Printing Materials

ORACAL®

ORALITE®

ORALUX®

ORAFOL's Headquarters

"

Located just outside of Berlin in the heart of Europe, the ORAFOL Europe GmbH headquarters is the hub of the organisation's culture of leadership and excellence.

Index
Printing Materials

Find the right solution for your application needs

The ORAFOL line of products for printing applications include ORACAL®, ORALITE® and ORALUX®. Our team of product applications experts can assist you in selecting the perfect material for your application and take into consideration variables such as application method, substrate type, duration and durability requirements.

> **"** ORAFOL is your full range supplier of printing materials.

ORACAL®

Premium Cast
ORACAL® 952 / 953   NEW!

70 micron cast PVC film, characterised by excellent adaptability and converting characteristics. Available in white and transparent gloss finish. ORACAL® 952 has a permanent adhesive, and ORACAL® 953 a repositionable permanent adhesive. Both products are available also with *Rapid*Air®.

High Performance Print Vinyl
ORACAL® 1050

This light-fast, weather resistant and durable material has been designed for medium and long-term outdoor applications of up to 7 years. It comes in white with matt or gloss finish, and in transparent with gloss finish. The permanent water-resistant high performance acrylic adhesive of the ORACAL® 1050 series meets highest performance requirements. The film is particularly suited for cutting plotters and high quality screen printing.

Hi-Tack High Performance Print Vinyl
ORACAL® 1050HT

This high performance PVC film with extreme performance adhesive with very high tack and adhesion, was specifically developed for applications on "hard-to-stick" substrates such as low energy plastics (polyethylene, polypropylene) and rough or textured surfaces. The film comes with excellent light-fastness and weather resistance, and it is well suited for medium and long-term exterior use up to 7 years. It comes in white, with a glossy or matt surface.

High Performance Print Vinyl
ORACAL® 552

The ORACAL® 552 series of light-fast and weather resistant material, is designed for long-lasting high quality vehicle decorations. It comes in white and transparent with glossy surface. The permanent seawater resistant high performance acrylic adhesive meets all the highest requirements. Possible applications are high quality screen printing for outdoor lettering, decorations and marking of products with high demands on resistance and durability.

1.

Example 1
ORACAL® 952 / 953

2.

Example 2
ORACAL® 1050

Opaque Vinyl

ORACAL® 1670 / 1660

These extremely opaque, white, highly pigmented PVC films with gloss or matt finish have been developed for short and medium-term outdoor lettering, and decorative works on surfaces that need to be covered with a completely opaque material. The ORACAL® 1670 series is made for permanent use, whereas the ORACAL® 1660 comes with a removable adhesive, ensuring that these special films can be used for a wide array of applications.

Opaque Vinyl

ORACAL® 1668

This white special PVC film has been designed for low-cost letterings and decorations for outdoor applications. The high opacity enables a thorough coverage. ORACAL® 1668 is supplied with a black opaque adhesive. It is available in both a glossy and a matt finish. Possible applications include letterings on cars and means of transport as basis film.

Print Vinyl

ORACAL® 2640 / 2620

These printing films have been developed for large-area designs, in particular for use in screen printing. For UV-offset printing and flexoprinting special inks are necessary. The material is available in both transparent and white, and comes with a matt or glossy finish. The ORACAL® 2640 series is supplied with a permanent adhesive, whereas ORACAL® 2620 comes with a removable adhesive. Both films are ideal for an exceptionally wide range of applications. They are suited for short and medium-term outdoor use: for markings, inscriptions and decorations, where a thick PVC is required.

Print Vinyl

ORACAL® 1650 / 1630

These films have been developed for high quality screen printing, UV-offset and flexoprinting. In cases where a high degree of humidity may affect the bonding of the material, ORACAL® 1650 series is the perfect choice with its water-resistant high performance acrylic adhesive. ORACAL® 1630 is recommended for applications where the film needs to be removed without residue even after a two-year bonding period. Both films are suited for short and medium-term exterior use: for markings, inscriptions and decorations.

Example 3
ORACAL® 1670
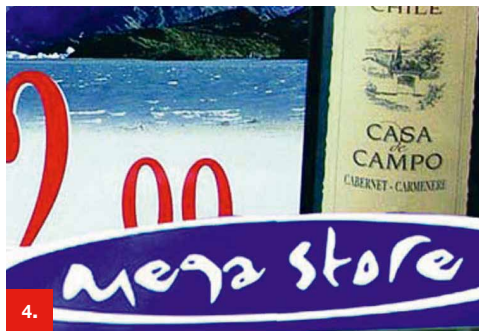
Example 4
ORACAL® 1650

Example 5
ORACAL® 1668

ORACAL®

Print Vinyl
ORACAL® 1640 / 1620

These printing films have been designed for screen printing, and they both show good performance in UV-offset printing as well. Special inks are necessary for UV-offset and flexo printing. The materials are available in transparent and white, and in both a matt and a glossy finish. The permanent acrylic adhesive of the ORACAL® 1640 series means that the material can be utilised in a wide variety of applications. ORACAL® 1620 series is supplied with a removable adhesive which ensures easy removal without residue from almost all surfaces.

