

Introduction

ORAFOL® films, ORACAL® 970RA Premium Wrapping Cast, Premium Shift Effect Cast, & Premium Special Effect Cast for application to vehicles (hereinafter also referred to as "ORAFOL® film") are premium grade, self-adhesive film products manufactured by ORAFOL Europe GmbH & ORAFOL Americas, Inc. (hereinafter also referred to as "ORAFOL") for temporary vehicle decoration.

Please note that general graphic marking and wrap films are by nature more sensitive than automotive clear coats, and therefore require special care when applying and cleaning. To ensure maximum service life, please refer to and comply with the current version of our Application Guidelines, Post Care & Maintenance, and Removal Guidelines listed below.

Application and removal of ORAFOL® films should be carried out exclusively by qualified wrap installers (i.e. trained and experienced ORAFOL Certified Wrap Installers.)

Inappropriate or incorrect application or removal of ORAFOL® films or use of film types unsuited for the application may result in substrate surface damage on the vehicle or considerably reduced ORAFOL® film performance and/or service life.

Contents

- Service Life
- Application Guidelines
- Post Care & Maintenance Guidelines
- Removal Guidelines
- Warranty Information

Service Life

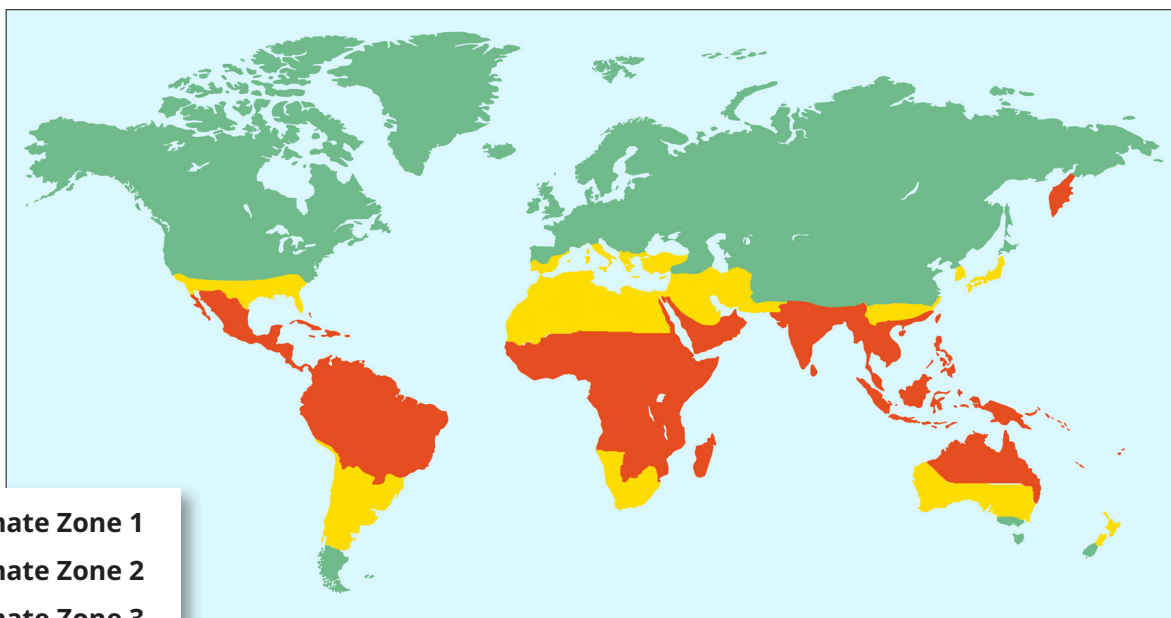
The service life specified in the technical data sheets represents the maximum expected service life for vehicle vertical outdoor exposure under normal conditions identified as Climate Zone 1 in the below Climate Zone diagram. The expected service life will be reduced for Climate Zone 2 & 3 as shown in the below tables.

The following tables provide an overview of the expected reduction of maximum service life under deviating environmental conditions and orientations, divided into three climate zones. Applications with a deviation from the vertical level of more than $\pm 10^\circ$ are considered horizontal applications. The specific is valid for all ORACAL® solid color, metallic, and special effect films suitable for vertical and horizontal wrap or general graphic applications (i.e., ORACAL® 970RA for full wrap or general graphic application, ORACAL® 975, 951, 851, 751RA, 751, 651 for general graphic applications).



