



HIGH PERFORMANCE FILM
SUPTAC S 5000

DESCRIPTION

The S 5000 series is the highest performance film in the HEXIS range and suitable for almost any indoor and outdoor application. 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, solvent inkjet or screen-printed 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)
- ✓ Very conformable and flexible to ensure suitability for rounded, undulated and flat surfaces or on rivets (see separate note)
- ✓ Solvent based adhesive inhibiting migration of plasticisers, pressure sensitive, permanent and transparent
- ✓ Adhesive can be easily removed by using HEXIS Decoll'Vite

CHARACTERISTICS

Polymeric vinyl

Gloss or matt surface; thickness 70µm; the combination of a polymeric film and the adhesive ensures good conformability without alteration to the colours.

Colours stable over time

Elongation at break minimum 100% (vinyl only)

Shrinkage below 0.3% over 100mm after 168 hours at +70°C

Temperature resistance -40°C to +90°C (-40°F to +194°F)

Adhesive

Acrylic solvent based pressure sensitive

Peel: 1.9kg/25mm after 20 min; dry application on glass

Shear: over 200 days; 25mm weighed at 1 kg at +50°C

Initial tack: 1.5kg on 25mm x 25mm on aluminium

Silicon liner

White silicone coated paper 137g/m² with high internal cohesion

Stable under hygrometric variations to ensure stay flat properties

Release: 20g/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 polyethylene + aqueous adhesive]

CHARACTERISTICS FOR AUTOMOBILE APPLICATIONS

Excerpts from the tests SUPTAC S 5000 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	1.7kg over 2.5cm	conform
Hot adhesion/peel	after 22 hours at 23°C and 1 hour at 85°C	1.45kg over 2.5cm	conform
Cold impact	4 hours at -30°C impact of a 200g ball from 50cm 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	1.7kg	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	1.4kg	conform
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	1.37kg	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	1.35kg	conform
Initial tack	immediate on glass	1.5kg	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 ND45
- Acetone
- Trichlorethylene
- White spirit

Preliminary testing of substrates

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 an adhesive tape Tesa® type 7476 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. 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.

☞ Caution: 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 preparation	Prior cleaning	Wet application
		not suitable	average	good	very good			
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	
Glass					✓		strong	
Methacrylate (Altuglass, Plexiglas...)					✓	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 chlorhydric 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 ND45 (strong degreaser)	Hexis
Isopropyl alcohol	drugstore
Clean Hexis (medium strength degreaser)	Hexis
Burning alcohol	drugstore
Acetone/Trichlo/white spirit/gasoline/petrol	drugstore

Always comply with instructions on product label.

Resistance under total immersion

Sampler: 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 5 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.

APPLICATION OF GRAPHICS

- ✓ To ease the operation HEXIS supplies various plastic and felt squeegees.
- ✓ 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 rounded 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 screen printing, 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.

STORAGE BEFORE APPLICATION

- ✓ Storage conditions require an ambient temperature below +30°C (+86°F) with a relative humidity of 80% 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.

Colour	Nordic climate Central Europe	Mediterranean climate	Tropical and marine climate	Desert climate
White Black gloss and mat	10 years	8 years	7 years	6 years
Other colours <i>except:</i> yellows/reds/light green/light blue	8 years 6 years	6 years 5 years	5 years 4 years	4 years 3 years
Metallics: gold silver	2 years 5 years	2 years 5 years	1 year 4 years	1 year 4 years
Transparent "etched glass"	8 years	7 years	5 years	4 years

These results are obtained under vertical exposure outdoors and the conditions of the indicated durability 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.



Z.I. Horizons Sud
34110 Frontignan
France

Tel. +33-467 18 66 80 - Fax +33-467 48 38 79

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