

TECHNICAL DATASHEET

TECKWRAP FILM 180 SERIES

TeckWrap 180 series is a polymeric calendered vinyl film available in various colors and finishes. Depending on the type, films are supplied with plastic or paper release liner with a uniform grid pattern. The roll is secured with three fasteners. The films of the 180 series are to be used in mid-term outdoor applications

Features

- An intermediate hybrid vinyl film with removable adhesive
- Initial adhesion is medium (17-19 °C room temperature); maximum adhesion is achieved in 48 hours
- Ability to reposition. Additional heating of backed-up film triggers the film memory. It shrinks down to its original state and can be reapplied without losing tack
- New air drain technology (ADT) ensures fast and easy bubble-free installation
- 100-130 Micron thickness provides overall protection of surface against smaller stone chips and more minor scratches

Application and End Uses

- Fleet graphics, lettering, marking, decals, and decorative elements
- Wall graphics, signature, advertising, and window graphics
- Full (smooth and medium curved surfaces) and partial vehicle graphics

TECKWRAP FILM 190 SERIES

TeckWrap 190 series is a polymeric calendered vinyl film available in various colors and finishes. Depending on the type, films are supplied with plastic or paper release liner with a uniform grid pattern. The roll is secured with three fasteners. The films of the 190 series are to be used in long-term outdoor applications

Features

- An advanced polymeric vinyl film with removable adhesive
- High-tech formulation with more extended durability
- Initial adhesion is medium (17-19 °C room temperature); maximum adhesion is achieved in 48 hours.
- Ability to reposition. Additional heating of backed-up film triggers the film memory. It shrinks down to its original state and can be reapplied without losing tack.
- New air drain technology (ADT) ensures fast and easy bubble-free installation.
- A multi-layered film designed for full car wrapping
- 120-130 Micron thickness

Application and End Uses

- Fleet graphics, lettering, marking, decals, and decorative elements
- Full vehicle graphics

END USES LIMITATIONS

Films are not recommended for the following uses:

- Compound curves and extreme angles (should be wrapped partially)
- Low surface energy substrates like plastic materials
- Weak binding surfaces like pile fabric or acrylic paint
- Surfaces painted with poor paint.
- Dusty or grassy surfaces

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- Rusty metal surfaces like iron, copper, brassy, silver; surfaces with silicone, wax, or any other coating (ceramic, quartz)
- Moist or cold surfaces with weak binding
- Over the films of another brand (not TeckWrap)

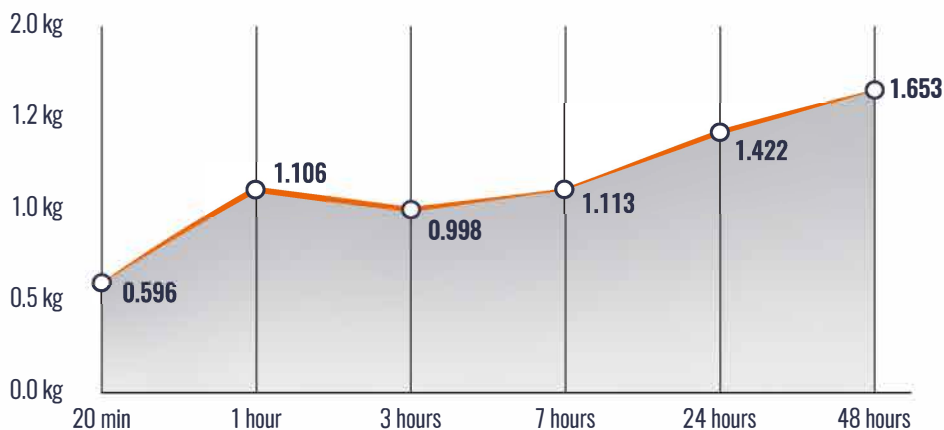
BASIC PHYSICAL PROPERTIES

FEATURE	PROPERTIES
Film	High-performance hybrid calendered self-adhesive film
Finish	Gloss, Matte, Chrome, Satin, Structured
Adhesive	Henkel solvent polyacrylate, medium initial adhesion, cure time 48 hours air release (see peel strength chart)
Adhesive Color	Transparent
Release liner	Films with plastic liner (HD code): transparent plastic liner with grid pattern Other films: Kraft white silicone-coated paper with double-sided polyethylene coating
Package	The film is rolled color-side-out on an 8cm (diam) core. Roll is set into a plastic cover, secured with three fasteners, and placed in a carton box.
Roll standard width	1.52m (5ft), (1.6yd)
Roll standard length	3m, 5m, 10m, 15m, 18m (9.8ft, 16ft, 33ft, 49ft, 59ft) (3.3yd, 5.5yd, 11yd, 16yd, 19yd)
Film protection	Clear protective coating