Hi-Tack Print Vinyl
ORACAL® 1640HT

This soft PVC printing film has been developed for short and medium-term outdoor applications such as markings, inscriptions and decorations. Indoor exposure is almost unlimited. The strong adhesive allows for an excellent initial peel adhesion even onto apolar surfaces. The film is available in transparent and white with gloss or matt finish. It is suited for screen printing, for UV offset printing and flexoprinting special inks are necessary.

Print Vinyl
ORACAL® 1610 / 1629

These printing films have been designed for short-term outdoor applications such as markings, inscriptions and decorations. ORACAL® 1610 Print Vinyl is especially suited for stickers with a large surface area to be easily and residuelessly removed. They are available in transparent and white with gloss finish. Both the ultra-removable solvent based adhesive of 1610 series and the easily removable acrylic adhesive of 1629 series allow for problem-free residueless removal even after two years of application.

Floor Graphics Vinyl
ORACAL® 1663

For ORAFOL® Floor Graphics systems in connection with ORAGUARD® 250AS or 255AS. Excellent opacity suppressing colour shadows of the floor surface. The adhesive guarantees clean removal.

6.

Example 6
ORACAL® 1640

7.

Example 7
ORACAL® 1610 / 1629

8.

Example 8
ORACAL® 1640HT

ORACAL®

Hi-Tack Rubber Vinyl
ORACAL® 1680

White soft PVC film with gloss and matt surface. A strong permanent adhesive based on natural rubber ensures excellent application even on polyolefinic surfaces. This film is especially suitable for application on uneven and apolar surfaces difficult to work on as well as materials with low surface tension such as PE and PP.

Print Vinyl
ORACAL® 640 / 620

Versatility is the hallmark of this proven series of colour films designed for short to medium-term decorations and markings. Series 640 is available in 24 colours with gloss and matt finish. Series 620 comes in 16 matt colours and additionally with a gloss surface in transparent, white and black. Series 640 is provided with a permanent and series 620 with a removable acrylic adhesive. Both films are very supple and are especially suitable for screen printing, perform well in UV-offset printing and outdoors show a permanence of 3 years. They are suited for all types of decorations.

Print Vinyl
ORACAL 640PF / 620PF

These health friendly, very soft PVC films are suited for short and medium term outdoor applications such as markings, inscriptions and decorations. Indoor exposure is almost unlimited. The films fulfil the requirements of the European directives 2005/84/EC (phthalates in toys and child care articles). Series 640PF is equipped with a permanent, series 620PF with a removable adhesive.

Example 9
ORACAL® 1680

Example 10
ORACAL® 620

ORACAL®

Print Polyester
ORACAL® 301F

These top coated polyester films are particularly suited for first-class decorative labels like doming labels, name plates and technical plates. They possess an excellent dimensional stability, good long term ageing properties and may be applied to apolar and structured substrates. They are available in a metallised chrome or a white gloss version.

Print Polyester
ORACAL® 352

This 23 micron and 50 micron thick polyester film is characterised by an outstanding dimensional stability and a good ageing behaviour. Its surface is specially treated to improve printability in screen and offset printing. The permanent water resistant acrylic adhesive, protected by silicone cardboard coated with polyethylene on both sides, fulfils most demanding requirements. The films are recommended for first class decorative labels, name and technical plates, decoration and moldings as well as safety stickers.

Eco Print
ORACAL® 1740 / 1720

The ECO PRINT line represents an alternative to PVC films for use in screen and offset printing. These polyolefin films come in transparent and white and have a glossy surface treated for an improved printability. The permanent adhesive of 1740 series and the removable acrylic adhesive of 1720 make these special PVC-free films ideal for a wide range of applications, where PVC-free material is strongly required.

11.

12.

13.

Example 11
ORACAL® 352

Example 12
ORACAL® 1740/1720

Example 13
ORACAL® 301F

ORALITE®

Engineer Grade Premium
ORALITE® 5700

This retroreflective, weatherproof film has an excellent corrosion and solvent resistance. The material was specifically developed for the manufacture of traffic control and guidance signs, warning and information signs and for reflective letterings, numbers and symbols intended for long-term outdoor use (7 years). Colour range includes white, yellow, orange, red, green, blue, brown and black. The smooth alkyd resin surface has a high scratch and impact resistance, and very good printing properties. Reflectivity and daytime colours comply with the international specifications for reflective materials of this class.

Engineer Grade
ORALITE® 5500

The ORALITE® 5500 series of retroreflective films are weatherproof materials with excellent corrosion and solvent resistance. They were developed for the manufacture of traffic control and guidance signs, warning and information signs and for reflective letterings, numbers and symbols intended for long-term outdoor use (7 years). This material is slightly thinner than the Engineer Grade Premium material, and with a lower reflectivity. Colour range is white, yellow, orange, red, green, blue, brown and black. The smooth alkyd resin surface has a high scratch and impact resistance, and very good printing properties. Reflectivity and daytime colours comply with the international specifications for reflective materials of this class.

Fleet Marking Grade / Fleet Engineer Grade / Fleet Engineer Grade
ORALITE® 5600E / 5600 / 5650RA

Both ORALITE® reflective films series 5600E and 5600 have been designed for high quality graphics. The materials can be digitally printed. Both films are suitable for use on cutting plotters, and provide good adaptability also to corrugations and rivets. ORALITE® 5600E is approved to ECE104, and may be applied as graphics inside contour markings on the sides of HGVs. The material is available in 11 colours, and comes with a high degree of flexibility as well as excellent corrosion and solvent resistance. ORALITE® 5650RA is particularly suited for large-sized graphics or decals as the *Rapid*Air® technology enables easy and rapid application without air inclusion onto even or slightly curved surfaces.

