

Graphic Solutions

Automotive & Architectural Window Films



Engineered to Perform Better™



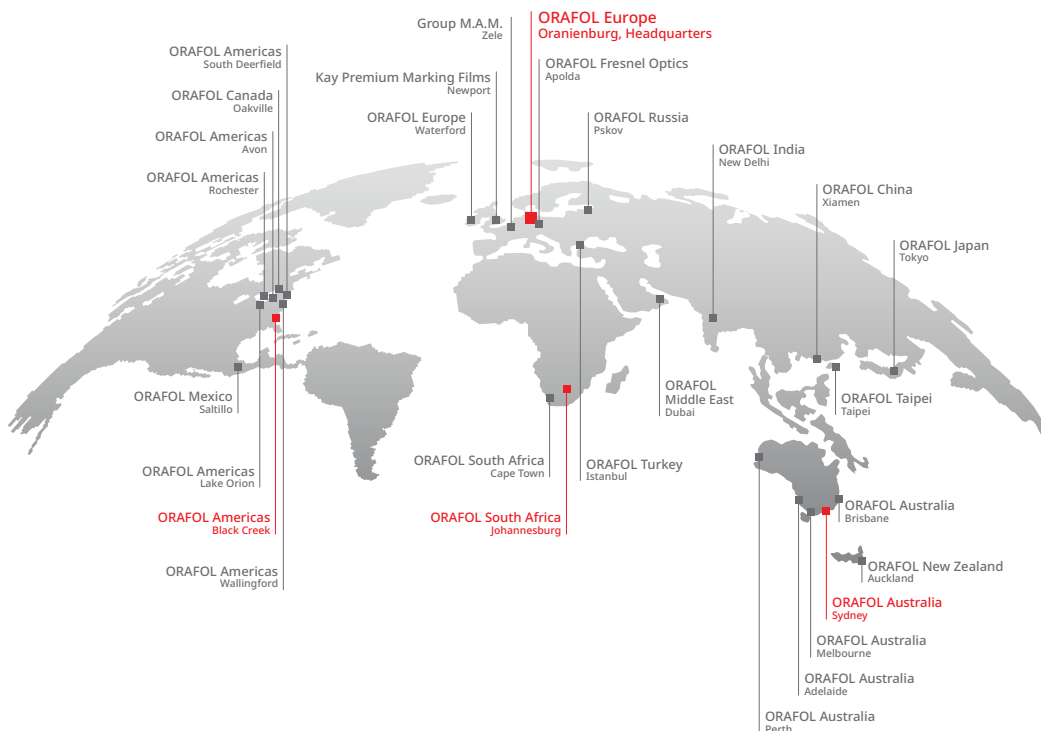


ORAFOL Europe GmbH

Headquarters and production facility

ORAFOL is one of the world's leading manufacturers of innovative self-adhesive graphic films, reflective materials and adhesive tape systems. The international ORAFOL GROUP is headquartered just outside the city gates of Berlin, in Oranienburg.

ORAFOL's Worldwide Locations



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Automotive & Architectural Window Films

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ORACAL® Safety Series

These are transparent safety window films with 100 micron (single layered), 200 micron and 375 micron (double layered) thickness options and externally applied versions (Safety Exterior 100 - Safety Exterior 200). These safety films prevent impacted glass from being scattered, which reduces the risk of damage. They are suitable for use in buildings, glass facades, and motor vehicles.



- Expected Service Life: 10 Years / 5 Years (Exterior)

	ORACAL® SAFETY 100 Micron	ORACAL® SAFETY 200 Micron	ORACAL® SAFETY 375 Micron	ORACAL® SAFETY Ext 100 Micron	ORACAL® SAFETY Ext 200 Micron
TSER**	16.8%	16.4%	17.6%	16.8%	16.4%
UV Rejection	99%	99%	99%	99%	99%
IR Rejection	10%	10%	11%	10%	10%
Visible Light Reflected	8%	9.5%	9.5%	8%	9.5%
Visible Light Transmitted	88.9%	88%	86.9%	88.9%	88%
Solar Energy Absorbed	9%	10.8%	12.3%	9%	10.8%
Solar Energy Reflected	7%	8.5%	8.5%	7%	8.5%
Solar Energy Transmitted	84%	80.7%	80.0%	84%	80.7%
Elongation at Break	160%	191%	183%	160%	191%
Tensile Strength (N/10mm)	151	297	459	151	297
180° Peeling Strength (N/10mm)	4.5	2.8	1.1	4.5	2.8

** Total Solar Energy Rejected



ORACAL® CA Series

These single layered automotive window films have an ideal thickness and are available in different tone options. While providing a good heat blocking performance, the color does not fade and the films are non-reflective.

