



TECHNICAL DATA SHEET - PLOTTER VINYL - SUPTAC S 5000 SERIES

DESCRIPTION

The S5000 series is the highest quality in the HEXIS film range and suitable for indoor and outdoor use. This series features the following characteristics:

- ✓ Vinyl film for computer-aided cutting; very stable product with negligible shrinkage. Easy cutting and weeding of large and small lettering.
- ✓ May be superposed (with overlap) or with imbrications to make up logos or signs of different colours.
- ✓ Can be printed by thermal transfer for outdoor signage, buses, signposts, advertising, pictograms, etc.
- ✓ Aggressive environments and water proof.
- ✓ Application possible at an ambient temperature starting from +7 °C (+45 °F).
- ✓ Conformable and flexible film to ensure suitability for flat, slightly undulated and slightly convex or concave surfaces.
- ✓ Solvent-based, pressure-sensitive, permanent and transparent adhesive inhibiting migration of plasticisers.
- ✓ Adhesive can be easily removed by using HEXIS Adhesive Remover (product no.1).

PRODUCT FEATURES

Polymeric vinyl	Gloss or matt surface. Thickness 65 µm. The combination of a polymeric film and the adhesive ensures good conformability without alteration to the colours. Colours stable over time Elongation at break, vinyl only, minimum 100 % Very low shrinkage below 0.4 % over 100 mm after 168 hours at +70 °C (+158 °F) Temperature resistance ranging from -40 °C to +90 °C (from -40 °F to +194 °F)
Adhesive	Pressure-sensitive solvent-based acrylic Peel: 1.7 kg per 25 mm after 20 minutes; dry application on glass Shear: over 200 days; 25 mm weighed at 1 kg at +50 °C (+122 °F) Initial tack: 1.5 kg on a 25 mm x 25 mm aluminium plate
Silicone liner	White silicone-coated paper 137 g/m ² with high internal cohesion Stable under hygrometric variations to ensure flat cutting Release: 20 g per 25 mm to allow cutting of letter sizes down to 10 mm (choose transfer tape appropriate for size of letters and ambient temperature).
Transfer tape	For choosing, according to application and work habits, HEXIS supplies 7 different quality levels: [paper + latex-based adhesive] [polyethylene + water-based acrylic adhesive]. [polyethylene + solvent-based adhesive] [embossed polypropylene + water-based adhesive].
For more information about the standard trial methods used, contact HEXIS Product Support Fax +33 - 4.67.48.38.79 Tel. +33 - 4.67.18.66.80	

FEATURES FOR AUTOMOBILE APPLICATIONS

Excerpts from the tests SUPTAC S5000 complying with automobile standards. Carried out by the Institute for Materials Behaviour and Aging Research and Development (*SERVOCAM*)

Shrinkage/temperature on aluminium	Duration	Values	Observation
Longitudinal	22 hours at 85 °C (185 °F)	0.76 %	Conform
Transversal	22 hours at 85 °C (185 °F)	0,2 %	Conform
Longitudinal	22 hours at 100 °C (212 °F)	1 %	Conform
Transversal	22 hours at 100 °C (212 °F)	0,3 %	Conform
Cold adhesion /peel strength	after 22 hours at 23 °C (73 °F) and 5 hours at -30 °C (-22 °F)	1.7 kg over 2.5 cm	Conform
Hot adhesion /peel strength	after 22 hours at 23 °C (73 °F) and 1 hour at 85 °C (185 °F)	1.45 kg over 2.5 cm	Conform
Cold impact	4 hours at -30 °C (-22 °F) impact on the film reverse side using a 200-g ball dropped from a 50-cm height	film does not peel off	Conform
Frictions (wearing-off resistance)	after 22-hours application, wearing by type B fabric bands rotating at 1400 r/min. during 30 min.	no visual alteration of the film	Conform
Behaviour of the adhesive on painted metal sheet (stains)	Application on painted, cooled down metal sheet after 70 hours at 85 °C (185 °F)	no migration at the junction film/coating	Conform

Resistance to cleaning agents

After application the vinyl is subject to friction by a 900-g load moving alternately during 10 seconds. A piece of fabric beneath the load is soaked in various solutions prior to the test. After the test, values are noted on a grey scale for the degradation of the vinyl as well as the resorption of the fabric.