14.

15.

16.

Example 14
ORACAL® 5700

Example 15
ORALITE® 5500

Example 16
ORALITE® 5600E

Commercial Grade
ORALITE® 5400

ORALITE® 5400 is a highly flexible, retroreflective film, available in 6 colours. The material is weather-resistant, and comes with an excellent corrosion and solvent resistance. The material was developed for the manufacture of guidance and information signs as well as for reflective advertising intended for a medium-term outdoor use (4 years) and for applications where just a minimum of retroreflection is required. The material is suitable for solvent based ink jet printing with solvent based inks and screen printing (ORALITE® 5018 screen printing ink is recommended). ORALITE® 5400 can be processed on cutting plotters, and in application the material provides a good adaptability also to uneven surfaces.

Commercial Grade
ORALITE® 5300

This retroreflective, weatherproof film has an excellent corrosion and solvent resistance. It was developed for the manufacture of guidance and warning signs, and for reflective letterings, numbers and symbols intended for a long-term outdoor use (7 years) and which require just a minimum of retroreflection. Colour range includes white, yellow, orange, red, green and blue. The smooth alkyd resin surface gives this material very good screen printing and ink jet printing properties. The daytime colours comply with the international specifications for reflective materials of this class. When using the ORALITE® reflective films series 5300 the particular national specifications have to be considered.

Economy Grade
ORALITE® 5200

The ORALITE® 5200 material is a retroreflective, weatherproof film with an excellent corrosion and solvent resistance. The material is particularly suited for the manufacture of information signs as well as for reflective advertising intended for a short-term outdoor use (3 years) and requiring just a minimum of retroreflection. The smooth surface gives this material a very good printability with screen and ink jet printing. The colour range is white, yellow, orange, red, green and blue. The daytime colours comply with the international specifications for reflective materials of this class. When using this material, the particular national specifications have to be considered.
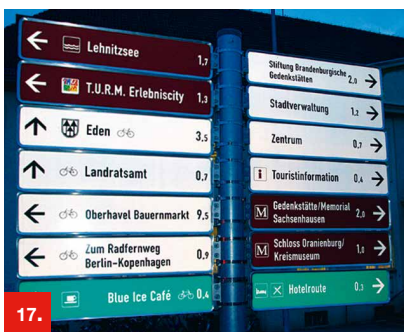
Example 17
ORALITE® 5400

Example 18
ORALITE® 5300

Example 19
ORALITE® 5200

"

ORAFOL provides global excellence
through technology, quality and service.

ORACAL® ORALUX®

Fluorescent Premium Cast Vinyl
ORACAL® 7510

This fluorescent day-glow cast film is particularly eye-catching at dawn, dusk, twilight or at other times when visibility is poor. The permanent water-resistant high performance acrylic adhesive meets highest demands for outdoor use of up to two years. It is available in 7 fluorescent colours and especially suitable for screen printing. Possible applications include warning signs, vehicle and bus advertising, name plates and graphics that require special high-impact visibility. It is well suited for die-cut plotter systems.

Fluorescent Cast Vinyl
ORACAL® 6510

This fluorescent day-glow cast film is particularly eye-catching at dawn, dusk, twilight or at other times when visibility is poor. 7 fluorescent colours are available. It is designed for short-term applications (1 year). The permanent water-resistant high performance acrylic adhesive meets highest demands. It is especially suitable for screen printing. Possible applications are vehicle and public transport advertising as well as signs and inscriptions of all kinds.

Luminescent Cast
ORALUX® 9300

The three-layered, light yellow, cadium-free special PVC film with satin-gloss surface is characterised by a lasting and very strong afterglow once the existing light source has been switched off. Even after frequent excitation the phosphorescent effect does not wear off. The film is used for indoor markings of emergency exits and danger spots. It fulfils the requirements of DIN 67 510.

Safety Vinyl
ORACAL® 820

This special white PVC cast film with a matt surface displays a very low tear and tear propagation resistance. This means that the self-adhesive film can only be removed in small segments, thus protecting against fraud. The permanent solvent polyacrylate adhesive meets most demanding standards. The film is suited for strong adhering stickers with document character. Removal and re-use is impossible. We recommend screen printing, ink jet printing with solvent-based inks, UV and latex inks is also possible.
In addition, ORACAL® 820G is available with a gloss surface.

20.

Example 20
ORALUX® 9300

21.