Expected Maximum Service Life in Years for Solid Color, Metallic, & Special Effect ORACAL® Films *(Vertical & Horizontal Exposure)*

Climate Zone 1		Climate Zone 2		Climate Zone 3	
Vertical	Horizontal	Vertical	Horizontal	Vertical	Horizontal
12 years	6 years	10 years	5 years	8 years	4 year
10 years	5 years	8 years	4 years	6 years	3 year
8 years	4 years	6 years	3 years	4 years	2 year
7 years	3.5 years	5 years	2.5 years	3 years	1.5 year
6 years	3 years	4 years	2 years	2 years	1 year
5 years	2.5 years	3 years	1.5 years	1.5 years	0.75 year
4 years	2 years	2 years	1 year	1 years	0.50 year
3 years	1.5 years	1 year	0.5 year	0.5 year	0.25 year



- **Climate Zone 1**
- **Climate Zone 2**
- **Climate Zone 3**

Climate Zones Defined

The Americas and Caribbean

Climate Zone 1 <i>Mild Climate</i>			Climate Zone 2 <i>Humid/Warm Climate</i>		Climate Zone 3 <i>Dry/Hot Climate</i>	
Canada						
United States						
Alaska Washington Oregon <i>Northern</i> California Idaho Montana Wyoming <i>Northern</i> Utah Colorado North Dakota South Dakota Nebraska	Kansas Minnesota Iowa <i>Northern</i> Missouri Wisconsin Illinois Michigan Indiana Ohio <i>Northern</i> Kentucky Pennsylvania	<i>Northern</i> West Virginia Maryland Delaware New Jersey New York Vermont Massachusetts Connecticut New Hampshire Rhode Island Maine	<i>Central & Southern</i> California Nevada <i>Central & Southern</i> Utah Arizona New Mexico Oklahoma Texas <i>Central & Southern</i> Missouri Arkansas Louisiana	<i>Central & Southern</i> Kentucky Tennessee Mississippi Alabama Georgia <i>Southern</i> West Virginia Virginia North Carolina South Carolina <i>Northern & Central</i> Florida	Hawaii	<i>Southern</i> Florida
Mexico All Central American countries All Caribbean countries & territories						
South America						
<i>Southern</i> Chile	<i>Southern</i> Argentina		<i>Central & Northern</i> Chile <i>Southern</i> Peru <i>Southern</i> Bolivia	Uruguay Argentina	Colombia Ecuador <i>Northern</i> Peru <i>Northern</i> Bolivia Paraguay	Venezuela Guyana Suriname French Guiana Brazil

Note

The information on expected maximum service life does not justify claims under guarantees, warranties or for other reasons. The information is based on practical experience under artificial and natural weathering under standard conditions and is not strictly applicable to the calculation of expected maximum service life for all vehicles, since there are so many possible influences that may cause perceived reduction in film performance, such as mechanical damage from an automated car wash, chemical and caustic cleaning agents, environmental impacts - such as acidic dew ("Fallout"), lack of appropriate care and maintenance of the film - such as lack of proper routine cleaning, etc.

Application on boats is generally not recommended below the water line. No warranty is given for applications under water.

Application Guidelines

Pre-Application Guidelines

- The surface of vehicle must be free of dust, grease, or any other contamination that could keep the film from adhering properly.
- The vehicle should be washed and allowed to dry for 24 hours before wrap installation.
 - Nooks and crevices that are likely to trap moisture, will result in poor adhesion.
- Wipe the vehicle with ORACAL® Pre-Wrap Surface Cleaner or isopropyl alcohol just before the installation to remove any soap residue or dust.
 - Change cleaning rags often throughout the cleaning process for best results.
 - Nooks, crevices, and under rubber seals should also be cleaned with one of these agents to promote proper adhesion into these areas.
 - It is also possible to go over these areas with a heat gun to help in drying these areas.
- Keep the vehicle in a controlled environment at the minimum temperature of **59°F** during the drying time.
- The graphics must be stored in a controlled environment between **65°F & 75°F**, for a minimum of **24 hours** prior to installation to promote an ideal application experience and performance.

