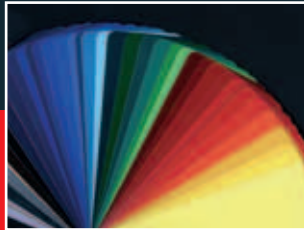


Materials

Plotter



Plotter Materials

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Extreme

85I Premium Cast

This super thin high-performance PVC film of only 50 micron is characterised by excellent adaptability also to corrugations and rivets and outstanding dimensional stability. Available in 101 standard colours and with a durability of up to 10 years, films of this series are especially suitable for high-quality vehicle and public transport system advertising. This film can be also used for digital thermotransfer printing (with resin ribbons).



Ultimate

751C Cast

This cast PVC film of 55 micron has especially been developed for unproblematic application on cutting plotter systems for lettering, marking and decorations with highest requirements for solidity and durability. It is also suitable for uneven surfaces as well as for rivets and corrugations. Films of this series are available in 118 standard colours in high gloss finished surface. They can be also used for digital thermotransfer printing (with resin ribbons).



Incomparable

751 Premium Cal

With its excellent dimensional stability and very good cutting and application characteristics this high-performance plotter film with a thickness of only 60 micron meets highest requirements for solidity and durability of up to 8 years. Films of this series are available in 78 gloss and 2 matt colours and are designed for long-term outdoor use. They are especially suitable for high-quality vehicle and public transport system advertising.



Effective

551 High Performance Cal

This high-performance film with a thickness of 70 micron has been developed for medium-term use of up to 7 years. 68 gloss and 2 matt colours ensure a high variety of applications on very different surfaces.



Universal

651 Intermediate Cal

This plotter film is designed for short- and medium-term application both indoors and outdoors. Its versatility and a range of 60 brilliant colours with glossy finish and 48 colours in matt make it a perfect match for a wide range of decorative works. It displays excellent opaqueness and is equipped with a permanent solvent polyacrylate adhesive to give it outdoor durability of up to five years.

Optimum

64I Economy Cal

This permanently bonding plotter film has been designed for universal short-term outdoor applications of up to four years. It is available in 60 colours both with gloss and matt finish.



Exhibition

63I Exhibition Cal

This plotter film is given a matt surface to suppress unwanted reflection and add elegance to your displays. It is ideal for trade fairs because its removable acrylate dispersion adhesive allows for easy, residueless removal. Available in 48 colours, this film is the perfect choice for clean and precise applications with a required durability of up to three years.

Certified according to DIN 4102-BI.



Promotion

62I Economy Cal

This removable plotter film is ideal for short-term advertising and sales promotions especially on vehicles. It is available in 45 colours with a gloss finish. Residueless removal of up to three years ensures high economic efficiency.



Translucent

8500 Translucent Cal

This translucent film is specially designed to meet the highest requirements. Its satin finish prevents unwanted reflections. Available in 55 colours and with a durability of up to seven years, this plotter film is the perfect solution for intricate designs on illuminated installations made of glass, acrylic glass and pretensioned banner material.



Etched Glass

8510 Etched Glass Cal

This special film is the ideal choice whenever a frosted look is desired or the impression of etched, cut or sandblasted glass is called for. The translucent film for decorative effects in glass comes in gold and silver and opens up many possibilities for adding a special touch to shop windows, glass doors and glass-like surfaces. With its permanent solvent polyacrylate adhesive and a durability of up to 7 years it covers a wide area of application.





Transparent

8300 Transparent Cal

This UV-stabilized, transparently dyed, gloss special-purpose film boasts a permanence of up to 5 years and is used to create high-quality illuminated signs and decorate back-lit glass surfaces. Available in 30 colours of brilliant transparency films of this series can be superimposed to obtain fine nuances of colour, making the creative possibilities virtually infinite.

Banner

451 Banner Cal

This plotter film is specially designed for use on banners, tarpaulins, ribbons and other flexible surfaces. It adapts perfectly to any surface, remains fast even under the most demanding conditions and can be easily removed without a trace. The discriminating designer will appreciate this series' satin finish in 30 beautiful colours.

