

# 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
<b>UV Primer inks</b>										
Series 140/11700	UV Primer Ink - Universal Glass					●				
Series 145/00001	UV Primer Ink - Rigid Substrates			●		●	●	●	●	
Series 145/00002	UV LED Primer Ink			●		●	●	●	●	
		<b>Recommended substrates/applications</b>								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><b>Core feature:</b> Highly <b>outdoor stable</b> UV ink with <b>8 years</b> of UV resistance without protection coating</p> <ul style="list-style-type: none"> <li>• UV Curing via <b>LED lamps</b> (wave length 395 nm)</li> <li>• Adhesion on a on a <b>various number of substrates</b> e.g. various plastic films: PE, PET, PC, PP, metal, glass, concrete, etc.</li> <li>• very <b>flexible and elastic</b> ink/print layer: <ul style="list-style-type: none"> <li>○ no stress whitening on the print layer,</li> <li>○ no breaking/cracking of the print layer when bended</li> <li>○ well balanced trade off between outstanding elasticity and quick curing of the print layer</li> </ul> </li> <li>• Ink for <b>multi scanning</b> printers</li> </ul>
Series 135/3	UV LED Universal Ink multi scanning	<p><b>Core feature:</b> Adhesion on a <b>various number of substrates</b> – LED curing</p> <ul style="list-style-type: none"> <li>• UV Curing via <b>LED lamps</b> (wave length 395 nm)</li> <li>• Excellent adhesion on <ul style="list-style-type: none"> <li>○ <b>absorbing</b> substrates: e.g. paper, cardboards, etc. and</li> <li>○ <b>non-absorbing</b> substrates: e.g. various plastic films (PE, PET, PC, PP, etc.), aluminum, glass (under dry conditions), acrylic glass, etc.</li> </ul> </li> <li>• <b>Large color gamut</b> (e.g. according to internal competition tests larger than SUN Chemical inks)</li> <li>• very <b>flexible and elastic</b> print layer: <ul style="list-style-type: none"> <li>○ no stress whitening on the print layer,</li> <li>○ no breaking/cracking of the print layer when bended</li> <li>○ well balanced trade off between outstanding elasticity and quick curing of the print layer</li> </ul> </li> <li>• Ink for <b>multi scanning</b> printers</li> </ul>
Series 135/4	UV Universal Ink multi scanning	<p><b>Core feature:</b> Adhesion on a <b>various number of substrates</b> – mercury UV curing</p> <ul style="list-style-type: none"> <li>• UV-Curing via standard <b>mercury UV-lamps</b></li> <li>• Curing dose at about <b>500-750 mJ/cm<sup>2</sup></b></li> <li>• Excellent adhesion on <ul style="list-style-type: none"> <li>○ <b>absorbing</b> substrates: e.g. paper, cardboards, etc. and</li> </ul> </li> </ul>

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

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

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

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



## Waterbased Inks Product description - product features

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

<p>Series 147/3</p>	<p>Water-based Latex Ink single pass or multi scanning</p>	<p><b>Core feature:</b> Low migration ink especially developed to adhere on <b>absorbing an non absorbing substrates</b></p> <ul style="list-style-type: none"> <li>• <b>Thermal and/or convection drying</b> of the ink layer (e.g. infrared/fan combination); target temperature on the surface between 60 – 80°C</li> <li>• Ink with good adhesion on <b>absorbing and non-absorbing</b> substrates including plastic films</li> <li>• <b>Low migration</b> ink without any monomers and photo-initiators;</li> <li>• Latex ink is compliant to the <b>Swiss Ordinance</b> list A/B, hence suitable for indirect food-contact (e.g. food packaging)</li> <li>• Relatively <b>odorless</b> compared to UV inks</li> <li>• <b>Open time</b> suitable for single pass printers (&gt; 20 min)</li> <li>• Ink for <b>single pass</b> or <b>multi scanning</b> print systems</li> </ul>
<p>Series 147/3</p>	<p>Water-based PVC Primer analog deposition</p>	<p><b>Core feature:</b> water-based plasticizer migration resistant adhesion promoter for <b>PVC wallpaper</b></p> <ul style="list-style-type: none"> <li>• <b>Thermal and/or convection drying</b> of the primer layer (e.g. infrared/fan combination), 1 min/100°C;</li> <li>• Assures <b>good adhesion</b> on <b>PVC substrates</b> of Hybrid and Latex Water-based inks;</li> <li>• <b>Plasticizer migration resistant</b>;</li> <li>• <b>Wet applied quantity</b> – 4-5 g/m<sup>2</sup>;</li> <li>• Slight <b>matting effect</b>;</li> <li>• <b>Withstands</b> <b>PVC wallpaper foaming</b> process at 200°C.</li> </ul>

SOLVENT BASED INKS		Product description - product features
Series 137/1 Series 137/2	Marking Inks	<p><b>Core feature:</b> Special inks for marking purposes;</p> <ul style="list-style-type: none"> <li>Series 137/1: Continuous Inkjet Inks</li> <li>Series 137/2: Drop-on-Demand inks (Mechanical Printheads)</li> </ul> <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><b>Core feature:</b> Special inkjet ink for Organic Solar Cells</p> <ul style="list-style-type: none"> <li><b>Thermal drying</b> after printing process required: the ink needs thermal drying at about 160°C to dry out the solvents;</li> </ul>
Series 142	Heavy Duty Glass ink Inorganic pigments	<p><b>Core feature:</b> Special glass ink solution based on inorganic pigments</p> <ul style="list-style-type: none"> <li>Thermal <b>curing and baking</b> 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)</li> <li>The ink shows excellent adhesion under wet and dry conditions: The ink layer consists of <b>glass particles which melt onto the glass</b> surface and form a very robust and durable surface</li> <li>Final print is resistant against <b>chemicals and solvents</b> and highest temperature</li> <li><b>Special hardware setup</b> 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</li> </ul>