

TIGITAL® – PRODUCT RANGE



		substrates/applications (*pretreatment to enhance adhesion required)						UV Curing Inks
graphics and signage applications		Paper / Paperboard	Plastic foils	Acrylic glass	Glass	Metals	Melamine	
Series 135/3	Universal Ink - UV LED Cure	●	●	●	●*	●*		●
Series 135/4	UV Universal Ink – multi scanning	●	●	●	●*	●*		●
Series 135/6	UV Universal Ink – single pass	●	●	●	●*	●*		●
specific industrial applications								
Series 134/1	UV LED Outdoor Ink				●*	●*		●
Series 140/1	UV Heavy Duty Ink // UV Glass Ink				●*	●*		●
Series 140/3	UV Direct-to-Metal Ink			●	●	●	●	●
Series 140/4	UV Heavy Duty Flex Ink			●*	●*	●*		●
Series 145/2	UV Decor Paper Ink	●						
Series 150/2	UV Thermo-formable Ink		●	●				

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Series 150/3	UV 3D Inks					●*	●*			UV Curing Inks
UV Primer inks										
Series 140/11700	UV Primer Ink - Universal Glass					●				
Series 145/00001	UV Primer Ink - Rigid Substrates			●		●	●	●	●	
Series 145/00002	UV LED Primer Ink			●		●	●	●	●	
		Recommended substrates/applications								Water-Based Inks
		Food packaging*)	Paper / Paperboard	Tissue/ Napkin	Wallpaper	Plastic foils	Acrylic glass	Wood / fiber boards		
Series 147/1	Water-based Hybrid Ink	●	●	●	●	●	●	●		
Series 147/2	Water-based Paperboard ink	●	●	●	●					
Series 147/3	Water-based Latex ink	●	●	●	●	●	●	●		

*) All TIGITAL® water-based inks are **low migration** inks, compliant to the **Swiss Ordinance lists A/B** and hence usable for indirect food contact

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		Recommended substrates/applications							Solvent based inks
		Food packaging*)	Paper / Paperboard	Tissue/ Napkin	Wallpaper	Plastic foils	Acrylic glass	Glass	
Series 137/ 1 Series 137/2	Marking Inks		●	●					
Series 137/3	OPV-Inks		●		●				
Series 142	Heavy Duty Glass Inks							●	

UV Curing Inks Product description - product features		
Series 134/1	UV LED Outdoor Ink Highly UV stable	<p>Core feature: Highly outdoor stable UV ink with 8 years of UV resistance without protection coating</p> <ul style="list-style-type: none"> • UV Curing via LED lamps (wave length 395 nm) • Adhesion on a on a various number of substrates e.g. various plastic films: PE, PET, PC, PP, metal, glass, concrete, etc. • very flexible and elastic ink/print layer: <ul style="list-style-type: none"> ○ no stress whitening on the print layer, ○ no breaking/cracking of the print layer when bended ○ well balanced trade off between outstanding elasticity and quick curing of the print layer • Ink for multi scanning printers
Series 135/3	UV LED Universal Ink multi scanning	<p>Core feature: Adhesion on a various number of substrates – LED curing</p> <ul style="list-style-type: none"> • UV Curing via LED lamps (wave length 395 nm) • Excellent adhesion on <ul style="list-style-type: none"> ○ absorbing substrates: e.g. paper, cardboards, etc. and ○ non-absorbing substrates: e.g. various plastic films (PE, PET, PC, PP, etc.), aluminum, glass (under dry conditions), acrylic glass, etc. • Large color gamut (e.g. according to internal competition tests larger than SUN Chemical inks) • very flexible and elastic print layer: <ul style="list-style-type: none"> ○ no stress whitening on the print layer, ○ no breaking/cracking of the print layer when bended ○ well balanced trade off between outstanding elasticity and quick curing of the print layer • Ink for multi scanning printers
Series 135/4	UV Universal Ink multi scanning	<p>Core feature: Adhesion on a various number of substrates – mercury UV curing</p> <ul style="list-style-type: none"> • UV-Curing via standard mercury UV-lamps • Curing dose at about 500-750 mJ/cm² • Excellent adhesion on <ul style="list-style-type: none"> ○ absorbing substrates: e.g. paper, cardboards, etc. and