- 38 micron
- Expected Service Life: 7 Years

	ORACAL® CA'05	ORACAL® CA'15	ORACAL® CA'20	ORACAL® CA'35	ORACAL® CA'50
TSER**	50%	48.6%	45.5%	41.2%	35.5%
UV Rejection	99%	99%	99%	99%	99%
IR Rejection	31%	31%	31%	31%	30%
Solar Energy Absorbed	60%	57.9%	54%	47.8%	39.6%
Solar Energy Reflected	5.7%	5.8%	5.8%	6.1%	6.4%
Solar Energy Transmitted	34.3%	36.3%	40.2%	46.1%	54%
Visible Light Reflected (ext)	5.1%	5.1%	5%	5.3%	6.1%
Visible Light Reflected (int)	4.8%	5%	5.2%	5.5%	6.2%
Visible Light Transmitted	5.5%	11%	20.5%	31.3%	48%

** Total Solar Energy Rejected

The automotive window films have the ORACAL® logo imprinted on the film surface which can be wiped easily with isopropyl alcohol.



ORACAL® Basic Series

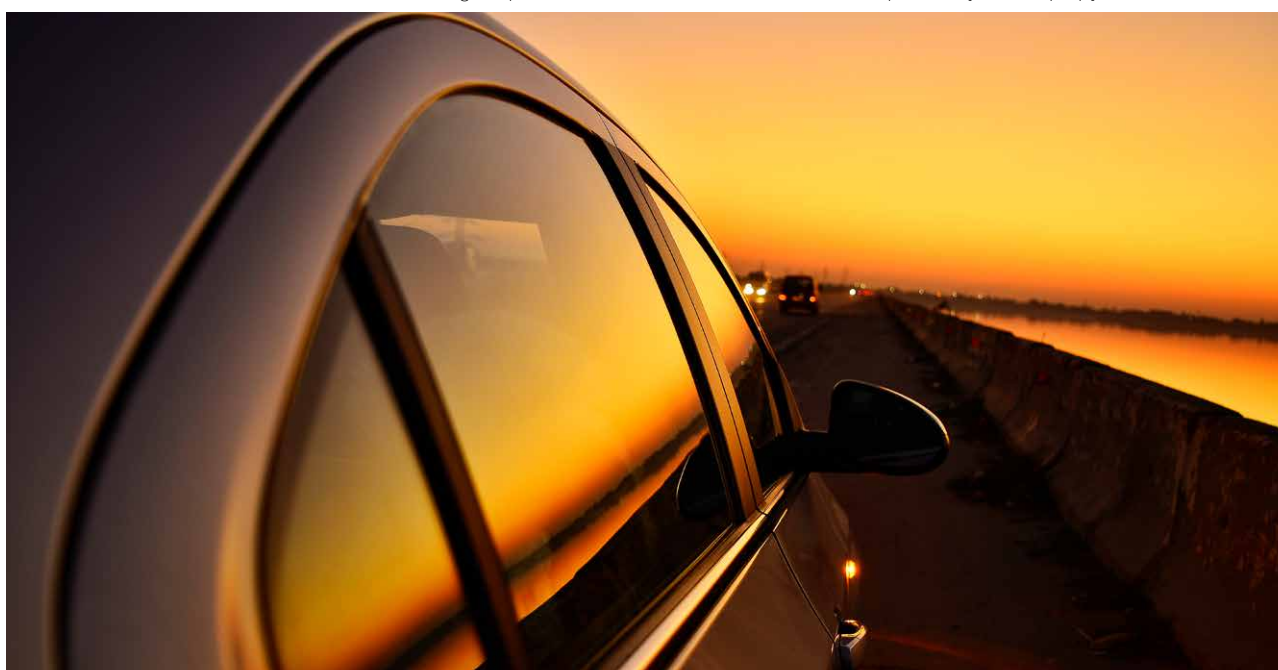
These double layered auto glass films have an ideal thickness and are available in different tone options. The color of these films provides a natural look from inside. Additionally, the ORACAL® Basic Series offers a higher heat blocking performance than standard window films. ORACAL® Basic window films are easy to apply when the right methods and equipment are used.

