reduce Glare?

Chapter Six - How How Does Window Film Reduce Glare?

Glare.

It can be a major issue. When high levels of visible light enter a space it can cause glare. But what do we actually mean by glare?

Glare is when people have difficulty seeing in the presence of bright light. In an office environment this can become a real nuisance and ultimately affects productivity and staff morale.

Glare can make it hard to focus on computer screens or TVs, making work or relaxation difficult.

And you may not realise, but glare can be just as bad in winter and autumn as it is in spring and summer.

In summer and spring you'll likely to get bright sunshine, in winter and autumn glare is caused by low lying sunshine and can be more problematic.

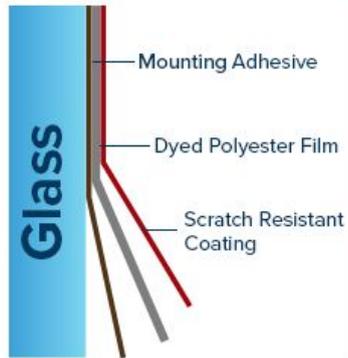
So if you work in an office environment and struggle with glare, or perhaps have a conservatory which is too uncomfortable to enjoy, you'll want to find a solution to this.

Once again the answer is window films.

Anti glare window films cut glare but maintain certain amounts of natural light levels. This creates a nicely lit environment but reduces glare.

This is how you reduce glare without reducing your view.

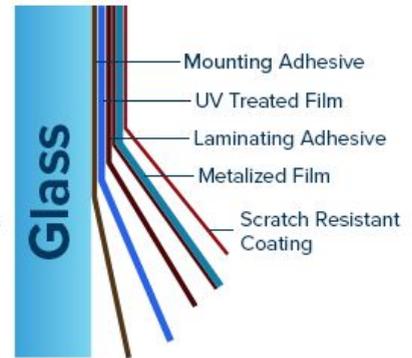
Dyed Films



Hybrid / High Performance Films



Metalized / Ceramic Films



Chapter Seven

How Does Window Film Improve Privacy and Security?

Chapter Seven - How Do Window Films Improve Privacy and Security?

Another common use of window films is improving privacy and security. There are many different window films that can be used for this particular issue.

Different privacy window films include:

1. Solar or Sun Control Window Films (Tint)
2. Privacy Mirror Films (One Way)
3. Blackout / Whiteout / Translucent Films (Frosted Appearance)
4. Decorative Window Films

Each of these different films have their own unique sets of pros and cons which will influence your decision in picking one.

Solar or Sun Control Window Films

Solar or sun control window films provide privacy by applying a tinted film to a window. This reduces the amount of visible light which can enter, therefore making it hard for individuals to see in from outside.

Pros:

Solar or sun control window films allow some natural light to enter the room and will also block up to 99% of UV rays. These films can enhance a buildings appearance.

Cons:

These types of films only really offer privacy during daylight hours. Once natural light levels fall, it becomes much easier to see through the window film. This is often mitigated by the use of blinds or curtains.

Privacy Mirror (One Way) Films

One way films apply a mirror like finish to the exterior of a window making it hard to see in from the outside.

Pros:

One way or privacy mirror films are excellent for offices and industrial units when you need to stop people from being able to see in from the outside.

Cons:

These window films create higher exterior reflectivity. This ultimately creates a shiny, mirror like appearance.

Blackout / Whiteout / Translucent Films

Blackout and whiteout films are a layer of solid colour (usually black or white) which is applied to glass.

Translucent or frosted window films apply a similar solid layer, but also allows natural light to pass through.

Pros:

These types of window film provide total privacy as they completely obscure the view which other films won't necessarily do.

Translucent or frosted films are good options as they obscure the view but also allow light into the room still.

Cons:

As these films offer true privacy and obscure vision both ways, they're not a good solution for any room in which you still want to be able to see out of as they block any kind of view.

Decorative

Decorative films add privacy by applying some kind of design, colour or pattern to the glass. This makes it difficult to see in from the outside.

Pros:

Unlike other films, these decorative films offer a high level of customisation. You can use any design you want which will enable you to reach the exact privacy level you want.

It can also be a nice statement piece instead of a solid block or mirror film. You can use it to enhance company branding or add a visual element to an office.

Cons:

Decorative films, as you may expect, are usually more expensive than some of the other privacy films we have discussed in this article.

Also, unless you think carefully about your design it could block your view out as well.

Chapter Eight

Frequently Asked Window Film Questions and Answers

Chapter Eight - Frequently Asked Window Film Questions and Answers

- **Can window film be removed and reapplied?**

Most window films utilise a permanent adhesive which means they cannot be re-applied once removed.

Films have been produced which have no adhesive and were designed to be removed and reapplied as required using a phenomenon known as static cling to stay on the surface.

However, these films are much less common nowadays and do not generally provide as clean a finish or the optical clarity of a modern window film.

- **How do you remove film from glass?**

Whilst we would recommend seeking professional help to remove a window film you can do it yourself on a small area.

To do this follow these steps:

1. Starting at a corner, pull the film away from the glass. Some films will come off all in one, some in small pieces. There is inevitably adhesive residue left on the surface.
2. Spray the remaining adhesive with plenty of soapy water and leave for a few minutes.
3. Using a razor-scaper, remove the adhesive taking care not to scratch the glass. Some types of glass are more susceptible to scratching, such as toughened. Keep the window wet at all times whilst using the scrapper.

- **Can you see through window film at night?**

This will vary depending on the window film used. However, typically at night window films work in reverse. So depending on light levels people may be able to see through them from the outside and your view through from the inside is more restricted.

- **How do you clean window film?**

Cleaning a surface with window film applied is very similar to cleaning a normal window.