Example 21
ORACAL® 820

Product Overview – Printing Materials

Product	Short name	Front material (without paper and adhesive)	Release paper	Adhesive	Colours [1]	Dimensional stability (FINAT-TM 14) [2]
ORACAL® 952 (NEW)	Premium Cast	Cast PVC film, 70 micron	Double sided PE coated paper, one side siliconised 143 g/m²	Solvent polyacrylate, permanent	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.1 mm
ORACAL® 952RA			Double sided PE coated RapidAir® paper, one side siliconised, 143 g/m²		White (gloss)	
ORACAL® 953 (NEW)	Premium Cast	Cast PVC film, 70 micron	double sided PE coated paper, one side siliconised 143 g/m²	Solvent polyacrylate, repositionable, permanent	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.1 mm
ORACAL® 953RA			Double sided PE coated RapidAir® paper, one side siliconised, 143 g/m²		White (gloss)	
ORACAL® 1050	High Performance Vinyl	Polymeric PVC film, 100 micron	Silicone coated paper on one side, 135 g/m²	Solvent polyacrylate, permanent	White (gloss / matt) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.2 mm
ORACAL® 1050HT	Hi-tack High Performance Print Vinyl	Polymeric PVC film, 100 micron	Silicone board, PE-coated on both sides, 148 g/m²	Solvent polyacrylate, permanent, high tack	White (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 552	High Performance Vinyl	Polymeric PVC film, 70 micron	Silicone board, PE-coated on both sides, 148 g/m²	Solvent polyacrylate, permanent	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.2 mm
ORACAL® 1670 ORACAL® 1660	Opaque Vinyl	Opaque special highly pigmented PVC film, 110 micron	Silicone coated paper on one side, 135 g/m²	Polyacrylate, permanent / Polyacrylate, removable	White (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1668	Opaque Vinyl	Opaque special PVC film, 100 micron	Silicone coated paper on one side, 135 g/m², white	Polyacrylate, black opaque, removable	White (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 2640 ORACAL® 2620	Print Vinyl	Soft PVC film, 200 micron	Silicone coated paper on one side, 135 g/m²	Polyacrylate, permanent / Polyacrylate, removable	White (gloss / matt) Transparent (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1650 ORACAL® 1630	Print Vinyl	Soft PVC film, 100 micron	Silicone coated paper on one side, 135 g/m²	Solvent polyacrylate, permanent / Solvent polyacrylate, removable	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1640 ORACAL® 1620	Print Vinyl	Soft PVC film, 100 micron	Silicone coated paper on one side, 135 g/m² [5] [6]	Polyacrylate, permanent / Polyacrylate, removable	White (gloss / matt) Transparent (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1640HT	Hi-tack Print Vinyl	Soft PVC film, 100 micron	Silicone coated paper on one side, 135 g/m² [5]	Polyacrylate, permanent, high tack	White (gloss / matt) Transparent (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1610	Print Vinyl	Soft PVC film, 100 micron	Silicone coated paper on one side, 135 g/m² [5]	Solvent polyacrylate ultra-removable	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1629			Silicone coated paper on one side, 135 g/m² [5]	Polyacrylate Easily removable	White (gloss) Transparent (gloss)	
ORACAL® 1680	Hi-tack Rubber Vinyl	Soft PVC film, 100 micron	Silicone coated paper on one side, 135 g/m² [5]	Solvent rubber based, permanent	White (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
ORACAL® 1663	Floor Graphics Vinyl	Highly pigmented opaque PVC film, 110 micron	Silicone coated paper on one side, 135 g/m²	Solvent polyacrylate, removable, transparent	White (gloss / matt)	No measurable shrinkage in cross direction, in length max 0.4 mm

[1] Special colours available upon request
[2] Adhered to steel
[3] Adhered to aluminium
[4] With vertical external weathering (normal Central European climate)
[5] Available with back slits 5 cm parallel to travel direction
[6] Also available with 190 g/m² silicone board (postcard bond)
[7] Available as PETP-films, 50 micron, white, chrome, chrome brushed and both sides gold
[8] Additionally: black, white and transparent with gloss surface
[9] Average
[10] 70 sheets per box
[11] only with glossy surface

Temperature resistance [3]	Adhesive power (FINAT-TM 1, after 24 hours) [2] [9]	Recommended printing methods	Tensile strength (DIN EN ISO 527)		Elongation at break (DIN EN ISO 527)		Service life if professionally applied (not printed) [4]	Minimum application temperature	Shelf life (at 20° C and 50% relative humidity)	Standard sizes Sheets (S) and Rolls (R) in mm
			along	across	along	across				
-50° C to +120° C, no variation	18 N/25 mm 16 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 120%	Min. 120%	10 years	Min. +8° C	2 years	R: 1000, 1260, 1400
-50° C to +120° C, no variation	20 N/25 mm 18 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 120%	Min. 120%	10 years	Min. +8° C	2 years	R: 1000, 1260, 1400
-40° C to +90° C, no variation	20 N/25 mm	Screen printing, UV-offset printing, flexoprinting	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	7 years	Min. +8° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-50° C to +100° C, no variation	28 N/25 mm	Screen printing, UV-offset printing, flexoprinting	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	7 years	Min. +4° C	1 year	R: 1000
-40° C to +90° C (short-term at +100° C), no variation	18 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	7 years	Min. +8° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	16 N/25 mm 6 N/25 mm	Screen printing. Inkjet printing with solvent-based inks. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +8° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	6 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	2 years	Min. +10° C	2 years	R: 1000, 1260, 1400 [11] S: 500 x 700 700 x 1000 [10] 1000 x 1400
-40° C to +80° C, no variation	16 N/25 mm 6 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +10° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	18 N/25 mm 5 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +8° C Min. 0° C	2 years	R: 1000, 1400 S: 500 x 700 700 x 1000 1000 x 1400 R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	16 N/25 mm 6 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. 0° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	22 N/25 mm	Screen printing. Special inks are necessary for UV-offset printing.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +10° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	1.5 N/25 mm 2 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa Min. 19 MPa	Min. 19 MPa Min. 19 MPa	Min. 130% Min. 130%	Min. 150% Min. 150%	3 years 3 years	Min. +8° C Min. +10° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +70° C, no variation	Stainless steel: 25 N/25 mm PP: 23 N/25 mm PE: 20 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +8° C	2 years	R: 1000, 1260, 1400 S: 500 x 700 700 x 1000 1000 x 1400
-40° C to +80° C, no variation	5 N/25 mm	Screen printing. Inkjet printing with solvent-based inks, UV- or latex-inks. Special inks are necessary for UV-offset printing and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. +8° C	2 years	R: 1000 (G), 1260 (G), 1370 (G/M), 1400 (G), 1520 (G).