	Duration	Values	Observation
Windscreen cleaner	after 22 hours at 23 °C (73 °F) the samples are immersed in windscreen cleaner for 1 minute, then dried for 30 minutes, then peeled off	Peel strength 1.7 kg	Conform
Hydrocarbons	after 22 hours at 23 °C (73 °F) the samples are immersed in the mix for 1 minute, then dried for 30 minutes, then peeled off	Peel strength 1.4 kg	Conform
50 / 50 mix Isooctane / Toluene	after 22 hours at 23 °C (73 °F) the samples are immersed in the mix for 1 minute, then dried for 30 minutes, then peeled off	1.37 kg	Conform
43 / 43 / 15 mix Isooctane / Toluene / Methanol	after 22 hours at 23 °C (73 °F) the samples are immersed in the mix for 1 minute, then dried for 30 minutes, then peeled off	1.35 kg	Conform
Initial tack	Immediate on glass	1.5 kg	Conform



Car wash: additives and the type of rotating brush may deteriorate the graphics. It is generally admitted that 10 automatic car washes scratch polyurethane paints; for this reason, any mechanical effect degrading the appearance of the vinyl is not covered by the warranty.



Graphics on vehicles that are cleaned with a high-pressure cleaner at a distance of less than 50 cm and a water temperature of more than 35 °C (95 °F) with unspecified additives *are not covered by the HEXIS warranty.*

SUBSTRATE PREPARATION

Any substrate must be assumed as contaminated. The cleanliness is an important criteria for the final outcome, see page 4, §1. It is essential that no humidity or condensation be trapped between the vinyl and the substrate, see page 9, § 3.

The recommended application temperature must be complied with. If in doubt about the compatibility of cleaning products and materials, a trial must be carried out. Once the surface is cleaned and dry, the vinyl must be applied immediately.

Cleaning method

Three common levels of cleaning are recommended before application.

Gentle: The most common

- HEXIS'O
- Pre Cleaner (product no.2) (powerful universal cleaning agent)
- Household alcohol
- Hand warm water with 5 % detergent
- Avoid soaps, oils and any cleaning product containing wax or silicon
- Always dry carefully (soft non-fleece pad)

Medium: with stronger cleaning products

- Final Cleaner (product no.3) on a clean cloth absorbent pad (cleaning and degreasing finishing agent)
 - Degreaser, Petrol
- Always wipe off before product evaporates (otherwise the cleaning is not effective)

Strong: only after prior testing

- Adhesive Remover (product no.1) (powerful cleaning agent)
- Acetone
- Trichloroethylene
- White spirit

Preliminary testing of substrates

In the case of already painted substrates, self-adhesive media must only be applied onto undamaged original paintwork. If the paintwork is not the original and/or is damaged, the application and the removal are at the installer's own judgement and own risk.

For an application on painted substrates, second hand PVC boards, porous surfaces or substrates of uncertain origin, the substrate must be tested for adhesion. Surface flaws are not always visible. If in doubt, we recommend the user to carry out one or all of the following tests:

Adhesion test:

Apply a Tesa® type 7476 adhesive tape or the like with a contact surface of 2.5 cm x 5 cm plus some margin to hold the strip. At a right angle pull the strip off the substrate in a single brisk movement. The adhesive must not show any traces. Repeat in different areas. HEXIS offer adhesive Tesa® 2.5 cm x 20 cm strips available on request.

Certain rolled, extruded, compressed or expanded products such as acrylics and metacrylics or foamed boards may cause bubbles due to degassing of the substrates. In these cases, we would advise to carry out a test:

Degassing test:

To verify it, use a 15 cm x 15 cm square of self-adhesive polyester or of the film to be applied. Wait for 24 hours or 2 hours at 65 °C (149 °F). The appearance of bubbles is the proof of an insufficiently degassed substrate. Repeat the same action after a few days or use the following degassing method.

Degassing method:

On polycarbonate, translucent or light diffusing metacrylate, expanded PVC ...

The purpose is to modify the surface tension of a substrate with the flame of a gas burner. Brisk horizontal and vertical passages with the flame on the entire surface (use the blue tip of the flame).

☞ Caution: Do not keep over a limited area for longer than 1 second (risk of damaging the board)

Water spray on the board should spread evenly; if it pearls off, the treatment is insufficient.

☞ The film must be applied immediately, otherwise, such a light surface treatment becomes ineffective after a few minutes.



Any bubbles due to degassing void the liability of HEXIS.