Metallized

351 Polyester Film

Excellent dimensional stability and good ageing behaviour characterise this 23 microns thick polyester film. It is suitable for application in cutting plotter systems as well as for printing. The high-gloss metallic cover shows best effects when applied to transparent surfaces.

381 Ultramirror Cast

This very decorative, permanently bonded cast film for lettering, marking and decorative works is designed to meet highest requirements as to long-term outdoor durability. Available in the colours chrome and shining gold, the smooth high gloss surface is suitable for printing. The film is characterised by permanent dimensional stability.

383 Ultraleaf Cast

This very decorative, permanently bonded cast film for lettering, marking and decorative works is designed to meet highest requirements as to long-term outdoor durability. The film with a three dimensional structure is characterised by a smooth surface suitable for printing and permanent dimensional stability. It is available in the colours chrome and shining gold.

Fluorescent Film

6510 Fluorescent Cast / 7510 Fluorescent Premium Cast

Both series consist of fluorescent special-application day-glow films which are particularly eye-catching at dawn, dusk, twilight or other times when visibility is poor. Available in six colours, series 6510 is suitable for short-term applications (one year), while the high-performance 7510 film is designed for applications of up to two years.

Sandblasting Film

831 / 832 Sandblast Film

These special-purpose PVC films which are 230 and 350 micron thick are designed for a broad range of applications in stonemasonry and artistic sandblasting studios. They are ideal for sandblasting of glass, plastics and wood.

Stencil Films

810 / 810 S / 811 / 813 Stencil Film

The 810 film is particularly suited for the design and lettering of flexible, uneven surfaces.

810 S with its strong resistance to solvents is ideal for multicoloured decorations.

The relatively high rigidity of 811 and 813 stencil films makes them ideal for painting and spraying work on large even surfaces.

The 813 film is translucently dyed, ensuring that the surface underneath remains visible, a great advantage when multiple paint applications are required.



Application Paper

Reliable application papers and films are required when films cut by computer-aided equipment are to be professionally and quickly applied to surfaces. ORAFOL has developed application materials designed for a great variety of demands and uses.

MT 52 Application Tape

MT 52 is a semi-transparent application paper used to transfer die-cut or computer-cut lettering and symbols. A specially developed natural-rubber adhesive ensures both a fast bond to the items being transferred and a flawless removal following application.

MT 72 Application Tape

Like MT 52, MT 72 is designed for use with nearly any type of film that has a smooth and matt surface. With its high dimensional strength and especially good durability even in wet application, MT 72 is up to the most demanding jobs.



Application Films

MT 80 P Application Tape

The specifically adjusted polyacrylate adhesive of the MT 80 P allows residueless removal without a major increase in adhesive strength even after over six months. The low elasticity of the front material ensures exact positioning. MT 80 P is recommended for all applications requiring a repeated use of the film tape.



MT 95 Application Tape

MT 95 has been developed for special uses requiring a highly transparent application material. The polyacrylate adhesive is of low adhesive strength which does not increase markedly even after an extended period of application.

Its high dimensional stability allows precise positioning of the film to be transferred.