		<ul style="list-style-type: none"> ○ non-absorbing substrates: e.g. various plastic films (PE, PET, PC, PP, etc.), aluminum, glass (under dry conditions), acrylic glass, etc. ● Large color gamut (e.g. according to internal competition tests larger than SUN Chemical inks) ● very flexible and elastic print layer: <ul style="list-style-type: none"> ○ no stress whitening on the print layer, ○ no breaking/cracking of the print layer when bended ○ well balanced trade-off between outstanding elasticity and quick curing of the print layer ● no need for thermal- or UV after-curing/baking ● Glass printing possible: Ink delivers very good adhesion on glass under dry conditions (usage of final product in dry surroundings) in combination with UV universal glass primer ● cross edge test: GT 0 (vs. GT 1-5 for well-established competitor products / acc. to internal competitor tests) ● Ink for multi scanning printers
Series 135/6	UV Universal Ink single pass	<p>Core feature: Ink especially developed for excellent adhesion on plastic substrates</p> <ul style="list-style-type: none"> ● Curing via standard mercury UV-lamps ● Excellent adhesion on plastic substrates, e.g. PE, PET, PC, PP, etc. ● Application examples: e.g. Industrial print on packaging bands, electronic cables, etc. ● higher resistance against solvents compared to inks from competitive ink manufacturers (acc. to competitor tests carried out by final customers) ● quick curing at about 400 mJ/cm² (about 20% faster than competitor products) ● Ink for single pass printers
Series 140/1	UV Heavy Duty Ink // UV Glass Ink wet conditions	<p>Core feature: UV ink for industrial printing on glass and metal with excellent adhesion also under wet conditions (usage of final product in humid or wet surroundings)</p> <ul style="list-style-type: none"> ● Curing via standard mercury UV-lamps ● based on organic pigments ● Surface pretreatment: For excellent adhesion properties (e.g. industrial glass printing) the ink requires a 2step Pyrosil preparation of the glass surface: <u>1st step:</u> Flaming of a special silane on to the substrate (so called Pyrosil-procedure) to create a highly reactive SiOx film on the glass surface; <u>2nd step:</u> Spraying of the alcohol based TIGITAL Adhesion Promoter (518/00005 for UV-inks; 518/00004 for UV inks)

		<p>and powder coatings) on to the surface. When the primer is dry the glass can be printed with TIGITAL UV Glass Inks.</p> <ul style="list-style-type: none"> • Excellent adhesion on glass, aluminum, galvanized steel, stainless steel • Outstanding adhesion also under wet conditions: <ul style="list-style-type: none"> ○ ink layer survives > 1000 hrs in the water bath (condensation test) ○ dishwasher proof ○ ink layer will not be resolved under wet conditions • high solvent resistance for all natural and chemical influences • no need for thermal- or UV after-curing of the printed glass. • Ink for single pass printers 	
Series 140/11700	UV Primer Ink -Universal Glass	<p>Core feature: Inkjet printable primer especially developed to support adhesion of TIGITAL UV universal ink or other universal inks on glass</p> <ul style="list-style-type: none"> • The primer can be printed on regular inkjet print-heads (works like transparent ink) or can be sprayed on the substrate • Gives excellent adhesion on glass, aluminum, steel (except: stainless steel) 	
Series 140/3	UV Direct-to-Metal Ink No primer needed	<p>Core feature: Ink especially developed for excellent adhesion on glass, metal and melamine under dry conditions (usage of final product in dry surroundings) without any pre-treatment</p> <ul style="list-style-type: none"> • Curing via standard mercury UV-lamps • Excellent adhesion on rigid substrates e.g. galvanized steel, stainless steel, aluminum, melamine plates or glass under dry conditions • Ink needs no primer or pretreatment to achieve outstanding adhesion on rigid substrates • Ink for single pass and multi scanning printers 	
Series 140/4	UV Heavy Duty Flex Ink	<p>Core feature: Ink especially developed for excellent adhesion on glass, metal and melamine. Most important feature is the flexibility without losing edge switch performance</p> <ul style="list-style-type: none"> • Curing via standard mercury UV-lamps • Excellent adhesion on rigid substrates e.g. galvanized steel, stainless steel, aluminum, melamine plates • Ink for single pass and multi scanning printers 	
Series	UV Melamine Primer -	<p>Core feature: Inkjet printable primer especially developed to support adhesion of TIGITAL UV Direct-to-Metal Ink or</p>	