Compatibility chart for HEXIS S5000 with certain substrates

Substrate		Adhesion				Surface preparation	Prior cleaning	Wet application
		not suitable	average	good	very good			
Aluminium	raw				*	Sanding (grain 120)	Strong	
	anodised			*			Gentle	no
	Dibond				*		Gentle	
Painted metal sheet				*		Degassing and adhesion test	Gentle or medium depending on the paint	flat
Marine plywood				*		Sealed with a primer, Sanding (grain 120)	Soft cloth	no
Stainless steel					*		Strong	no
Glass					*		Strong	
Methacrylate (Altuglass, Plexiglass...)					*	Degassing test	Gentle	
Polycarbonate (Lexan, Macrolon...)					*	Degassing test	Gentle	
Rigid /foamed PVC board	Komatex			*		Degassing test	Gentle	
	Komacel			*		Degassing test	Gentle	
	Vekaplan		*			Degassing test	Gentle	
	Coplast				*	Degassing test	Gentle	
	Forex			*		Degassing test	Gentle	
Floors	Tiles				*		Strong	
	Raw concrete			*		Diluted hydrochloric acid, then water rinsing	Medium	no
	Painted			*		Degassing and adhesion test	Gentle	
Polypropylene			*				Strong	
Silicone coats		*						
Teflon®		*						
ABS		*						
Double-sided melamine				*			Gentle or Medium	
Soft plasticised PVC	Suptac, Ecotac			*			Medium	
	Banner			*			Gentle or Medium	
Soft woven PVC	Banner	*						
	Stretched canvas			*			Gentle	
PE	Tyvek®		*					
	Robuskin		*				Gentle	
Drop paper			*					no

Principal cleaning agents Always check compatibility	Procurement
HEXIS'O (gentle cleaner)	HEXIS
Pre Cleaner (product no.2) (powerful universal cleaning agent)	HEXIS
Adhesive Remover (product no.1) (powerful cleaning agent)	HEXIS
Isopropyl alcohol	drugstore
Final Cleaner (product no.3) (cleaning and degreasing finishing agent)	HEXIS
Household alcohol	drugstore
Acetone / Trichloroethylene / White Spirit / gasoline / petrol	drugstore

Note: Always comply with instructions on product label.

Resistance under total immersion

In a graduated cylinder: Adhesive vinyl applied on a 25 mm x 200 mm glass plate for 22 hours at 23 °C (73 °F). After **immersion** the sampler is dried.

	ELONGATION		ADHESIVE VALUES ON GLASS	
	Immersion time	PVC only	Immersion time	Value after drying time
Water	> 1000 h	normal	24 h	86 % after 24 h drying
Salted water	> 1000 h	normal + 40 %	24 h	86 % after 24 h drying
Ethylene glycol	24 h	normal	1 h	93 % after 30 min. drying
Engine oil	24 h, then wipe off	normal	1 h	93 % after 30 min. drying
Petrol	24 h	Normal + 9 %	1 h	10 % after 30 min. drying
Diesel	24 h	Normal	1 h	86 % after 30 min. drying
Household alcohol	24 h	Normal + 15 %	1 h	65 % after 30 min. drying
Acetone	1 h	Normal + 7 %	1 h	2 % after 1 h drying

- ☞ Fresh paint must dry for at least 7 days at 25 °C (77 °F) to ensure complete degassing. A degassing test must be carried out before applying the film.
- ☞ Old, powdery or flaky paint must be sanded and renewed before application and an adhesion test must be carried out.
- ☞ Optimum adhesion of Suptac film is achieved after 24 hours.

FILM CUTTING

Films should preferably be stored in the same environment as the cutting device.

The pressure of the cutting blade should be adjusted according to the type of film. The colour of the vinyl is determined by colouring additives that may affect the hardness of the film when cutting. Thus when a red film is cut after a white one, the pressure may need to be increased.

If the pressure is too high, the liner (silicone-coated paper) may display cuts into which the adhesive may penetrate. This may make the weeding more difficult or even lift off the liner in the cutting zone. In all cases, it is preferable to weed immediately after cutting.

Letters cutting:

The minimal height depends on the condition of the blade, the pressure and the speed of cutting. In general, a height of 10 mm is acceptable with 1.5 mm descenders, at medium speed and with a blade in good condition. Smaller letters may be achieved by lowering the speed.

A used or worn blade influences the quality of the cut and requires a much stronger pressure. The ease of weeding also depends on it. HEXIS supplies blades for the most common plotters.

Choice of transfer tape:

The size of the letters to be transferred and the temperature influence choice of transfer films or paper to be used. Small letters and low temperatures require a High Tack tape. Wet or dry application, as well as the desired adhesion strength of the tape determine the choice of a particular type of adhesive for the transfer. After weeding, the application of the tape should be followed by vigorous wiping with a squeegee, particularly on small letters.

