

PIGMENTS
FOR PRINTING INKS

SCHLENK 

World of Metallics

P I G M E N T S



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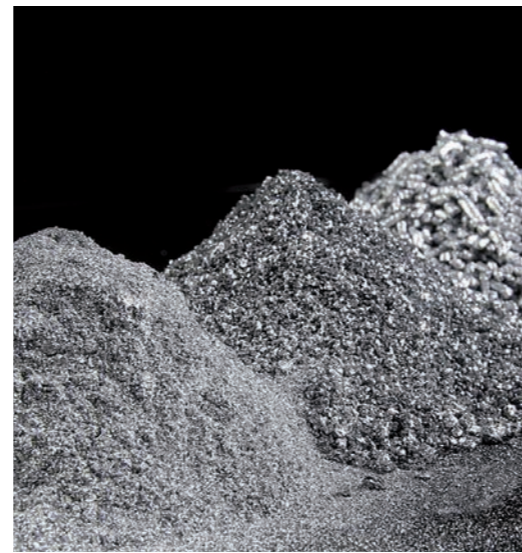
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METAPRINT® Lithogloss 102-02 Richpalegold &
METAPRINT® Lithogloss 102-07 Silber
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World of Metallics

PIGMENTS





GOLDBRONZE & ALUMINIUM PIGMENTS

APPLICATIONS

Metallic Pigments for Printing Inks

SCHLENK offers a comprehensive product range of metallic pigments, intermediate products and solutions for a wide variety of printing substrates and processes, including offset, flexo, gravure and screen printing as well as bronzing.

In the printing industry, the use of gold and silver metallic effects is very popular for increasing the quality and value of packaging (tobacco products, food and non-food articles, etc.), labels, print advertising and wall covering. The metallic effects enhance the appearance of the printed products.

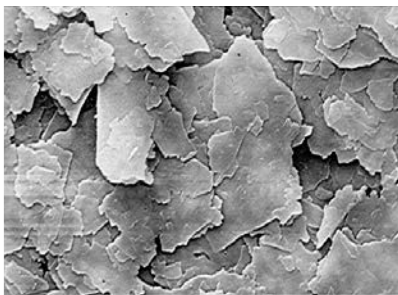
Using the appropriate printing process, a range of striking metal effects can be applied to an extensive range of media, including paper, carton, cardboard, tissue paper, plastic films, metals, glass, textiles, leather and many others.

Excellent gold and silver effects can be achieved in solvent systems and environmentally-friendly water based and UV-curable formulations.

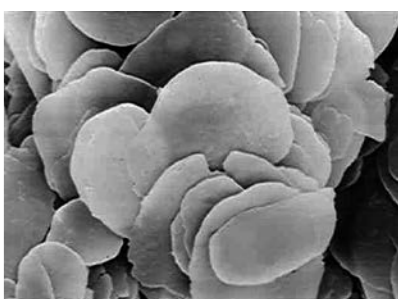
The metallic effect is achieved through specular reflection of light from a smooth pigment surface. Light scattering occurs at the flake edges and on a rough surface. Hence, as a general rule, pigment particles which are larger and with a smoother surface will yield more metallic and brilliant effects. Finer pigments give darker effects and have the advantage of superior opacity and printability.

Metallic pigments are produced by ball milling, this process produces irregularly shaped, metallic flakes (referred to as "Cornflakes"). More sophisticated ball milling produces round pigment particles having smooth surfaces ("Silverdollars"). Another process uses vapor deposited aluminium foils, whereby the extremely thin, highly-reflective metallized film is removed from the substrate and processed into pigment dispersions ("Vacuum Metallized Pigments" or "VMPs").

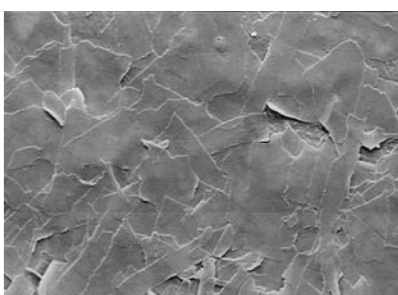
Cornflake



Silverdollar



VMP





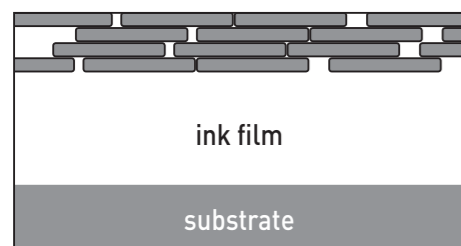
ALUMINIUM & GOLDBRONZE PIGMENTS

The lubricants used in metallic pigment production influence the wetting behavior of the metal pigments in a characteristic manner.