Material supplied in rolls: Choice of 76 mm or 152 mm diameter roll core / Material supplied in sheets: available in 100-sheet reams in boxes or 2500 sheets on pallets / Special sizes upon request

The statements in this information sheet are based upon our knowledge and practical experience. This data is intended only as a source of information, is given without guarantee and does not constitute a warranty. Due to the wide variety of possible uses and applications, customers should independently determine the suitability of this material for their specific purpose, prior to use.

Product Overview – Printing Materials

Product	Short name	Front material (without paper and adhesive)	Release paper	Adhesive	Colours [1]	Dimensional stability (FINAT-TM 14) [2]
ORACAL® 640 / ORACAL® 620	Print Vinyl	Soft PVC film, 80 micron	Silicone coated paper on one side, 135 g/m² [5]	Polyacrylate, permanent	24 colours (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
				Polyacrylate, removable	16 colours (matt) [8]	
ORACAL® 640PF / ORACAL® 620PF	Print Vinyl	Soft PVC film, 80 micron, phthalate free	Silicone coated paper on one side, 135 g/m²	Polyacrylate, permanent	White (gloss / matt) Transparent (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.4 mm
				Polyacrylate, removable		
ORACAL® 301F	Print Polyester	Polyester film topcoated, 50 micron	Polyester film, siliconised on one side, 100 micron	Modified solvent polyacrylate, permanent	White (gloss) Metallised chrome Chrome brushed	No measurable shrinkage in cross direction, in length max. 0.2 mm
ORACAL® 352	Print Polyester	Polyester film topcoated, 23 and 50 micron [7]	PE-coated silicone paper on both sides, 160 g/m²	Solvent polyacrylate, permanent	Transparent, chrome, matt chrome, brushed silver, gloss gold, white, doublesided gloss gold	No measurable shrinkage in cross direction, in length max. 0.1 mm
ORACAL® 1740 / ORACAL® 1720	Eco Print	Polyolefin film based on PP, coated with printing varnish, 90 micron	Silicone coated paper on one side, 135 g/m² [5] [6]	Polyacrylate, permanent	White (gloss) Transparent (gloss)	No measurable shrinkage in cross direction, in length max. 0.4 mm
				Polyacrylate, removable		
ORALITE® 5700	Engineer Grade *Premium*	Alkyd resin, 130 micron	PE-coated silicone paper on both sides, 145 g/m²	Solvent polyacrylate, permanent	8 colours	
ORALITE® 5500	Engineer Grade	Alkyd resin, 110 micron	PE-coated silicone paper on both sides, 145 g/m²	Solvent polyacrylate, permanent	8 colours	
ORALITE® 5600E	Fleet Marking Grade	Special cast PVC film, 90 micron - 140 micron	PE coat on silicone-coated cardboard, 145 g/m²	Solvent polyacrylate, permanent, removable by heat	11 colours	
ORALITE® 5600	Fleet Engineer Grade	Special cast PVC film, 110-140 micron	PE coat on silicone-coated cardboard, 145 g/m²	Solvent polyacrylate, permanent, removable by heat	11 colours	
ORALITE® 5650RA	Fleet Engineer Grade	Special cast PVC film, 110-140 micron	PE coated silicone paper on both sides, white, 145 g/m²	Solvent polyacrylate, permanent with low initial tack and a positionable adhesive	11 colours	
ORALITE® 5400	Commercial Grade	Special cast PVC film, 90 micron	PE-coated silicone paper on both sides, 145 g/m²	Solvent polyacrylate, permanent	6 colours	
ORALITE® 5300	Commercial Grade	Alkyd resin, 95 micron	PE-coated silicone paper on both sides, 145 g/m²	Solvent polyacrylate, permanent	6 colours	
ORALITE® 5200	Economy Grade	Special cast PVC film, 80 micron	PE-coated silicone paper on both sides, 145 g/m²	Solvent polyacrylate, permanent	6 colours	
ORACAL® 7510	Fluorescent Premium Cast	Cast PVC film, 150 micron	Silicone coated paper on one side, 137 g/m²	Solvent polyacrylate, permanent	7 colours gloss	No measurable shrinkage in cross direction, in length max. 0.3 mm [4]
ORACAL® 6510	Fluorescent Cast	Cast PVC film, 110 micron	Silicone coated paper on one side, 137 g/m²	Solvent polyacrylate, permanent	7 colours gloss	No measurable shrinkage in cross direction, in length max. 0.3 mm [4]
ORALUX® 9300	Luminescent Cast (9300 acc. to DIN 67510)	Special PVC film, 150 micron	PE-coated silicone paper on both sides, 148 g/m²	Solvent polyacrylate, permanent	Bright yellow, satin-gloss	No measurable shrinkage in cross direction, in length max. 0.3 mm
ORACAL® 820	Safety Vinyl	Cast PVC film, 55 micron	Silicone coated paper on one side, 135 g/m²	Solvent polyacrylate, permanent	White (gloss / matt)	No measurable shrinkage in cross direction, in length max. 0.2 mm