In the case of the glossy Suptac Charcoal Grey (S5433B), the transfer is done via the HEX900 or HEX902 paper tapes.

Transfer:

With small letters, it is preferable to turn the complete sheet upside down (tape beneath, paper liner on top) and to peel off the liner while keeping the tape in flat position.

GRAPHICS APPLICATION

- ✓ To ease the operation, HEXIS supplies various plastic and felt squeegees.
- ✓ The substrate must have a temperature of at least 7 °C (45 °F). For optimum adhesion, the ambient temperature and the temperature of the substrate must range from 15 °C (59 °F) to 25 °C (77 °F).
- ✓ The minimum temperature for application must be complied with, as far as the environment and substrate are concerned. Hygrometry does not influence the application except in the case of dry application. In a cold environment, the tape should be left longer before being removed, and several days are necessary for the adhesive to achieve the final adhesion.
- ✓ The application depends on the size of the graphics, the flatness of the substrate and whether application is wet or dry. A very large graphic should be divided in vertical areas and each should be positioned on the top end using an adhesive, before complete removal of the liner.
- ✓ On slightly complex surfaces, use a thermal device and smooth with a felt-covered squeegee to achieve the conformability of the film.
- ✓ For vehicles, do not apply under no circumstances adhesive film on window seals or seals between body parts.
- ✓ Fleets of new vehicles must be carefully and completely dewaxed with soapy water under pressure and fully rinsed before applying the graphics. Repeat the operation if necessary.
- ✓ On textured or grained surfaces (grain below 150), dry application with a felt squeegee is advised while slightly heating the vinyl, if necessary.
- ✓ On glass, after a thorough cleaning, particularly of the corners and angles, the transfer application allows to firmly squeegee the graphics perimeter (sore point).
- ✓ On cold glass, condensation may be observed between the glass and the adhesive film; it is therefore advisable to heat the substrate.
- ✓ If bubbles appear during dry application, a needle can be used to pierce the film and wipe off the air; however, a cutter would weaken the film.
- ✓ In the case of wet application, the durability will essentially depend on the care taken to wipe off any water from beneath the film; otherwise the risk of bubbling remains. Use a rubber squeegee as used for window cleaning, and moisten the vinyl surface to avoid scratching. Wait for drying before removing the transfer tape.