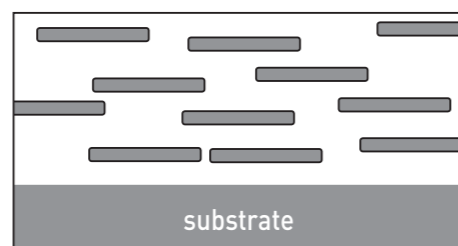
Leafing pigments orientate at the liquid/air interface to form a bright, metallic surface.

Non-leafing pigments are wetted effectively and are distributed evenly through the ink film layer.

This provides more abrasion- and tape-resistant prints which can be overprinted and laminated. In addition non-leafing pigments (especially aluminium pigments) can be also used for producing colored metallic effects through the combination with transparent color pigments.



LEAFING PIGMENT



NON LEAFING PIGMENT

Aluminium pigments are achromatic, i.e. they have no individual color while goldbronze pigments are available in a range of standard colors depending on the alloy composition:

Richgold	(Cu/Zn approx. 70/30)
Richpalegold	(Cu/Zn approx. 80/20)
Palegold	(Cu/Zn approx. 90/10)
Copper	(100% Cu)

These "natural shades" can be intensified through controlled oxidation and are available in unique metallic color tones, for example: Deep Gold, English Green, Lemon, Fire Red, etc.

The optimum pigment properties required for each product application are largely dictated by the printing process, which in turn determines the final visual effect.

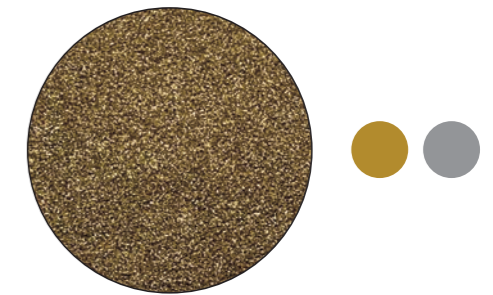
The use of dust free pastes and/or pellets is common for aluminium pigments (due to the safety risks of handling aluminium powders). A variety of solvents can be used in the pigment paste. The solvent choice is determined by the printing ink technology which is in turn dictated by the printing process and substrate. GRANDAL® and GRANDOR® pellets are prepared with a resin widely compatible with both gravure and flexo printing.

Water based systems contribute significantly to reduce the content of organic solvents (VOC - volatile organic compounds). The metal pigments used for these applications are offered as stabilized water based pastes (AQUADOR®, AQUASILBER® and AQUAMET®) or as water-free, solvent-free granules pelletized with a water based binder (GRANDOR® W and GRANDAL® W).

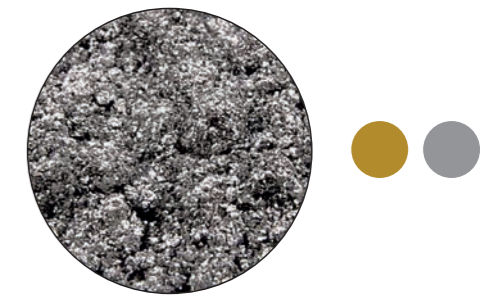
Specially formulated powders, pastes and granules are available for UV-curable systems.

Metal pigments in aluminium and goldbronze are available in various delivery forms:

Powder



Pastes



Pellets



VMP Suspensions



Pigments for Lithographic Printings Inks



Lithographic (Offset) printing is one of the most frequently used printing processes. In both casesheet fed and web offset printing high quality metallic effect inks (for gold and silver metallic appearance) can be

used to enhance packaging materials, advertising graphics, catalogs, posters, etc.

The offset printing process requires the use of extremely fine metallic pigments because large pigment particles have poor transfer, making them

difficult to print. The typical pigments used are in the range of 2 - 4 µm (gold bronze) or 4 - 10 µm (aluminium). In general: the coarser the pigment, the greater the metallic brilliance, and the finer the pigment, the higher the printability and opacity, especially at high speeds. For high speed printing presses pigments between 2 - 2.5 µm for gold bronze and 4 - 5 µm for aluminium pigments are the first choices.

High brilliance VMP pigments can be used in offset printing, with special leafing grades available to give the maximum metallic effect. SCHLENK offers a complete product range for all offset applications. This includes gold bronze powders, goldbronze and aluminium pastes and VMP slurries to meet all the requirements of the ink manufacturer. For UV- printing in offset we offer stabilized pastes in selected solvents and/or monomers.