[1] *Special colours available upon request*
[2] *Adhered to steel*
[3] *Adhered to aluminium*
[4] *With vertical external weathering (normal Central European climate)*
[5] *Available with back slits 5 cm parallel to travel direction*
[6] *Also available with 190 g/m² silicone board (postcard bond)*
[7] *Available as PETP-films, 50 micron, white, chrome, chrome brushed and both sides gold*
[8] *Additionally: black, white and transparent with gloss surface*
[9] *Average*
[10] *70 sheets per box*

ORACAL® ORALITE® ORALUX®

Temperature resistance [3]	Adhesive power (FINAT-TM 1, after 24 ours) [2][9]	Recommended printing methods	Tensile strength (DIN EN ISO 527)		Elongation at break (DIN EN ISO 527)		Service life if professionally applied (not printed) [4]	Minimum application temperature	Shelf life (at 20°C and 50% relative humidity)	Standard sizes Sheets (S) and Rolls (R) in mm
			along	across	along	across				
-40°C to +80°C, no variation	16 N/25 mm / 6 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. 0°C	2 years	R: 1000, 1260, 1400 S: 700 x 500 700 x 1000 1000 x 1400
-40°C to +80°C, no variation	16 N/25 mm / 6 N/25 mm	Screen printing. Special inks are necessary for UV-offset and flexoprinting.	Min. 19 MPa	Min. 19 MPa	Min. 130%	Min. 150%	3 years	Min. 0°C	2 years	S: 500 x 700 1000 x 700
-30°C to +110°C, no variation	25 N/25 mm	Screen printing UV-offset printing	Min. 200 MPa	Min. 260 MPa	Min. 125%	Min. 80%	2 years	Min. +8°C	2 years	R: 1000, 1260 S: 700 x 500 700 x 1000
-40°C to +120°C, no variation	12 N/25 mm	Screen printing UV-offset printing	Min. 200 MPa	Min. 260 MPa	Min. 125%	Min. 80%	2 years, gloss gold 1 year	Min. +8°C	2 years	R: 1000, 1260 S: 700 x 500 700 x 1000
-40°C to +70°C, no variation	12 N/25 mm / 2 N/25 mm	Screen printing UV-offset printing	Min. 38 MPa	Min. 38 MPa	Min. 130% transp. Min. 110% white	Min. 180% transp. Min. 120% white	2 years	Min. +10°C	2 years	R: 1000 (1260, 1400 only white) S: 500 x 700 700 x 1000 1000 x 1400
-56°C to +82°C	15 N/25 mm (film tear)	Screen printing. ORALITE® 5018 screen printing ink					7 years	Min. +10°C	2 years	R: 610, 760, 920, 1235
-56°C to +82°C	15 N/25 mm (film tear)	Screen printing. ORALITE® 5018 screen printing ink					7 years	Min. +10°C	2 years	R: 610, 760, 920, 1235
-50°C to +95°C	17 N/25 mm	Ink jet printing with solvent based, UV or latex inks. Screen printing.	Min. 10 MPa	Min. 10 MPa	Min. 100%	Min. 100%	7 years	Min. +8°C	2 years	R: 610, 1235
-50°C to +95°C	17 N/25 mm	Ink jet printing with solvent based, UV or latex inks. Screen printing.	Min. 10 MPa	Min. 10 MPa	Min. 100%	Min. 100%	7 years	Min. +8°C	2 years	R: 610, 1235
-50°C to +95°C	17 N/25 mm	Ink jet printing with solvent based, UV or latex inks. Screen printing.	Min. 10 MPa	Min. 10 MPa	Min. 100%	Min. 100%	7 years	Min. +8°C	2 years	R: 610, 1235
-50°C to +82°C	15 N/25 mm (film tear)	Screen printing. ORALITE® 5018 screen printing ink Solvent based inkjet printing					4 years	Min. +10°C	2 years	R: 610, 1235
-50°C to +82°C	15 N/25 mm (film tear)	Screen printing. ORALITE® 5018 screen printing ink					7 years	Min. +10°C	2 years	R: 610, 1235
-50°C to +82°C	15 N/25 mm (film tear)	Screen printing. ORALITE® 5018 screen printing ink Solvent based inkjet printing					3 years	Min. +10°C	2 years	R: 610, 1235
-40°C to +110°C, no variation	18 N/25 mm	Screen printing	Min. 15 MPa	Min. 15 MPa	Min. 120%	Min. 120%	2 years fl. yellow 3 years	Min. +8°C	2 years	R: 1000, 1260 S: 700 x 500 700 x 1000 1400 x 1000 [10]
-40°C to +105°C, no variation	16 N/25 mm	Screen printing	Min. 13 MPa	Min. 13 MPa	Min. 100%	Min. 100%	1 year fl. yellow 2 years	Min. +8°C	2 years	R: 1000, 1260 S: 700 x 500 700 x 1000 1400 x 1000 [10]
-40°C to +100°C, no variation	18 N/25 mm	Screen printing.	Min. 12 MPa	Min. 10 MPa	Min. 100%	Min. 100%	5 years (interior use)	Min. +8°C	2 years	R: 1000, 1260 S: 700 x 500
-40°C to +90°C, no variation	The adhesive power of the film is higher than the tensile strength, the material breaks immediately when peeled off the surface	Screen printing. Also suitable for inkjet printing with solvent-based, UV or latex inks and glossy surfaces for digital thermo-transfer printing.	Min. 14 MPa	Min. 14 MPa	Min. 4%	Min. 4%	5 years	Min. +10°C	2 years	R: 1000, 1400 S: 700 x 500 700 x 1000 1000 x 1400