1. Spray a soapy water mixture onto the window.
2. Next use a soft cloth or sponge to spread the soapy mixture around the window.
3. Then using a squeegee from top to bottom to remove the excess mixture.
4. Finally use a soft towel to dry the window.

- **Does window tint film go inside or outside?**

More installations are done internally to limit exposure to the elements and improve durability. However, some installations are done externally for improved solar control performance and if there are access issues. Externally applied window films have a more durable protective coating which makes them slightly more expensive.

- **Can window film be applied to plexiglass?**

You should avoid applying window films manufactured for glass on plexiglass. Plexiglass has the potential to expel certain gases or chemical components known as outgassing. This can cause air bubbles between the plexiglass and window film.

- **Does window film keep heat out?**

Applying a solar or sun control window film will help to keep heat out, as this was its intended purpose. However, other window films will not generate the same results. Make sure you pick the correct window film for your requirements by checking with your supplier.

- **Will window film bubbles go away?**

This depends on the type of bubble. Water bubbles also known as blistering will disappear as the window film cures. However, if the window film has been applied with trapped air bubbles, then these will not go away on their own.

- **Can window film damage windows?**

So long as you apply the correct window film for your particular windows there should be no issues. However, applying the wrong film to the wrong windows can cause issues. Always check with your supplier first.

- **How long will window film last?**

This will depend on the type of film used, location and other factors such as wear-and-tear. A good quality solar control film applied internally will typically last 7-10 years or 3-5 years externally, proving they are well maintained. Automotive films can last 3-10 years, depending on the type of construction.

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Chapter Nine Window Film Regulations

Chapter Nine - Window Film Regulations

The intended use of a particular window film will dictate what kind of regulations it must adhere to. For instance, safety or security films are more strictly controlled than say solar control films.

Safety & Security

Thicker window films for improving safety and security are designed especially to perform under extreme conditions. Therefore, they must meet a range of specific standards.

In the UK, the standards that govern safety and security window films were previously BS 6206 which had three distinct classes - Class A, B and C.

However, these standards were replaced by European standards set out by the European Committee for Standardisation. The specific standard is the EN12600 which is the classification of resistance of glazing to an impact.

The American standards for safety and security window films are ANSI Z.97, CPSC 16 CFR 1201, Cat II (400 ft-lb).

Sun & Solar Control

Sun or solar control films are subjected to much less critical testing. In fact there are no formal standards or criteria for these films to meet.

Automotive Use

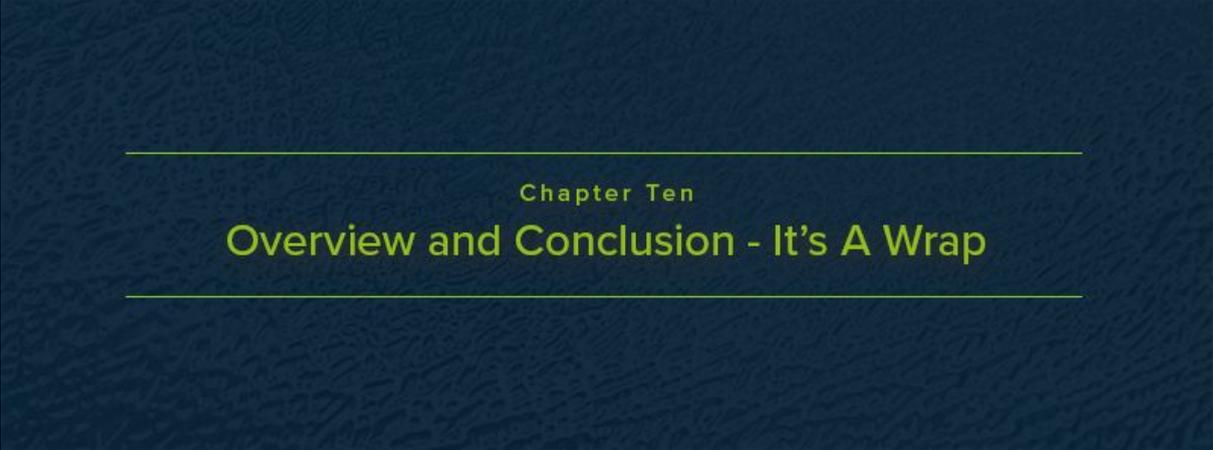
Similar to Safety and Security, window films that are designed to tint vehicle windows are heavily controlled as they reduce visible light transmission for car windows.

Driving in the dark with a too dark tint may make it hard or even dangerous to drive on the roads.

Dark tinted windows can also make it hard for police to identify drivers and their passengers.

In the UK, the regulations for window tints are laid out by the Vehicle and Operator Services Agency in the Road Vehicles (Construction and Use) Regulations 1986.

These regulations dictate that any front windows in front of the 'B' post must have no less than 70% visible light transmission and 75% for the windscreens.

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Chapter Ten
Overview and Conclusion - It's A Wrap

Chapter Ten - Overview and Conclusion - It's a Wrap

Hopefully by now you should have a pretty good understanding of everything window film related.

We've looked at all the different types of window film and why you might want to use them.

For example, sun or solar control films to reduce heat in offices or conservatories.

We've also discussed window films specifically designed to reduce fade and glare.

Finally, we learnt which window films can be used to provide privacy and looked at how different types provide different levels of privacy.

We've also run through some frequently answered questions for anything we might have missed!

We finished off by going through some of the different regulations which govern safety and security window films and tinting window films for vehicles.

Thanks for reading and be sure to check back later as we'll be updating regularly with more useful information!

If you have any feedback or questions please get in touch via email.