ORAMASK®

ORATAPE®

ORAFOL®

Description

	Short name	Front material (without covering material and adhesive)	Covering material	Adhesive	Colours	Dimensional stability (FINAT-TM 14)	Water resistance (DIN 50021 at +23°C)	Temperature resistance
ORACAL® 851	Premium Cast	cast PVC film, 50 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	101 high gloss 2 matt ③	shrinkage in length 0.1 mm max. ④⑤	no variation after 100 h ⑦	-50 °C to +110 °C, no variation ⑦
ORACAL® 751C	Cast	cast PVC film, 55 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	118 high gloss 2 matt ③	shrinkage in length 0.15 mm max. ④⑤	no variation after 100 h ⑦	-50 °C to +110 °C, no variation ⑦
ORACAL® 751	Premium Cal	polymeric PVC film, 60 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	78 gloss 2 matt ③	shrinkage in length < 0.2 mm ④⑤	no variation after 100 h ⑦	-50 °C to +90 °C, no variation for short period (24 h) +100 °C ⑦
ORACAL® 551	High Performance Cal	polymeric PVC film, 70 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	68 gloss 2 matt ③	shrinkage in length 0.2 mm max. ④⑤	no variation after 100 h ⑦	-50 °C to +90 °C, no variation for short period (24 h) +100 °C ⑦
ORACAL® 651	Intermediate Cal	special PVC film, 70 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	60 gloss 48 matt ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +80 °C, no variation ⑦
ORACAL® 641	Economy Cal	soft PVC film, 75 micron	silicone coated paper on one side, white, 137 g/m ² ①	polyacrylate, permanent	60 gloss 60 matt ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 48 h ⑦	-40 °C to +80 °C, no variation ⑦
ORACAL® 631	Exhibition Cal	soft PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	polyacrylate, removable	48 matt ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 48 h ⑦	-40 °C to +80 °C, no variation ⑦
ORACAL® 621	Economy Cal	soft PVC film, 75 micron	silicone coated paper on one side, white, 137 g/m ² ①	polyacrylate, removable ②	45 gloss ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 48 h ⑦	-40 °C to +80 °C, no variation ⑦
ORACAL® 8500	Translucent Cal	polymeric PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	55 silk-matt ③	shrinkage in length 0.2 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +90 °C, no variation ③
ORACAL® 8510	Etched Glass Cal	polymeric PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	gold, silver with fine and coarse structure	shrinkage in length 0.2 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +90 °C, no variation ③
ORACAL® 8300	Transparent Cal	soft PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	30 gloss ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +80 °C, no variation ③
ORACAL® 451	Banner Cal	special PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	30 silk-matt ③	shrinkage in length 0.4 mm max. ④⑤	no variation after 100 h ⑦	-20 °C to +65 °C, no variation ⑦
ORACAL® 351	Polyester Film	polyester film, 23 micron	special silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	3	shrinkage in length 0.1 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +120 °C, no variation ⑦
ORACAL® 381 383	Ultramirror Cast Ultraleaf Cast	cast polymeric film, 85 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	2 gloss, 2 gloss em- bossed	shrinkage in length 0.25 mm max. ④⑤	no variation after 100 h ⑦	-54 °C to +71 °C, no variation ⑦
ORACAL® 6510	Fluorescent Cast	cast PVC film, 110 micron	silicone coated paper on one side, white, 137 g/m ² ①	solvent polyacrylate, permanent	6 gloss	shrinkage in length 0.3 mm max. ④⑤	no variation after 100 h ⑦	-40 °C to +105 °C, no variation ⑦
ORACAL® 7510	Fluorescent Premium Cast	cast PVC film, 150 micron			6 gloss	shrinkage in length 0.3 mm max.	no variation after 100 h ⑦	-40 °C to +110 °C, no variation ⑦
ORAMASK® 810 811 813 810 S	Stencil Film	soft PVC film, 80 micron	silicone coated paper on one side, white, 137 g/m ² ①	polyacrylate, with weak final tack solvent polyacrylate, removable	grey white blue dark grey	shrinkage in length 0.4 mm max. ④⑤	—	—
ORAMASK® 831 832	Sandblasting Film	soft PVC film, 230 micron 350 micron	silicone coated paper on one side, white, 137 g/m ² ①	polyacrylate, removable	green grey	shrinkage in length 0.4 mm max. ③④	—	—

