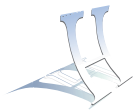


DATA SHEET PLOTTER VINYL SUPTAC
S 5000 SERIES

DESCRIPTION

The S5000 series is the highest quality film in the HEXIS 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 composed of different colours.
- ✓ Can be printed by thermal transfer for outdoor signage, buses, signposts, advertising, pictograms etc.
- ✓ Resistant to water and aggressive environments.
- ✓ Application possible at an ambient temperature from +7°C (+45°F).
- ✓ Conformable and flexible to ensure suitability for flat, slightly undulated and slightly convex or concave surfaces.
- ✓ Solvent-based adhesive inhibiting migration of plasticisers, pressure sensitive, permanent and transparent.
- ✓ Adhesive can be easily removed by using HEXIS Decoll'vit.

CHARACTERISTICS OF THE PRODUCT

Polymeric vinyl	Gloss or matt surface. Thickness 65µm. 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% Shrinkage below 0.4 % over 100mm after 168 hours at +70°C Temperature resistant –40°C to +90°C (-40°F to +194°F)
Adhesive	Acrylic solvent based pressure sensitive Peel: 1.7 kg / 25mm after 20 minutes; dry application on glass. Shear: over 200 days; 25mm weighed at 1 kg at +50°C Initial tack: 1.5 kg on 25mm x 25mm on aluminium
Silicone liner	White silicone coated paper 137g/m² with high internal cohesion Stable under hygrometric variations to ensure stay flat properties Release: 20 g/25mm to allow letters sizes down to 10mm (choose transfer tape appropriate for size of the letters and ambient temperature).
Transfer Tape	Choose according application and work habits. Hexis supplies 7 different types: [paper + latex adhesive] [polyethylene + aqueous acrylic adhesive]. [polyethylene + solvent adhesive] [embossed polypropylene + aqueous adhesive].
For more information about the test methods contact HEXIS Product Support Fax +33 - 4.67.48.38.79 Tel. +33 - 4.67.18.66.80	

CHARACTERISTICS FOR AUTOMOBILE APPLICATIONS

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

Shrinkage/temperature on aluminium	**Duration**	**Values**	**Observation**
Longitudinal	22 hours at 85°C	0.76%	Conform
Transversal	22 hours at 85°C	0,2 %	Conform
Longitudinal	22 hours at 100°C	1%	Conform
Transversal	22 hours at 100°C	0,3 %	Conform
Cold adhesion /peel	after 22 hours at 23°C and 5 hours at –30°C	1.7 kg over 2.5 cm	Conform
Hot adhesion /peel	after 22 hours at 23°C and 1 hour at 85°C	1.45 kg over 2.5 cm	Conform
Cold impact	4 hours at –30°C impact of the 200g ball from 50 cm on the reverse side	film does not peel	Conform
Wear	after 22 hours wear 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	Application on painted metal sheet cooled down after 70 hours at 85°C	no migration at the interface film/coating	Conform

Resistance to cleaning agents

After application the vinyl is subject to friction wear by a 900g 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 on a grey scale for the degradation of the vinyl are noted as well as the resorption of the fabric.

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

⚠ Car wash: additives and the type of brush may deteriorate the graphics. It is generally admitted that 10 automatic car washes affect 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 high pressure at a distance of less than 50cm and a water temperature of more than 35°C (95°F) with unspecified additives are not covered by the HEXIS warranty.

PREPARATION OF THE SUBSTRATE

Any substrate must be assumed contaminated. The cleanliness is determining for the longevity and finish. It is essential that no humidity or condensation be trapped between the vinyl and the substrate.
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.

Mild: The most common

- Hexis'O
- Household alcohol
- Hand warm water with 5% detergent
- Avoid soaps, oils and any product containing wax or silicon
- Always dry carefully (soft non-fleece fabric)

Medium: with stronger cleaning products

- Clean Hexis
- Degreaser, Petrol
  Wipe off before product evaporates (otherwise the product is not effective)

Strong: only with prior testing

- Hexis D45
- Acetone
- Trichloroethylene
- White spirit

Preliminary testing of substrates

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

For an application on painted substrates, previously used 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 carry out one or all of the following tests:

Adhesion test:
Apply a Tesa® type 7476 adhesive tape with a contact surface of 2.5cm x 5cm 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 has adhesive Tesa® 2.5cm x 5cm 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 use a 15cm x 15cm 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 a sign of the substrate having insufficiently degassed. Repeat the same action after a few days or use the following degassing method.

Degassing:
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 should cover the complete surface (use blue tip of the flame).