**for full physical characteristics check:*

Product Bulletin 180 Series, Product Bulletin 190 Series, Product Bulletin 290 Series

180 ° PEEL STRENGTH TEST



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OPERATING RECOMMENDATIONS

Application Tools

- Car wrap tools kit
- High density felt squeegee
- Cutter (Knives with 30 and 45-degree blades)
- Professional temperature controllable heat gun
- An infrared thermometer, gloves, felt, towel

Pre-install

- Within 24 hours before installation, the roll should be placed in the follow-up room operating in its original package to protect it from humidity and equalize the temperature. If the temperature of the vinyl film differs substantially from the room temperature during installation, it may cause film deformation.
- Follow the recommended application temperature. Operating in temperatures below recommended impairs adhesive layer properties and reduces its stickiness on the edges. Operation in temperature above recommended causes destruction of air release channels. Air release channels collapse causes adhesive lines. The films with plastic liner (HD code) are more sensitive to application temperatures.

Surface Cleaning

24 hours before application:

- Clean the surface with a soapy solution. Manually clean away any organic and non-organic wastes. Clean away any petrochemical contaminants (tar, oil, grease)
- Use a good automotive cleaner and wax remover
- Wipe down the surface with isopropyl alcohol
- Clean the surface with abrasive clay to remove the rest of the contamination

Surface Drying

- Use a dry cloth or paper towel to dry the surface
- Make sure that the surface, edges, corrugations, hollows, and joints of the vehicle are dry
- Carefully remove remaining humidity under rubber seals

Right Before Application

- Check the surface for contaminations
- Clean dirt under removed hardware
- Degrease the surface. Degrease curves and corners
- Clean dust from the surface with towels
- Keep in mind that a clean surface ensures high-quality application and the best result

Application Method

A dry method of application should be used with all TeckWrap films. Films with plastic liner may require a soapy (PH neutral) solution applied on larger surfaces (hoods, roofs, etc.) before application to reduce the adhesive tack. The solution should dry before application and not be used on curves and bends.

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EXPLOITATION

Please note that films are, by nature, more vulnerable than paintwork. Special care is needed when applying and cleaning the film.

- It's recommended to use aftercare products with neutral pH for vinyl films to prolong their life. Please remember that the wrapped surface needs the same care as the painted surface.
- The film is wash-ready. Please note that the application of waxes, polishes, or coatings changes the finish and may impact the film's longevity.
- Avoid using harsh chemicals and brushes when cleaning the surface. When you use pre-spraying cleaner and high-pressure washers, use it with caution. Avoid pointing the spray bar directly to the surface and edges. Do not direct the water stream at a sharp angle to the edge. Hold the nozzle 70cm away from and perpendicular to the film. Excessive pressure during washing can damage the applied film by forcing water underneath the film.
- Any aggressive impurities like tree resin, dead insects, or bird droppings must be removed from the film's surface as soon as possible. Use warm soapy water and a soft brush or sponge for cleaning. Rinse thoroughly after cleaning. Wipe residual moisture from the surface. Allow drying naturally.
- The films with matte finish are more sensitive to contaminations and should be cleaned more often (handwash only)

All film (except matte and chrome finish) has a primary self-healing feature. The gentle heating of the surface at 20-30°C will eliminate minor scratches on the film surface. While healing a film, do not keep the heat gun close to a surface and do not aim at a single spot.

The vinyl film, just like car paint, can be destroyed by prolonged exposure to extreme heat or pollutants. Avoiding continuous exposure to direct sunlight is recommended. Otherwise, this may lead to faster color fading and change the adhesive properties. Precipitation like rain may have pollutants. TeckWrap recommends washing the vehicle more often during winter time to clean off chemical reagents.

FILM REMOVAL

TeckWrap recommends removing the film within two years (general). Please refer to the exploitation chart of each series for exposure types and periods.

Depending on the climate zone and exploitation period, some adhesives may remain on the surface after film removal. Both the initial adhesion and final adhesion may be affected by the type of the surface. Flat and vertical surfaces are the easiest. Horizontal and curved are may be more difficult.

TeckWrap does not guarantee easy removability from the following surfaces:

- Metal surfaces with oxidation.
- Aged paint or paint with low paint to substrate adhesion
- Surfaces with top coating, scratches, or damages.
- Surfaces exposed to continuous, direct UV light/sunlight and high temperatures. As it may change the film's tensile strength, the film in this condition may easily tear and break apart, making the removal process complicated.
- TeckWrap recommends the removal of the film at room temperature of 17-20°C. At low temperatures, the film may become fragile and break apart when pulled. At high temperatures, excessive heat can reactivate the adhesive and increase adhesive residue.