Technical Data*

Adhesive power (FINAT-1, after 24 h, stainless steel)	Resistance to solvents and chemicals ③	Resistance to cleaning agents ⑦	Tensile strength (DIN EN ISO 527)		Elongation at break (DIN EN ISO 527)		Service life in years ①			Recommended application temperature	Shelf life (at +20°C and 50% relative humidity)	Standard sizes
			along	across	along	across	black/white	transparent/coloured	metallic			
18 N/25 mm ⑤	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑦	min. 21 MPa	min. 21 MPa	min. 130 %	min. 130 %	10	8	6	min. +8 °C	2 years	1260 mm 1000 mm 756 mm 750 mm 700 mm 630 mm 500 mm 466 mm 378 mm
18 N/25 mm ⑤	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 120 %	min. 120 %	8	7	5	min. +8 °C	2 years	
18 N/25 mm ⑤	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 150 %	min. 170 %	8	7	4	min. +8 °C	2 years	
18 N/25 mm ⑤	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	7	5	4	min. +8 °C	2 years	
18 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	5	4	4	min. +8 °C	2 years	
16 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	4	3	3	min. +10 °C	2 years	
7 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	3	3	3	min. +10 °C	2 years	
7 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑦	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	3	3	3	min. +10 °C	2 years	
18 N/25 mm ⑥ 16 N/25 mm ⑥	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑧	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	7	7	5	min. +8 °C	2 years	
18 N/25 mm ⑥ 16 N/25 mm ⑥	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑥	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	7			min. +8 °C	2 years	
18 N/25 mm ⑥ 16 N/25 mm ⑥	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑧	min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	5			min. +8 °C	2 years	
14 N/25 mm ⑤	resistant to most oils and greases, fuels, aliphatic solvents, weak acids, salts and alkalis	no variation ⑥	min. 15 MPa	min. 15 MPa	min. 120 %	min. 150 %	3	3	3	min. +8 °C	2 years	
12 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑥	min. 200 MPa	min. 300 MPa	min. 120 %	min. 85 %	silver 2 gold 1			min. +8 °C	2 years	
16 N/25 mm	resistant to most oils and greases, aliphatic solvents, weak acids, salts and alkalis	no variation	min. 17 MPa	min. 17 MPa	min. 35%	min. 35%	5			min. +8 °C	2 years	1220 mm
16 N/25 mm ⑤	resistant to most oils and greases, weak acids, salts and alkalis	no variation ⑥	min. 13 MPa	min. 13 MPa	min. 100 %	min. 100 %	1			min. +8 °C	2 years	1260 mm 1000 mm 756 mm 750 mm 700 mm 630 mm 500 mm 466 mm 378 mm
18 N/25 mm ⑤			mind. 15 MPa	min. 15 MPa	min. 120 %	min. 120 %	2					
1 N/25 mm ⑤ 6 N/25 mm ⑤	_____		min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	_____			min. +10°C to +25°C	2 years	
1 N/25 mm ⑤					min. 90 %	min. 90 %						
					min. 130 %	min. 150 %						
5 N/25 mm ⑤ 6 N/25 mm ⑤	_____		min. 19 MPa	min. 19 MPa	min. 130 %	min. 150 %	_____			min. +10 °C	2 years	

- ① blue coated with white film
- ② residueless removal within 2 years
- ③ special colours on request
- ④ no shrinkage in cross direction
- ⑤ adhered to steel
- ⑥ adhered to glass
- ⑦ adhered to aluminium
- ⑧ adhered to acrylic glass
- ⑨ 72 h after adhering to aluminium at room temperature
- ⑩ 8 h in car wash (0,5% household cleaners at room temperature and at +65°C)
- ⑪ by specialist application under outdoor vertical exposure (normal climate of central Europe)
- ⑫ average value

special sizes on 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.



1. Storage and processing conditions

ORACAL®, ORAMASK®, ORALITE® and ORATAPE® self-adhesive products are delivered in rolls which should at any times be stored either suspended or standing on the roll blocks provided in a cool, dry place protected from sunlight. Storage temperature should not exceed + 30 °C. Prior to processing, the self-adhesive films should be accommodated to the humidity and temperature prevailing in the processing area. Relative humidity between 50% and 60% and temperatures in the range of + 18°C to + 22 °C are considered ideal. Extreme variations of the above conditions could lead to expansion or shrinkage of the protective paper. The result is insufficient flatness of the self-adhesive material and dimensional changes in the cuts. Please observe the storage instructions provided in the technical data sheet accompanying each film.

2. Preparing the surface

The high-quality special adhesives used for ORACAL® self-adhesive materials create an excellent bond with just about any clean, smooth and weatherproof surface which is free of grease, wax and silicone. Prior to applying the ORAFOL self-adhesive products, clean the surface thoroughly with isopropanol and wipe it dry with a cloth. Gas bubbles may form between the film and the surface if any solvent residue remains as a result of improper cleaning or if the lacquer on the surface is too fresh.