Application Guidelines

- Review Pre-Application Guidelines prior to proceeding to Application Guidelines.
- Required Application Tools:

The following tools are crucial for application

- Application Squeegee with felt edge (soft, natural fiber-based felts are recommended)
- Wrap Sticks (various sizes and angles to assist with material tucking in to tight spaces)
- Cutting Tape
- Sharp angled cutting and slitting blade
- Mobile Heat Source (Heat Gun, Infrared Station, PodSteamer, or Propane Torch)
- Infrared Thermometer
- Blue ORACAL® WrapGlove™ or White ORAFOL® GHOST™ Glove



Wet Application Notice

- Wet application is possible for decorative striping and lettering on flat or slightly curved surfaces, but only with non-air-egress adhesive films, i.e., ORACAL® 975, 951, 851, 751, 651.
- Films with air-egress (ORACAL® 970RA) (751RA) (RA = *RapidAir*®) should only be applied using a dry application and never using a wet application.
- For best results the film should be installed in an enclosed climate controlled environment, kept between **65°F & 75°F** for proper film and adhesive performance.
- For optimal results the installation environment and vehicle surface temperature should remain between **65°F & 75°F**.
 - *The colder the temperature, the more brittle the film and less tacky the adhesive will perform.*
 - *The warmer the temperature, the more pliable the film and more aggressive the adhesive will perform.*
 - *Either of these described conditions will result in the need to alter the installation process and require more time to complete the installation.*
- It is important to keep the vehicle in a temperature controlled environment throughout the installation for best results and reducing the risk of complications.
- If the surface temperature of the vehicle is below 59°F, it is recommended to heat up the vehicle surface with a mobile infrared heating station to help improve adhesion properties.
- After the initial application of the film, post heat full web of the film to a temperature of approximately 150°F to allow the adhesive to begin to acclimate to the large flat sections of the vehicle body. This will also reveal any remaining air bubbles that may have been missed during application.
 - Multiple rounds of heat and pressure are recommended for deep recesses and corrugations to assist in developing the film's new contoured memory.
 - **All Edges, Recesses, Tucked Areas** must be post-heated to a temperature of **230°F to 248°F** to help collapse and effectively anchor the film and adhesive in these areas.
 - Allow the film to cool back down to room temperature.
 - Apply pressure to intended area where cutting/trimming will eventually take place with finger or squeegee pressure. The material should be completely smooth where applied to the vehicle surface, and free of wrinkles, "fingers", or air bubbles.
 - Trim the material using the cutting tape or cutting blade, taking care not to cut into the vehicle clear coat, glass, light fixtures, plastic trim, etc.
 - After the film has been trimmed, post heat once more to a temperature of approximately 150°F.
 - If the material begins to lift or pucker in the areas where trimming occurred, the material was not properly set by the installer.
 - Using the WrapGlove®, apply gliding finger pressure to the area of the film that was trimmed to press it back into place. The assistance of edge seal tape or clear laminate strips may be required to anchor the edge of the material back into place.
 - If this is not applicable, the material may need to be removed, and a new panel installed with appropriate adjustments being made to the installation method.

Post-Application Guidelines

- The vehicle must remain in a temperature controlled environment for a minimum of 24 hours after installation for the film to adequately begin to acclimate to the application surface.
 - Full acclimation of the film may take upwards of 72 hours, depending on the environment.
- Prior to delivering the vehicle back to the owner, perform one last inspection to identify any areas where air bubbles or edge lifting may have occurred and take corrective action.

Pay close attention to:

- Corners
- Recesses
- Termination points where cuts were made, such as:
 - Window and wheel well edges
 - Side view mirrors
 - Bottoms & side edges of doors and tailgates
- 24 hours after installation is complete, apply a coat of the ORACAL® Long-Lasting Seal
 - The ORACAL® Long-Lasting Seal provides a long-term protection of your car wrapping film.
 - The version developed for glossy car wrapping films will provide an extremely smooth surface with a unique deep gloss. Contains PTFE.
 - The version developed for matte car wrapping films is a water-free product with very high carnauba wax content.
 - Achieve the highest possible degree of protection with ORACAL® cleaning and care agents.

Post Care & Maintenance Guidelines

Remind the vehicle owner:

- To wait a minimum of 72 hours to wash their vehicle.
- For general maintenance, every 2-3 weeks hand wash with a simple mixture of mild detergent and water or ORACAL® Shampoo and water mixture with clean, soft-microfiber cloth rags. Rinse and dry with clean soft-microfiber cloth rags.
- Try to avoid pressure washing. If pressure washing is unavoidable hold the nozzle least 15 + inches away, at a 45° angle, with a water temperature of 67°-77°F. Avoid the film edges.
- Pressure washing too closely to a film edge will cause pre-mature failure such as edge lifting, chipping, cracking. This is not a material failure and is not warranted by ORAFOL Americas, Inc.