- 38 micron
- Expected Service Life: 5 Years

	ORACAL® Basic'05	ORACAL® Basic'15	ORACAL® Basic'20	ORACAL® Basic'35	ORACAL® Basic'50
TSER**	54%	52%	50.6%	46.5%	42%
UV Rejection	99%	99%	99%	99%	99%
IR Rejection	37%	37%	37%	37%	37%
Solar Energy Absorbed	62.4%	59.7%	57.2%	50.9%	44.3%
Solar Energy Reflected	7.9%	7.9%	8.4%	8.9%	9.3%
Solar Energy Transmitted	29.7%	32.4%	34.4%	40.2%	46.4%
Visible Light Reflected (ext)	6.8%	7.2%	7.6%	7.5%	8.1%
Visible Light Reflected (int)	4.8%	4.9%	5.3%	5.9%	7.3%
Visible Light Transmitted	5.3%	10.8%	16.8%	26.9%	40.5%

** Total Solar Energy Rejected

The automotive window films have the ORACAL® logo imprinted on the film surface which can be wiped easily with isopropyl alcohol.



ORACAL® NT Advanced Series

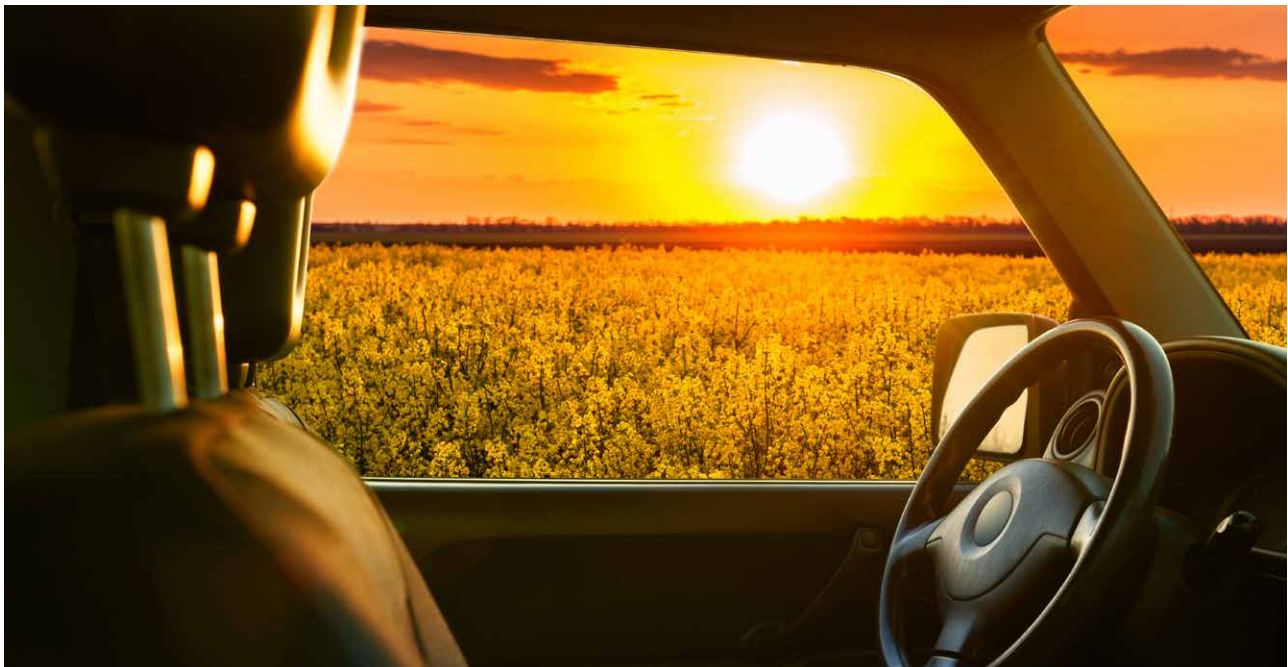
These are double-layered, nano-technological / carbon automotive window films with ideal thickness and different tone options. These series has a structure that prevents heat at high levels. ORACAL® NT Advanced Series films are produced with advanced technology. These films provide ease of application when right methods and equipment are used.