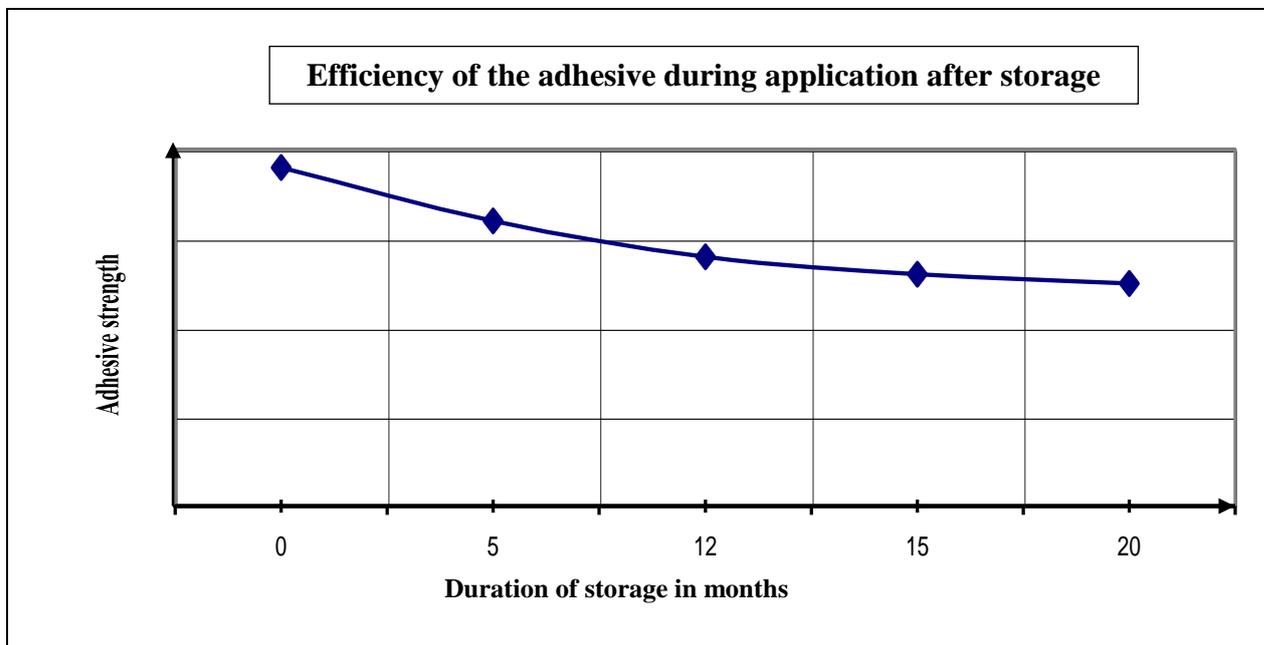


Very dark vinyls absorb the heat that cannot be reflected. Such a concentration may generate inner tensions within the glass, which may eventually break the glass. *These random phenomena are not the responsibility of HEXIS.*

- ✓ Horizontal applications such as on vehicle bonnets or vehicle roofs may after a certain period of time undergo a slight discolouration or gloss reduction compared to vertical applications. These areas under maximum exposure to sunlight and climatic conditions, are not the responsibility of HEXIS regarding the product durability.
- ✓ Application on marine plywood requires a primer and slight 120-grain sanding before dry application.
- ✓ The different types of marking such as thermal transfer, digital printing etc. are not included in the durability of the product itself.
- ✓ On tiles, the joints weaken the adhesion and make the product more fragile.
- ✓ For further information about the application of the SUPTAC film, please refer to Professionals/Data Sheets on our website at www.hexis-graphics.com.

STORAGE BEFORE USE

- ✓ Storage conditions require an ambient temperature ranging from +15 °C (+59 °F) to +25 °C (+77 °F) with relative humidity between 30 % and 70 %, without direct sunlight exposure. It is recommended to store cardboard boxes vertically or to suspend the rolls in order to avoid pressure marks on the carrying zone.
- ✓ By their nature, adhesives age more or less rapidly before application on the final surface. The adhesive strength has a tendency to weaken over the storage duration.



- ✓ This phenomenon affects the adhesive BEFORE application. We would advise not keeping products over a too long period of time and to renew your stock regularly. The maximum storage time is one year in its original packaging from the date of delivery by HEXIS. Beyond that date, the adhesive is still usable albeit with lower performance and under sole responsibility of the user.
- ✓ The storage duration of this product is 2 years, if, before application, it is stored unopened in its original packaging, at a temperature ranging from 15 °C to 25 °C (from 59 °F to 77 °F), with relative humidity between 30 % and 70 %.
- ✓ Pressure-sensitive adhesives preserve the adhesion features at the end of the storage and at the moment of application during the entire guaranteed period. Any claim questioning the adhesive shall only be considered if **accompanied with its batch number (Lot No.)**.

DURABILITY: OCEANIC/NORTHERN CONTINENTAL/MEDITERRANEAN CLIMATE

The colour pigments of vinyls influence the stability duration of colourings. The durability is confirmed by aging tests under UV-rays of SUPTAC S5000 polymeric films and under natural exposure; the durations indicated below are those where a reduction or a gradual modification of the appearance is noticeable.

These results are obtained under vertical outdoor exposure. The stated durabilities are dependent on this position up to a few degrees. Other positions accentuate the climatic influences and alterations of gloss, colour and even a slight powder effect may appear.

In the case of SUPTAC S5000 films, a South-facing exposure inclined at 45° angle may divide durability by 2.5 compared to the values stated in the table below.

Colour Range 1: White, transparent, black

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
White	White Gloss	S5001B	10	8	7	6
	White Matt	S5001M	10	8	7	6
Transparent	Clear Gloss	S5899B	5	5	4	4
	Clear Matt	S5899M	5	5	4	4
Black	Black Gloss	S5889B	10	8	7	6
	Black Matt	S5889M	10	8	7	6

Colour Range 2: Colours

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
Yellow & Orange	Pastel Yellow	S5100B	4	4	3	3
	Lemon	S5108B	5	5	4	4
	Buttercup	S5109B	5	5	4	4
	Daffodil	S5123B	4	4	3	3
	Mustard	S5136B	5	5	4	4
	Apricot	S5137B	8	7	5	4
	Orange	S5165B	4	4	3	3
	Bright Orange	S5OVIF	4	4	3	3