145/00001	Rigid Substrates	<p style="text-align: center;">universal inks on rigid materials</p> <ul style="list-style-type: none"> • The primer can be printed on regular inkjet print-heads (works like transparent ink) or can be sprayed on the substrate • Gives excellent adhesion on rigid materials e.g. melamine, glass (dry & wet conditions), aluminum, galvanized steel, stainless steel • solvent free alternative to the industrial 2step Pyrosil pretreatment • inkjet printable alternative to the industrial 2step Pyrosil pretreatment 	
Series 145/00002	UV-LED Melamine Primer - Rigid Substrates	<p style="text-align: center;">Core feature: Inkjet printable primer especially developed to support adhesion of TIGITAL UV Direct-to-Metal Ink or universal inks on rigid materials</p> <ul style="list-style-type: none"> • The primer can be printed on regular inkjet print-heads (works like transparent ink) or can be sprayed on the substrate • Gives excellent adhesion on rigid materials e.g. melamine, glass (dry & wet conditions), aluminum, galvanized steel, stainless steel • solvent free alternative to the industrial 2step Pyrosil pretreatment • inkjet printable alternative to the industrial 2step Pyrosil pretreatment 	
Series 145/2	UV Decor Paper Ink Wood decoration	<p style="text-align: center;">Core feature: Ink especially developed to survive the melamine lamination process of the wood floor panel manufacturing industry</p> <ul style="list-style-type: none"> • Curing via standard mercury UV-lamps • Adhesion on decoration paper or wood • Ink layer survives the melamine pressing process: Lamination can be done using solid melamine overlays or first impregnate the printed substrate using an aqueous melamine solution an press after drying. • No soaking effects of the ink into the decor paper, no stretching or deformation of the substrate like it is common with water-based decor inks • Better print quality than water-based inks on decor paper: better edge definition, no bleeding, immediate pinning • TIGITAL patent pending • Significantly better reliability than water-based decor inks because of much longer open time (decap time) of UV inks • Ink for single pass printers 	

<p>Series 150/2</p>	<p>UV Thermo-formable Ink Highly flexible</p>	<p>Core feature: Ink especially developed to survive thermoforming/stretching after the printing on plastic films</p> <ul style="list-style-type: none"> • Curing via standard mercury UV-lamps • Excellent adhesion on a various number of plastic films (e.g. PE, PET, PC, PP, etc.) • the ink is extremely flexible and survives thermoforming processes from 300% (= for single pass printing) to 700% (for multi pass printing) • temperature resistant up to 200°C • The ink needs temperature during the forming process (at room temperature it is not possible to form it up to 700% > e.g. no printing on balloons, rubber, etc.) • No stress whitening, no Yellowing, no breaking of the print layer when bended • Ink for single pass printers 	
<p>Series 150/3</p>	<p>3D Printing Inks</p>	<p>150/3001 UV Insulating Ink</p> <p>Core feature: Inkjet printable 3D ink with a high cross link factor and high thermal, chemical and mechanical stability</p> <ul style="list-style-type: none"> • The 3D ink can be printed on regular inkjet print-heads at elevated temperatures. • Pinning with UV-LEDs is possible • Final curing takes place with standard UV inks <p>150/3002 UV Support Ink</p> <p>Core feature: Ink is required in the 3D printing process as removable support material.</p> <ul style="list-style-type: none"> • The Support ink can be printed on regular inkjet print-heads at elevated temperatures. • Pinning with UV-LEDs is possible • Final curing takes place with standard UV inks • Inks can be removed in water (ev. slightly basic pH-value) in a super sonic bath 	
<p>Series 518/00005</p>	<p>TIGITAL Adhesion Promoter</p>	<p>Core feature: Liquid primer especially developed to form chemical bonding between glass and TIGITAL UV-Glass Inks</p> <ul style="list-style-type: none"> • To be applied after the pyrosil pretreatment of glass either by spraying, dipping or printing using mechanic valve print-head (not printable with piezo based heads) • Gives outstanding adhesion on glass and metals also under wet conditions • Ink layer without top coat or ink layer combined with powder coating top coat survives > 1000 hrs in the water bath (condensation test) 	