☞ Caution: Do not keep over a limited area for longer than 1 second (risk of damage to the board)
Water spray on the board should spread evenly; if it pearls off the treatment is insufficient.
☞ The film must be applied immediately as such 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		Prior	Wet
		not suitable	average	good	very good	preparation	cleaning	appli-cation
Aluminium	unfinished				*	Sand (grain 120)	Strong	
	anodised			*			Gentle	no
	Dibond				*		Gentle	
Painted metal sheet				*		Degassing and adhesion test	Gentle or medium according to paint	flat
Marine plywood				*		Sand (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 + rinse with water	Medium	no
	Painted			*		Degassing and adhesion test	Gentle	
Polypropylene			*				Strong	
Silicone coats		*						
Teflon®		*						
ABS		*						
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 source
Hexis'O	Hexis
Hexis D45 (strong degreaser)	Hexis
Isopropyl alcohol	drugstore
Clean Hexis (medium strength degreaser)	Hexis
Burning alcohol	drugstore
Acetone/Trichloroethylene/white spirit/gasoline/petrol	drugstore

Always comply with instructions on product label.

Resistance under total immersion
Sample: Adhesive vinyl applied on a 25mm x 200mm glass plate for 22h at 23°C.
After immersion the sampler is dried.

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

- Fresh paint must dry for at least 7 days at 25°C 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.

CUTTING THE FILM

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 silicone liner paper shows 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..

Cutting letters:
The minimal height depends on the condition of the blade, the pressure and the cutting speed. In general a height of 10mm is acceptable with 1.5mm legs, at medium speed and 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 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 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 tape. After weeding the application of the tape should be followed by vigorous wiping with a squeegee, in particular on small letters.

Transfer:
With small letters it is preferable to turn the complete sheet (tape below, paper liner on top) and to peel the liner while keeping the tape flat.

INSTALLATION OF THE GRAPHICS

- ✓ To ease the operation HEXIS supplies various plastic and felt squeegees.
- ✓ The substrate must have a temperature of min. 7°C. For best adhesion the ambient temperature and the temperature of the substrate must be between 15 and 25°C.
- ✓ The minimum temperature for application must be complied with; both as far as the environment and the substrate are concerned. Hygrometrics do 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 glue 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 sections and each should be positioned on the top end before complete removal of the liner.
- ✓ On slightly complex surfaces using a thermal device and smoothing with a felt squeegee can achieve the conformability of the film.
- ✓ On vehicles do not apply 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 the graphics are applied. 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.
- ✓ On glass corners and angles must be given particular attention while cleaning; in the same areas the squeegee should be strongly applied during application.
- ✓ On cold glass condensation may be observed between the glass and the adhesive film; it is advisable to heat the substrate.
- ✓ If bubbles appear during dry application a needle can be used to pierce the film and wipe the air; a cutter would weaken the film.
- ✓ When using wet application the durability will depend on the care taken to wipe 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 everything to dry before removing the transfer tape.

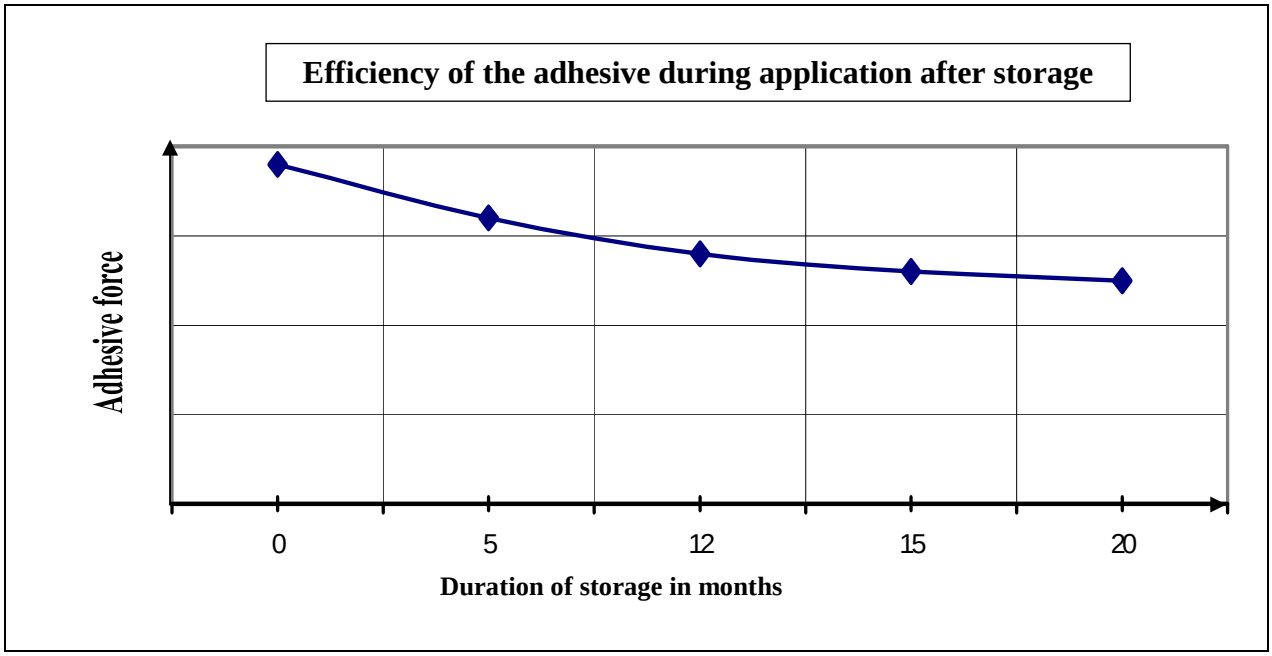
Very dark vinyls absorb the heat that is not reflected. Such a concentration may generate tensions in the glass, which may even break the glass. These accidental phenomena are not the responsibility of Hexis.