Using aggressive, caustic cleaners and mechanical brushes and other aggressive cleaning procedures will result in reduction of the film's performance life, damage to film overlapping seams/edges, and add overall frustration.



Removal Guidelines

ORAFOL® films are equipped with high-quality adhesive with permanent final adhesion. Refer to the specific product technical data sheet for specific information regarding adhesive type.

- ORACAL 970RA Premium Wrapping Cast, Shift Effect, & Special Effect, as well as ORACAL® 975 Premium Textured films offer an adhesive formulation that is remarkably easier to remove from vehicle surfaces with the assistance of heat with minimal to no residue being left behind.
 - ORACAL® 975 Premium Textured films may remove in smaller sections due to the embossed textured structure of the film.
- ORACAL® 951, 851, 751RA, 751, and 651 marking films have permanent final adhesive with no guarantee regarding the amount of adhesive residue being left behind on the vehicle surface.
- In any case, it is possible for some adhesive residue to remain on the vehicle surface when removing the film. Such residues can be removed with a silicone-free citrus-based adhesive remover. Be sure to rinse away any remaining residue with a mild detergent and water mixture.

For Best Removal Results:

- Removal should be performed within the stated durability period for the specific vinyl.
- Optimal removal results will occur within the first **(4) four years** of the service period or once film discoloration or fading begins to appear.
- Environment and surface temperature must be at least **+68°F** before ORAFOL® films can be removed.
- For colder month climates, bring the vehicle surface temperature to at least **+68°F**. If not brought to this temperature prior to removal, an excessive amount of adhesive residue is likely to remain on the vehicle surface.
- First, warm the surface area of the graphic with a heat gun, propane torch, infrared heat station, or industrial PodSteamer to a temperature between **+104°F & +140°F**
- Carefully lift up one corner of the ORAFOL® film with a fingernail or plastic blade.
- Then slowly draw the film from the surface at a **90° to 180° angle**.
- Heating the film moderately throughout the removal process is recommended. Maintaining a temperature between **+104°F & +140°F** while pulling makes removal considerably easier.
- Removing behaviour is also markedly affected by the type and texture of the surface and the conditions of use.

Warranty Information

In the event of non-compliance with the information outlined throughout this document, any warranty or liability shall be void. The service life of ORAFOL® films applied to any automobile or vehicle type is determined by following the Processing & Handling Guidelines outlined throughout this document. Application and Removal of ORAFOL® films shall only be done by trained specialists (i.e. skilled and experienced vehicle wrap application specialists). With the stated information throughout this document, the trained wrap specialists are responsible for the quality of wrap or graphic application and removal, while general day to day maintenance and care for the vehicle wrap lies on the vehicle owner. The information provided in the Processing & Handling instructions is based exclusively on our current knowledge and experience. It constitutes neither a warranty of certain properties nor a quality or durability guarantee with regard to our ORAFOL® films. We are not responsible for costs incurred for the removal of our films. ORAFOL will enter into project-related warranty agreements with verified, qualified vehicle wrap production and installation companies. For information pertaining to custom warranties, please contact an ORAFOL Regional Sales Manager for more information. For additional information related to application, removal, or general care and maintenance, please contact an ORAFOL Product Technical Support Specialist.



Note

Surfaces to which the material will be applied must be thoroughly cleaned from dust, grease or any contamination which could affect the adhesion of the material. Freshly lacquered or painted surfaces should be completely cured. The compatibility of selected lacquers and paints should be tested by the user, prior to application of the material. Films with structured surface are naturally more sensitive than the unstructured. Accordingly, these films are to be treated carefully both in processing and in cleaning. Impurities affect the appearance of structured films and require more frequent cleaning. Furthermore the application information published by ORAFOL is to be considered. The batch traceability according to ISO 9001 is possible on the basis of the roll number.

IMPORTANT NOTICE

All ORAFOL® products are subject to careful quality control throughout the manufacturing process and are warranted to be of merchantable quality and free from manufacturing defects. Published information concerning ORAFOL® products is based upon research which the Company believes to be reliable, although such information does not constitute a warranty. Because of the variety of uses of ORAFOL® products and the continuing development of new applications, the purchaser should carefully consider the suitability and performance of the product for each intended use, and the purchaser shall assume all risks regarding such use.

All specifications are subject to change without prior notice.