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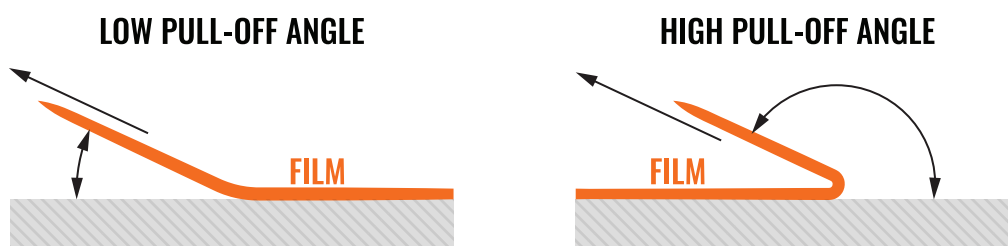
Please refer to the chart below for the removal details.

SERIES	PRODUCT TYPE	METHOD	RESIDUE AMOUNT	PERIOD	ADHESION STRENGTH	PULL ANGLE	REMOVAL INFORMATION
190	Gloss and Color-shift metallic	Heating	Less than 25%	2 years	Medium	High	This film can be removed easily with heat within exploitation period
190	Chameleon and Glitter Metallic (matte and gloss)	Heating	Less than 30%	2 years	High	High	
190	Satin & Matte Metallic	Heating	Less than 30%	2 years	High	High	
180	Gloss Aluminum	Heating	Less than 30%	2 years	Medium	Low	This film can be removed with aid chemicals and polishing. These films may leave more than 40% adhesive residue
180	Satin Chrome	Heating	Less than 30%	2 years	Medium	Low	
180	Mirror and Neo Chrome	No heat	More than 40%	1 year	High	Low	
180	High Gloss	No heat	Less than 25%	2 year	Medium	High	This film can be removed easily with heat within exploitation period
180	Matte & Super Matte	No heat	Less than 25%	2 year	Medium	High	
180/190	Structure	Heating	Less than 30%	2 year	High	High	

GENERAL RECOMMENDATIONS

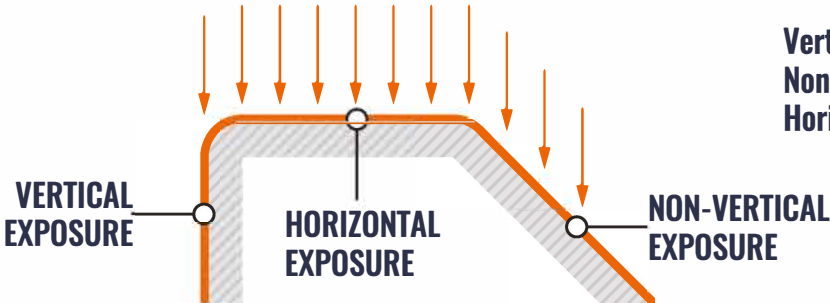
Before purchasing and using a customer shall determine the product's suitability for its intended use. All information about product use and recommendations are listed on the product pages at www.teckwrap.com.

When the film is removed during the warranty period of the climatic zone, the surface should be heated first, and film pulled at a low angle with slow speed except for chrome films. Do not heat chrome film during uninstal. To avoid adhesive residue on the substrate during uninstal, TeckWrap recommends pulling off the chrome film quickly or "snap" it off at a low angle. Refer to the graphics below.



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DURABILITY INFORMATION



Vertical Exposure: the surface +/- 10° from vertical
Non-vertical Exposure: 10°-45° from vertical
Horizontal Exposure: the surface 45°-90° from vertical

HORIZONTAL AND NON- VERTICAL EXPOSURE	ZONE 1	ZONE 2	ZONE 3
WARRANTY PERIOD	2 years	1 year	Up to 1 year
VERTICAL EXPOSURE	ZONE 1	ZONE 2	ZONE 3
WARRANTY PERIOD	3 years	2 years	Up to 1 year

Zone 1: Andorra, Armenia, Austria, Azerbaijan, Belorussia, Belgium, Bosnia-Herzegovina, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, metropolitan France, Georgia, Germany, Greenland, Hungary, Iceland, Ireland, Italy (north of Rome), Kazakhstan, Latvia, Lichtenstein, Lithuania, Luxembourg, Moldavia, Montenegro, Norway, the Netherlands, Poland, Romania, United Kingdom, Russia, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Ukraine, USA (excl.: USA desert's - zone 3)