Material supplied in rolls: Choice of 76 mm or 152 mm diameter roll core / Material supplied in sheets: availble in 100-sheet reams in boxes or 2500 sheets on pallets / Special sizes upon request

The statements in this information sheet are based upon our knowledge and practical experience. This data is intended only as a source of information, is given without guarantee and does not constitute a warranty. Due to the wide variety of possible uses and applications, customers should independently determine the suitability of this material for their specific purpose, prior to use.

"
ORAFOL products are sold in more than 100 countries worldwide.
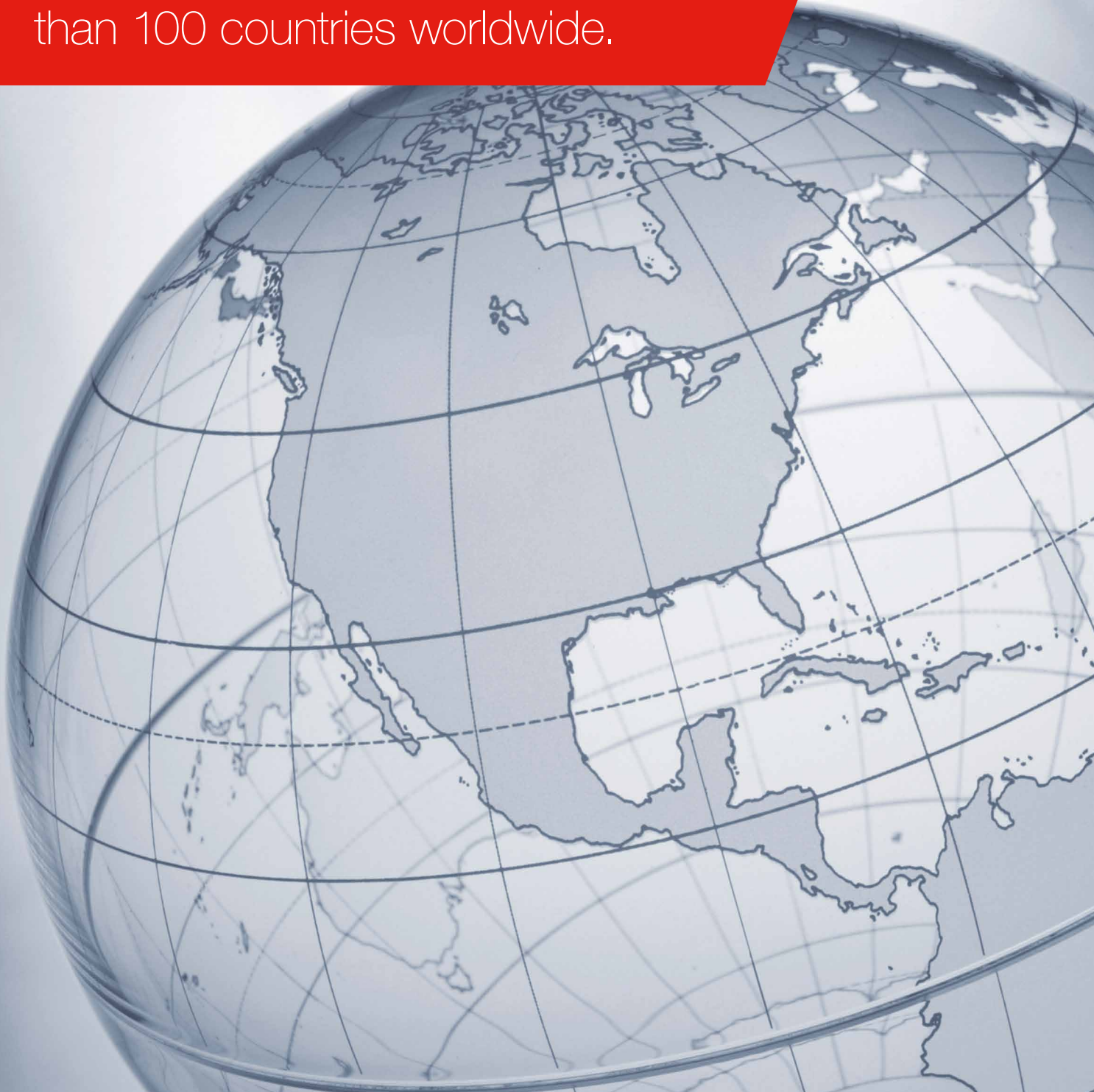
Notes on Processing and Handling

1. Preliminary remarks

The following general tips are given for application of ORAFOL® Printing Materials. If you want to apply printing material on a car, please also see our practical information for self-adhesive films for application on cars (Download: www.orafol.com).