Allow at least three weeks to elapse before applying the film to lacquer which has been air-dried or baked. Isopropanol is recommended as the cleaning agent as other agents may, under certain circumstances, attack the lacquer or reduce the adhesive strength of the film. For surfaces which tend to outgas, such as polycarbonate products, we recommend the following steps. Clean the surface, apply a piece of film and store it at + 60 °C for about 24 hours. If after this time bubbles have formed in the bond, outgassing is still taking place. In such a case, the plastic material must be thermally treated or stored under room conditions for a longer period. When using ORAMASK® plotter films, it is important that the surfaces receiving the designs be thoroughly cleaned. Isopropanol is preferred for cleaning lacquered surfaces and vehicle tarpaulins. When used on those surfaces (tarpaulins in particular), the spirit should be removed as soon as possible after cleaning to prevent it from penetrating into the surface coating. Be sure to allow sufficient time for the solvent to evaporate after cleaning. For jobs calling for multi-coloured designs, make absolutely sure that the ORAMASK® plotter films are only applied onto paint which is thoroughly dry. Residual solvents may cause residue from the adhesive to remain after the stencil film is removed.

3. Application temperatures

ORACAL® plotter films should always be applied at temperatures above + 8°C. A significant drop in temperature should be avoided during the first 24 hours after adhesion. Should a temperature drop nonetheless occur, we recommend treating the film with hot air from a hair dryer.

4. Removing silicone paper

Lay the cut plotter film with the film side down on a flat surface. Pull back only as much silicone paper as required to begin mounting. Always draw the silicone paper from the film, never the other way round.

5. Adhesion

There are two major methods of application: dry and wet adhesion. For dry adhesion, first position the film cut and press it at one corner on the surface. Then adhere the remainder by applying a plastic squeegee across the film in overlapping sweeps. Depending on the size of the cut being mounted, the silicone paper may be removed completely before bonding or gradually during the adhering procedure. When using ORATAPE® application paper or film, pull these slowly away from the film at a 180° angle. Wet adhesion should only be done in warm weather when temperatures are at least + 18°C. Spray the exposed adhesive side with low-surface-tension water (water mixed with a flushing agent) and lay it upon the receiving surface. The ease of precise positioning is the great advantage of the wet adhesion method. Press the film to the surface using sweeping, overlapping motions. Make sure that the water is completely squeezed out from between the surface and the adhesive. For wet adhesion, we recommend ORATAPE® MT 72 application paper. After a short drying period, remove application paper carefully at a 180° angle. Slightly moistening the back side of the application paper makes this procedure even easier. The bond is improved if the film is pressed again to the surface after a few hours. To avoid differences in perceived colour after adhesion, ORACAL® coloured films should always be worked and adhered in one direction only. When mounting across overlapping sheets of metal or expansion joints, use a sharp knife to separate the film at these points so that the film does not come loose when exposed to motion.

Different background profiles are used in vehicle construction. When applying films to such backgrounds always follow the profile. Never just lay out the film and press it under tension into the recess. With overlapping film adhesion, it is important to make sure that the edges of the film sheets overlap by a minimum of 4 mm and a maximum of 12 mm. When applying film to film, make absolutely sure that only films of the same manufacturer and the same type are put on top of each other (monomeric film on monomeric film and polymeric film on polymeric softened film). Caution! Certain thermal insulation glazing systems may be damaged by self-adhesive films due to thermal stresses caused by extreme temperature fluctuations.

6. Removing permanently bonded ORACAL® plotter films

Environment and surface temperature must be at least + 20 °C before these films can be removed. Using a knife, first lift up cautiously one corner of the film. Then slowly draw the film from the surface at a 180° angle. Heating the film with a blow-dryer while pulling makes removal considerably easier. If the film being removed is very old, a small amount of residue from the adhesive may remain on the surface. It can be removed easily with varnish thinner.

Plotter Materials



Digital printing materials



Plotter materials



Screen and Offset printing materials



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Deutscher Akkreditierungsrat

DAR

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The company is certified according to DIN EN ISO 9001:2000