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
Red	Vermillion	S5179B	3	2	2	1
	Fire red	S5795B	5	5	4	4
	Tomato	S5485B	4	4	3	3
	Carnelian Red	S5797B	3	2	2	1
	Ruby	S5186B	5	5	4	4
	Cardinal Red	S5193B	5	5	4	4
	Bright Cardinal Red	S5200B	5	5	4	4
	Wine Red	S5201B	5	5	4	4
	Burgundy	S5505B	5	5	4	4
Pink	Magenta	S5214B	8	7	5	4
	Fuchsia	S5220B	5	5	4	4
	Salmon Pink	S5169B	4	4	3	3
	Skin tone	S5698B	6	5	4	3
Violet	Lilac	S5251B	7	6	5	4
	Pink Violet	S5480B	6	5	4	3
	Amethyst	S5623B	8	7	5	4
	Lavender	S5655B	4	4	3	3
	Purple	S5527B	8	7	5	4
Blue	Dark Navy	S5532B	10	8	7	6
	Navy Blue	S5295B	10	8	7	6
	Light navy blue	S5281B	10	8	7	6
	Sapphire	S5280B	5	5	4	4
	Nordic Blue	S5NORB	2	2	1	1
	Electric Blue	S5ELEB	2	2	1	1
	Reflex Blue	S5RFXB	8	7	5	4
	Cosmos Blue	S5294B	10	8	7	6
	Antique Blue	S5534B	10	8	7	6

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
Blue	Vivid Blue	S5300B	8	7	5	4
	Ocean Blue	S5005B	8	7	5	4
	Intense Blue	S5293B	10	8	7	6
	Olympic Blue	S5299B	8	7	5	4
	Hollyhock	S5278B	8	7	5	4
	Powder Blue	S5297B	8	7	5	4
	Lakeview Blue	S5298B	10	8	7	6
Green	Pistachio	S5351B	10	8	7	6
	Mint	S5332B	5	5	4	4
	Dark Jade	S5268B	8	7	5	4
	Turquoise	S5320B	10	8	7	6
	Racing Green	S5336B	10	8	7	6
	Forest Green	S5323B	5	5	4	4
	Caper Green	S5498B	10	8	7	6
	Emerald	S5348B	10	8	7	6
	Kelly Green	S5340B	6	5	4	3
	Clover Green	S5354B	9	7	6	5
	Fern	S5360B	4	4	3	3
	Kiwi	S5375B	4	4	3	3
	Acacia Green	S5VACB	4	4	3	3
	Olive Green	S5392B	6	5	4	3

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
Brown	Terra Cotta	S5167B	6	5	4	3
	Havana Brown	S5635B	4	4	3	3
	Brown	S5476B	6	5	4	3
Beige	Pale Yellow	S5607B	5	4	3	2
	Cream	S5155B	8	7	5	4
	Beige	S5461B	8	7	5	4
	Ivory	S5468B	10	8	7	6
	Magnolia	S5685B	6	5	4	3
	Eggshell	S5506B	6	5	4	3
Grey	Beige Grey	S5GBEB	2	2	1	1
	Pearl Grey	S5GPEB	8	7	5	4
	Flamingo Grey	S5517B	8	7	5	4
	Cream	S5BA01B	4	4	3	3
	Spray	S5434B	10	8	7	6
	Clay Grey	S5205B	8	7	5	4
	Oyster Grey	S5428B	10	8	7	6
	Medium Grey	S5431B	5	4	3	2
	Dove Grey	S5443B	10	8	7	6
	Mouse Grey	S5430B	10	8	7	6
	Dark Grey	S5445B	7	6	5	4
Traffic Grey	S5446B	10	8	7	6	

Colour Range 3: Metallic

Colour Shade	Colour Name	Colour Code	Durability (Years)			
			Northern & Central European Climate	Mediterranean Climate	Tropical & Oceanic Climate	Desert Climate
Metallic	Charcoal Grey	S5433B	8	7	5	4
	Gold	S5871B	2	2	1	1
	Silver	S5877B	5	4	3	2

NOTES:

Because of the great variety of substrates and the growing number of new applications, the installer must check the suitability of the media for each application. The measuring methods for the standards quoted above served as basis for the development of our own measuring methods which are available on request. Please feel free to contact us to get the latest instructions in use.

All information released originates from laboratory measurements on a regular basis. However, it does not constitute a binding warranty. The seller is not held accountable for indirectly related damages beyond the replacement value of the purchased product. All specifications are subject to potential changes without prior notice. Updates of our specifications are automatically available on our website at www.hexis-graphics.com.