2. Storage

ORACAL® printing films should at all times be stored in a cool dry place protected from sunlight. Material delivered in rolls must be either suspended or stand on-end on the roll blocks provided.

Products delivered in sheet form must be stored flat on shelves or on pallets in their original packing. Prior to processing, the self-adhesive films should be accommodated to the humidity and temperature conditions prevailing in the processing area. Relative humidity of between 50 and 55% and temperatures in the range of +20° C to +22° C are considered ideal. The table below provides guidelines for the time required for accommodation depending on the stacking height of the sheets and the temperature difference between the sheets and the processing area.

Number of sheets per stack	Temperature difference between sheets and processing area		
	±5° C	±10° C	±15° C
250	3 hours	6 hours	10 hours
1500	4 hours	9 hours	15 hours

3. Cutting

It is important to use a clean, sharp knife when cutting ORACAL® printing films. A clean knife prevents any build-up of adhesive residue which could be deposited on the edge of the sheet. The clamping balls should apply as little pressure as possible during cutting.

4. Printing

Use only printing ink systems recommended by the ink manufacturer for the self-adhesive material being processed. During multicolour printing, always ensure that each layer of ink has thoroughly dried before the next is applied.

There is a direct relationship between dimensional stability and register accuracy during printing. Tunnel drying alters the moisture content of the cover paper and the dimensional stability of the film itself may be affected. To ensure register accuracy in multicolour prints, we recommend passing the self-adhesive material once through the printing machine and the tunnel dryer prior to printing.

Undulation of the edges or plating of the self-adhesive material can always be traced to excessively dry or moist conditions within the processing areas. Constant ambient conditions should be maintained both day and night. A large reduction in temperature promotes undulation of the edges.

If you wish to protect the print with a finishing coat of clear enamel, please be aware that solvents may cause brittleness of the material and that shrinkage may occur during drying causing the film edges to detach from the carrier paper or from the surface to which the film is applied. Compatibility should therefore be tested prior to printing.

5. Application

ORACAL® printing grades can be applied to many surfaces but all have to be clean, dry and free of oil, grease, solvents, silicone or other contamination. Residues of solvent left after incomplete cleaning can cause gas bubbles between the film and the surface. Similarly, fresh finishes including oven-dried and baked paints can cause bubbles and should be allowed to stand for at least three weeks. To avoid undesirable temporary whitening in wet application on transparent surfaces, we recommend the use of printing films equipped with solvent polyacrylate adhesive. For the application on cars please see additionally the practical information on how to apply self-adhesive films on cars. For the application on car windows the remarks in the practical information for application on cars are to be followed.

Caution!

Certain high thermal insulation double glazing systems may be damaged by self-adhesive stickers due to stress caused by extreme temperature fluctuations.

6. Removability

Please see the practical information for plotter films. This information is based on our knowledge and experience. We did not explain all considering aspects of application. Specialised or occupational knowledge and competence of a professional sign maker are presupposed. Due to the diversity of potential influencing factors during application and use, we recommend customers to make own tests of our products. No legally binding warranty of certain qualities can be derived from our information.

Printing Materials
Engineered to Perform Better™
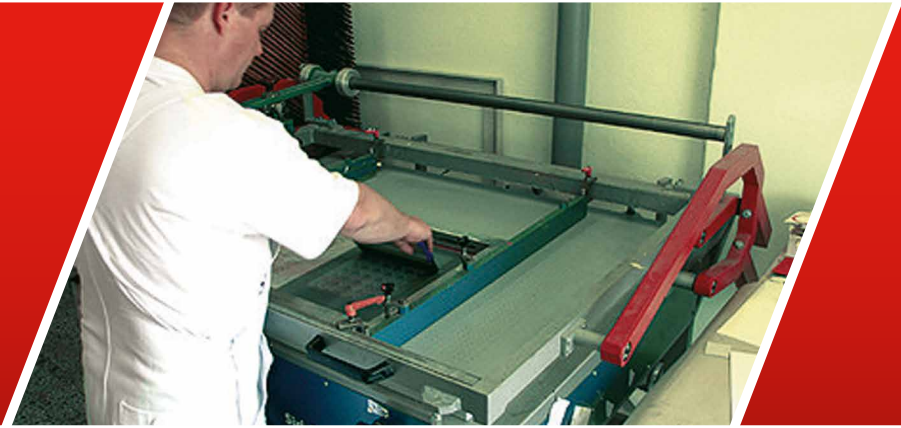
ORAFOL Europe GmbH

Orafolstraße 2, D-16515 Oranienburg, Germany
Tel: +49 (0)3301 864-0 · Fax: +49 (0)3301 864-100
graphic.innovations@orafol.de · www.orafol.com

MANAGEMENT SYSTEM CERTIFICATION
DNV·GL
ISO 9001 ▬ ISO 14001
ISO 50001