→ Aluminium Pigments for Lithographic Inks

PRODUCTS		CHARACTERISTICS		
oilbased paste		D 50 value	Particle Shape	Outstanding features
Offset FM/1380		10	Cornflake	coarse economy grade; bright leafing pigment
Offset FM/4500		4	Cornflake	slightly larger particle size than FM6500 giving a „whiter“ appearance - the best choice for polychromatic blends
Offset FM/6500		4	Cornflake	the finest offset aluminium available, outstanding coverage and superb gloss; the best choice for high speed printing
Offset FM/9900		7.5	Silverdollar	non-leafing Silverdollar pigment for inks with outstanding overprintable properties

oilbased paste with 65% metal content

→ Vacuum Metallized Pigments for Lithographic Inks

PRODUCTS		CHARACTERISTICS		
oilbased paste	UV curable UV paste	D 50 value	Particle Shape	Outstanding features
	Decomet UV 2798/20	12	VMP	high hiding power; outstanding stability and metallic effect in UV systems
Decomet 2791/30		12	VMP	reflecting mirror-like surface; extremely bright and brilliant

oilbased paste with 30% metal content

UV curable monomer paste with 20% metal content



→ Goldbronze Pigments for Lithographic Inks

PRODUCTS			CHARACTERISTICS	
powder	oilbased paste	UV curable paste	D 50 value	Outstanding features
Offset 6026	Offset FM/6026		3.7	economical offset pigment with good value in use
Offset 6229	Offset FM/6229		2.7	excellent offset pigment with very good all-round performance
Offset 6234	Offset FM/6234		2.3	excellent offset pigment with very good gloss & brilliance performance
Offset 6327	Offset FM/6327	Offset UV/6327	3	best brilliance; combined with outstanding intense and clear color strength
Offset 6340	Offset FM/6340		2	the finest goldbronze offset available; outstanding coverage and superb gloss - the best choice for high speed printing
Offset 6434	Offset FM/6434		2.5	impressive sharp details with high colorintensity are possible

100% fine goldbronze powder

mineral oil paste typically with 88% metal content

UV curable monomer paste with 85% metal content

Available Color Shades: Richgold; Richpalegold; Palegold. Offset 6229 also available in copper shade

Pigments for Gravure & Flexographic Printing Inks

Flexographic and gravure printing provides the best metallic effects on printed items. Gravure printing is preferred for very high volume print runs and where achieving the most brilliant metallic effect is of high importance. Gravure printing process is primarily used for carton board, flexible packaging and wall coverings.

Flexographic printing is typically used for shorter print runs than gravure with applications such as film and paper packaging, wrapping paper, tissues, narrow-web labels, corrugated board and wallpaper.

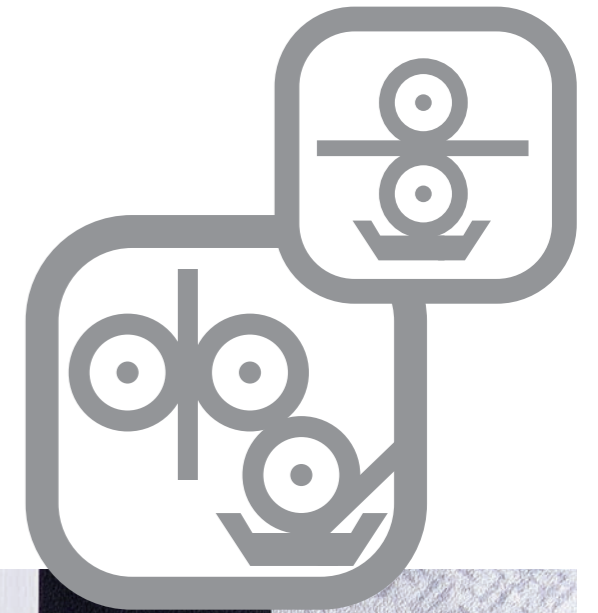
For both flexographic and gravure printing, medium to fine particle size metallic pigments are recommended to achieve high quality print effects with outstanding brilliance:

- Goldbronze pigments: 4 – 10 µm
- Aluminium pigments 6 – 18 µm
- Vacuum Metallized Pigments (VMPs): 10 – 14 µm

The low viscosity of gravure inks allows VMPs to demonstrate their full visual potential. Reverse printing on polyester film will deliver a mirror finish

and printing VMPs on paper and board by gravure now regularly replaces foil board and foil blocking in many print applications. Attractive colored metallic effects can also be achieved by blending transparent pigments or dyes with VMPs to achieve a wide range of colored metallic shades, including excellent imitation gold effects.

SCHLENK offers a complete range of powders, pastes, dispersions and pellets for solvent based, water based and UV-curable systems.