- 38 micron
- Expected Service Life: 7 Years

	ORACAL® NT Advanced'05	ORACAL® NT Advanced'20	ORACAL® NT Advanced'30	ORACAL® NT Advanced'50
TSER**	64.66%	59.21%	55.86%	49.48%
UV Rejection	99%	99%	99%	99%
IR Rejection	74.4%	64.2%	64.1%	62.3%
Solar Energy Absorbed	72.49%	63.38%	58.51%	48.75%
Solar Energy Reflected	11.08%	12.39%	12.61%	13.45%
Solar Energy Transmitted	16.42%	24.25%	28.87%	37.80%
Visible Light Reflected (ext)	6.19%	7.42%	7.99%	9.48%
Visible Light Reflected (int)	6.19%	7.42%	7.99%	9.48%
Visible Light Transmitted	6.3%	16.8%	29.3%	46.02%

** Total Solar Energy Rejected

The automotive window films have the ORACAL® logo imprinted on the film surface which can be wiped easily with isopropyl alcohol.



ORACAL® Front Window WS Series

This is a double-layered, nano-technology front window film with ideal thickness, applied interiorly. The heat blocking performance of this product is higher than standard window films. These films are ideal for car front windows with the high level of clarity and light transmission in order not to hinder vision.

- 38 micron
- Expected Service Life: 7 Years

ORACAL® Front Window WS'70

Visible Light Transmitted	Visible Light Reflected (int)	Solar Energy Transmitted	Solar Energy Reflected	Solar Energy Absorbed	IR Rejection	UV Rejection	TSER**
75.2%	8.06%	35.72%	14.24%	50.03%	86.7%	99%	51.22%

** Total Solar Energy Rejected

The automotive window films have the ORACAL® logo imprinted on the film surface which can be wiped easily with isopropyl alcohol.



ORACAL® Commercial S Series

These are silver/metallized building window films that are double layered, in ideal thickness, and available in different tone options. Using ORACAL® Commercial S Series in vehicles is not recommended because they are highly reflective. These films can be easily applied when the right methods and equipment are used.

- 50 micron
- Expected Service Life: 7 Years

	ORACAL® Commercial S'00	ORACAL® Commercial S'05	ORACAL® Commercial S'20	ORACAL® Commercial S'30	ORACAL® Commercial S'50	ORACAL® Commercial S'60
TSER**	93.6%	88.5%	74.7%	61.2%	39.9%	33.5%
UV Rejection	99%	99%	99%	99%	99%	99%
IR Rejection	99.4%	94%	82%	71%	48%	39%
Solar Energy Absorbed	14.6%	29.9%	26.9%	29%	31.3%	29.7%
Solar Energy Reflected	85%	65.3%	55.9%	43.3%	23.5%	15.8%
Solar Energy Transmitted	0.4%	4.8%	17.2%	27.7%	45.2%	54.5%
Visible Light Reflected (ext)	83.6%	73.6%	52.3%	34.2%	16.8%	12.4%
Visible Light Reflected (int)	87.7%	77.7%	56.7%	38.2%	20.3%	14.9%
Visible Light Transmitted	2.3%	5.8%	21.8%	38%	52.8%	64.2%

** Total Solar Energy Rejected



ORACAL® Commercial S Plus Series

ORACAL® Commercial S Plus Window Films are developed for interior installations on architectural glass. These sputter films are provided in different tone options. ORACAL® Commercial S Plus Series provides an outstanding performance for solar heat rejection as well as a new appearance on buildings.

- 50 micron
- Expected Service Life: 7 Years

ORACAL® Commercial S Plus'35

Visible Light Transmitted	Visible Light Reflected (int)	Visible Light Reflected (ext)	Solar Energy Transmitted	Solar Energy Reflected	Solar Energy Absorbed	IR Rejection	UV Rejection	TSER**
37.6%	52.1%	50%	24.5%	52.3%	23.2%	85%	99%	70.3%

ORACAL® Commercial S Plus'50

Visible Light Transmitted	Visible Light Reflected (int)	Visible Light Reflected (ext)	Solar Energy Transmitted	Solar Energy Reflected	Solar Energy Absorbed	IR Rejection	UV Rejection	TSER**
52%	35.2%	33.6%	34.5%	41.9%	23.6%	75%	99%	60.1%

** Total Solar Energy Rejected





Engineered to Perform Better™

Automotive & Architectural Window Films

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