Zone 2: Afghanistan, Albania, Argentina, Australia (southern States), Bahamas, Barbados, Belize, Bangladesh, Bhutan, Burma, Bolivia, Brazil, Bulgaria, Cambodia, Cape Verde, Caribbean islands, Chile, China, Cooperative Republic of Guyana, Cuba, Cyprus, Colombia, Costa Rica, Crete, Ecuador, El Salvador, Fiji, French West Indies, Greece, Guatemala, Guyana, Haiti, Honduras, India, Indonesia, Italy (south of Rome), Jamaica, Japan, Kyrgyzstan, Korea, Laos, Lesotho, Macedonia, Malaysia, Maldives, Malta, Mongolia, Nepal, Nicaragua, New Zealand, Pakistan, Panama, Papua-New-Guinea, Paraguay, Peru, Philippines, Polynesia, Porto Rico, Portugal, Dominican Republic, Sardinia, Singapore, South Africa, Spain, Sri Lanka, Surinam, Swaziland, Syria, Tajikistan, Taiwan, Thailand, East Timor, Turkey, Turkmenistan, Uruguay, USA (Arizona, California, Florida, Nevada, New Mexico, Texas, Utah), Uzbekistan, Venezuela, Vietnam, West Indies.

Zone 3: Algeria, Angola, Australia (northern and desert states), Bahrain, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Iraq, Iran, Israel, Ivory Coast, Jordan, Kenya, Kuwait, Lebanon, Liberia, Libya, Madagascar, Malawi, Mali, Morocco, Mauritius, Mauritania, Mexico, Mozambique, Namibia, Niger, Nigeria, Oman, Palestine, Qatar, Reunion Island, Rwanda, Senegal, Saudi Arabia, Sierra Leone, Somalia, Sudan, Tanzania, Togo, Tunisia, Uganda, United Arab Emirates, Western Sahara, Yemen, Zambia, Zimbabwe and all desert areas.

Durability

In general the durability and expected performance life of TeckWrap films is up to 5 years but primarily depend on the exposure angle and climate conditions in which the film is used. Besides this a number of other factors may reduce the durability time such as the quality and preparation of the surface the film applied to, surface texture, film maintenance and cleaning, degree of pollution.

The indicators given in charts above are an estimate of the time during which the film visually retains an expected color pigment and surface finish. However a slight and gradual change in pigment color and gloss is unavoidable and considered as normal wear and tear.

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CAUTION

Certain films, like metallic films, have directional characteristics. For best results, all the panels are to be installed in the same direction to keep a uniform look. Handle metalized films with care as the appearance of the metalized layer could change upon crumpling, overstretching, and overheating.

Special care must be taken to avoid scratching the film. Marks may stay visible, and you may not be able to eliminate them because of the metallic finish. Scratching of the film is not covered by warranty. TeckWrap recommends using a steam vacuum or IRR heater for installation of metalized films and dry application only. Before purchasing and using, a customer shall determine the suitability of the product for its intended use. One should have high installation skills in the wrapping of chrome and metalized films. Chrome and metalized films are generally used for partial custom design.

SHELF LIFE AND STORAGE

Rolls should be stored in original boxes until the time of use. Rolls should be kept on plastic caps in the horizontal position. This prevents the film from dents and warp deformation. Do not place heavy objects on the top of the packaging/roll to avoid deformation. After unpacking, the film roll should be stored on bars at proper room temperature. Apply the film within the period mentioned in the product specifications of the used film type. Store printed film on the core tube printed side out. Do not roll the printed film until it is completely dry.

Avoid storing rolls in the vertical position for an extended period. Store cuts rolled up. Do not press down the rolled-up film. Fasten the rolls tightly, especially the plastic liner (HD code) rolls. Loose material can cause a "tunneling" problem. The ideal storage room temperature is 17-19 °C, and humidity is 30-40%. In high temperatures, the adhesive layer tends to destroy. In high humidity, vinyl tends to deform and warp. It is restricted to storing vinyl films close to a heat source or under direct sunlight. The ideal storage condition is a dry, clean and cool place protected from direct UV rays. Shelf life is two years from the production date.

Note: Depending on external conditions, the shelf time may differ from given above. Shelf time should not be interpreted as a warranty under any circumstances. Technical information is general information and is not used for specification purposes. Refer to your film's specification for

DISCLAIMER

All TeckWrap products are carefully controlled throughout the production and packaging process and are warranted to be free of defects in materials and manufacture at the time of shipment.

The films mentioned in this document are covered by the TeckWrap product warranty and limitation of liability. All TeckWrap products are sold with the understanding that a buyer has independently determined the suitability of products for their purpose. In case of product defects communicated in the mentioned period, TeckWrap will consider and determine the existence of the defect and further decide at its sole discretion to either replace the defective product without charge or compensate it with money in such amount, as TeckWrap deems reasonable. This action is the exclusive right and only obligation of TeckWrap Inc. This warranty does not cover the cases of normal wearing and transportation. In no event will TeckWrap Inc. be liable and responsible for labor, consequential damages, or incidental damages of any kind. Please forward your reclamation letters by email to crm@teckwrap.com

All product specifications are subject to change without prior notice.