Waterbased Inks Product description - product features

<p>Series 147/1</p>	<p>Water-based Hybrid Ink single pass or multi scanning</p>	<p>Core feature: Low migration ink especially developed to combine advantages of water-based inks in terms of food compliance with technical advantages of UV-inks in terms of curing</p> <ul style="list-style-type: none"> • UV-curing water-based ink • Ink with good adhesion on absorbing and non-absorbing substrates including plastic films • 3step curing of the ink layer: <ol style="list-style-type: none"> 1. Pinning of the ink drop via UV LED 2. Thermal Drying of the co-solvents and wetting agents 3. Final UV-curing of the ink layer with UV mercury lamps • Low migration ink without monomers and lowest possible content of photo-initiators, hence suitable for indirect food-contact (e.g. food packaging) • Hybrid ink is compliant to the Swiss Ordinance list A/B • Hybrid ink is compliant with European standard EN71 specifying safety requirements for toys (Part 3, Part 9) and can be used for printing on wooden toys • Higher mechanical and chemical resistance than thermal curing (water-based) Latex inks • Relatively odorless compared to UV-inks • Open time suitable for single pass applications (> 20 min) • Ink for single pass an multi scanning printers
<p>Series 147/2</p>	<p>Water-based Paperboard Ink single pass or multi scanning</p>	<p>Core feature: Low migration ink especially developed to perform perfectly on cardboards or paper packaging</p> <ul style="list-style-type: none"> • Thermal and/or convection drying of the ink layer (e.g. infrared/fan combination); target temperature on the surface between 60 – 80°C • Best adhesion and excellent wetting on absorbing Inkjet Substrates – e.g. Paper and carton boxes (inkjet coated) • Low migration ink without any monomers and photo-initiators; indirect food-contact possible (e.g. for food packaging) • Paperboard ink compliant to the Swiss Ordinance list A/B, hence suitable for indirect food-contact (e.g. food packaging) • Relatively odorless compared to UV inks • Bigger color gamut than e.g. Toyo ink (according to color measurements carried out by customers) • Ink for single pass printers

<p>Series 147/3</p>	<p>Water-based Latex Ink single pass or multi scanning</p>	<p>Core feature: Low migration ink especially developed to adhere on absorbing an non absorbing substrates</p> <ul style="list-style-type: none"> • Thermal and/or convection drying of the ink layer (e.g. infrared/fan combination); target temperature on the surface between 60 – 80°C • Ink with good adhesion on absorbing and non-absorbing substrates including plastic films • Low migration ink without any monomers and photo-initiators; • Latex ink is compliant to the Swiss Ordinance list A/B, hence suitable for indirect food-contact (e.g. food packaging) • Relatively odorless compared to UV inks • Open time suitable for single pass printers (> 20 min) • Ink for single pass or multi scanning print systems
<p>Series 147/3</p>	<p>Water-based PVC Primer analog deposition</p>	<p>Core feature: water-based plasticizer migration resistant adhesion promoter for PVC wallpaper</p> <ul style="list-style-type: none"> • Thermal and/or convection drying of the primer layer (e.g. infrared/fan combination), 1 min/100°C; • Assures good adhesion on PVC substrates of Hybrid and Latex Water-based inks; • Plasticizer migration resistant; • Wet applied quantity – 4-5 g/m²; • Slight matting effect; • Withstands PVC wallpaper foaming process at 200°C.

SOLVENT BASED INKS		Product description - product features
Series 137/1 Series 137/2	Marking Inks	<p>Core feature: Special inks for marking purposes;</p> <ul style="list-style-type: none"> Series 137/1: Continuous Inkjet Inks Series 137/2: Drop-on-Demand inks (Mechanical Printheads) <p>Both Series are print on various substrates for marking purposes. The drying works thermally.</p>
Series 137/3	OPV Ink single pass or multi scanning	<p>Core feature: Special inkjet ink for Organic Solar Cells</p> <ul style="list-style-type: none"> Thermal drying after printing process required: the ink needs thermal drying at about 160°C to dry out the solvents;
Series 142	Heavy Duty Glass ink Inorganic pigments	<p>Core feature: Special glass ink solution based on inorganic pigments</p> <ul style="list-style-type: none"> Thermal curing and baking after the print process required: The ink needs thermal drying at about 200°C first to dry out the solvents; finally the printed glass needs a heat-curing in an oven at about 700 °C (2step-Drying necessary otherwise solvents would burn if immediately dried/baked at 700°C) The ink shows excellent adhesion under wet and dry conditions: The ink layer consists of glass particles which melt onto the glass surface and form a very robust and durable surface Final print is resistant against chemicals and solvents and highest temperature Special hardware setup required: The ink is based on inorganic pigments. Because of the higher sedimentation tendency of inorganic pigments print-heads with continuously recirculation procedures are recommended