- ✓ Horizontal applications such as on vehicle bonnets or vehicle roofs may after a certain time undergo a slight discoloration or reduction in gloss compared to vertical applications. These areas are under maximum exposure to sunlight and climatic conditions and are outside the responsibility of Hexis for the durability of the product.
- ✓ Application on marine plywood requires a primer and light sanding with a 120 grain before dry application.
- ✓ The different types of marking such as hot marking, 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 www.hexis-graphics.com.

STORAGE BEFORE USE

- ✓ Storage conditions require an ambient temperature between +15°C (+59°F) and +25°C (+77°F) with relative humidity between 30% and 70% outside direct exposure to sunlight. It is recommended to store cartons vertically or to suspend the rolls in order to avoid pressure marks on the contact zone.

- ✓ By their very nature adhesives age more or less before application on the final surface. The adhesive force has a tendency to weaken over the duration of the storage.



- ✓ This phenomenon affects the adhesive BEFORE application. We would advise not to keep product indefinitely and to rotate your stock. The maximum storage time is one year in its original packing 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.

- ✓ Pressure sensitive adhesives preserve the adhesion strength at the end of the storage and at the moment of application for the entire guaranteed period. Any claim questioning the adhesive shall only be considered if **accompanied by the batch number (Lot No.)**.

DURABILITY: MARITIME/NORTHERN CONTINENTAL/MEDITERRANEAN CLIMATE

The colour pigments of vinyls influence the stability 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 indicated durabilities are dependent on this position up to a few degrees. Other positions accentuate the climatic influences and alterations of gloss, colour or even a slight powder effect may appear.
In the case of SUPTAC S5000 films a south-facing exposure inclined at 45° may divide the durability by 2.5 compared to the values indicated 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

			Durability (years)			
Colour Shade	Colour Name	Colour Code	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	10	8	7	6
	Orange	S5165B	4	4	3	3
	Bright Orange	SOVIF	4	4	3	3

			Durability (years)			
Colour Shade	**Colour Name**	**Colour Code**	**Northern & Central European Climate**	**Mediterranean Climate**	**Tropical & Oceanic Climate**	**Desert Climate**
Red	Warm Red	S5WRED	4	4	3	3
	Vermillion	S5179B	3	2	2	1
	Fire red	S5795B	5	5	4	4
	Tomato	S5485B	4	4	3	3
	Ruby	S5186B	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	10	8	7	6
	Fuchsia	S5220B	5	5	4	4
	Salmon Pink	S5169B	4	4	3	3
	Skintone	S5698B	6	5	4	3
Violet	Lilac	S5251B	7	6	5	4
	Pink Violet	S5480B	6	5	4	3
	Amethyste	S5623B	10	8	7	6
	Lavender	S5655B	4	4	3	3
	Purple	S5527B	8	7	5	4
Blue	Dark Navy	S5532B	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	S5RFX	8	7	5	4
	Cosmos Blue	S5294B	10	8	7	6
	Antique Blue	S5534B	10	8	7	6

			Durability (years)			
Colour Shade	**Colour Name**	**Colour Code**	**Northern & Central European Climate**	**Mediterranean Climate**	**Tropical & Oceanic Climate**	**Desert Climate**
Blue	Vivid Blue	S5300B	8	7	5	4
	Ocean Blue	S5005B	10	8	7	6
	Intense Blue	S5293B	10	8	7	6
	Olympic Blue	S5299B	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
	Sherwood Green	S5364B	7	6	5	4
	Emerald	S5348B	10	8	7	6
	Kelly Green	S5340B	6	5	4	3
	Clover Green	S5354B	9	7	6	5
	Apple Green	S5369B	6	5	4	3
	Fern	S5360B	4	4	3	3
	Kiwi	S5375B	4	4	3	3
	Olive Green	S5392B	6	5	4	3

			Durability (years)			
Colour Shade	**Colour Name**	**Colour Code**	**Northern & Central European Climate**	**Mediterranean Climate**	**Tropical & Oceanic Climate**	**Desert Climate**
Brown	Imitation Gold	S5245B	4	4	3	3
	Terra Cotta	S5167B	6	5	4	3
	Havana Brown	S5635B	4	4	3	3
	Caramel	S5405B	7	6	5	4
	Brown	S5476B	6	5	4	3
Beige	Pale Yellow	S5607B	5	4	3	2
	Cream	S5155B	4	4	3	3
	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	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: Metallics

			Durability (years)			
Colour Shade	**Colour Name**	**Colour Code**	**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