→ Aluminium Pigments leading for Gravure & Flexographic Inks

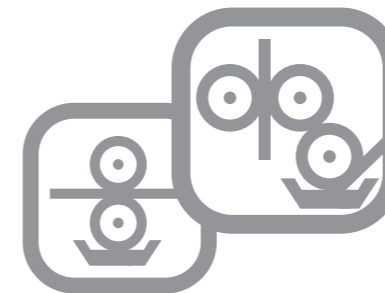
PRODUCTS					CHARACTERISTICS			
solvent based		water based		UV curable	D 50 value	Particle Shape	Outstanding features	
powder	paste	pellet	paste	pellet				pellet/paste
PP/980	PM/990		Aquasilber LPW/980		17	Cornflake	large particle size for extra metallic brilliance	
PP/1180	PM/1190	Grandal 1180	Aquasilber LPW/1180		13	Cornflake	good coverage and printability from mid sized particles	
PP/1380	PM/1390	Grandal 1380	Aquasilber LPW/1380		10	Cornflake	fine pigment grade gives high coverage and printability	
Powdal 170XB		Grandal 170		Grandal W/170	Grandal 170	6	Cornflake	extra fine aluminium pigment for exceptional coverage and transfer but retaining excellent brilliance
Metaface 2140	PM/2140	Grandal 2140	Aquasilber LPW/2140		Metaface UV-TE/2140	13	Cornflake	refined pigment for high brilliance, coverage and print performance
	methoxypropanol paste with 65% metal content	pellet with 95% metal content and 5% resin	stabilized water based paste containing 65% metal content	water solutable pellet with 80% metal content	pellet containing 95% metal content or UV curable paste			

All metallic pigments in powder form are available as pastes as well different solvents are possible on request.

→ Aluminium Pigments non leafing for Gravure & Flexographic Inks

PRODUCTS			CHARACTERISTICS				
	solvent based		water based		D 50 value	Particle Shape	Outstanding features
	paste	pellet	paste	pellet			
Alumet	ET/1700	Grandal 1700	Aquamet NPW/1700	Grandal W/1700	18	Cornflake	large particle size gives higher metallic effect
Alumet	ET/1800	Grandal 1800			14	Cornflake	good coverage and printability from mid sized particles
Metaface		Grandal 140			13	Cornflake	high coverage and nice metallic effect for non leafing cornflake pigment
Alucar	ET/2900	Grandal 2900	Aquamet NPW/2900	Grandal W/2900	11	Cornflake	fine pigment grade gives higher coverage and improved printability
Alushine	ET/6900	Grandal 6900			15	Silverdollar	mid sized Silverdollar pigment with high brilliance and full non leafing properties
Alushine	ET/7600	Grandal 7600			13	Silverdollar	thick Silverdollar with very white appearance but low hiding power
Alustar	ET/8500	Grandal 8500	Aquamet NPW/8500	Grandal W/8500	15	Silverdollar	very good tinting behavior; high in brilliance and coverage
Alustar	ET/9600	Grandal 9600		Grandal W/9600	13	Silverdollar	thin Silverdollar with best fulltone silver effect and high brilliance and coverage
Alustar	ET/9800	Grandal 9800		Grandal W/9800	8.5	Silverdollar	outstanding very thin and fine Silverdollar with extraordinary tinting behavior
	ethylacetate paste with 60 - 70% metal content also available as methoxypropyl-alcohol paste	pellet with 80 or 95% metal content and 20 or 5% resin	stabilized water based paste containing 60% metal pigment	stabilized water based pellet containing 70 - 80% metal pigment			

different solvents upon request



→ Vacuum Metallized Pigments for Gravure & Flexographic Inks

PRODUCTS			CHARACTERISTICS		
solvent suspension	water based suspension	UV curable suspension	D 50 value	solvent	Outstanding features
	Decomet 1050/10		12-15	water	VMP suitable for water based inks
Decomet 1004/10			12-15	ethyl acetate	Vacuum Metallized Pigment with white appearance
Decomet 2004/10			12-15	ethyl acetate	standard grade pigment for mirror-like results; good tinting behavior
Decomet 2008/10			12-15	methoxypropyl acetate	standard grade pigment for mirror-like results; good tinting behavior
Decomet 2104/10			10-11	ethyl acetate	standard grade foil replacement pigment for mirror-like results; small particle size for improved print performance
Decomet 2108/10			10-11	methoxypropyl acetate	standard grade foil replacement pigment for mirror-like results; small particle size for improved print performance
		Decomet UV 2798/20	11-13	acrylate monomer*	mirror effect pigment for UV systems supplied in 100% UV monomer paste
Decomet 3004/10			11-14	ethyl acetate	metallic look; foil replacement pigment for mirror-like results
Decomet 3008/10			11-14	methoxypropyl acetate	metallic look; foil replacement pigment for mirror-like results
Decomet 3104/10			10-11	ethyl acetate	increased coverage; foil replacement pigment for mirror-like results; small particle size for improved print performance
Decomet 3108/10			10-11	methoxypropyl acetate	increased coverage; foil replacement pigment for mirror-like results; small particle size for improved print performance
Decomet 3109/10			10-11	n-propyl acetate	increased coverage; foil replacement pigment for mirror-like results; small particle size for improved print performance
Decomet 3504/10			9-11	ethyl acetate	increased coverage; extremely brilliant platinum effect combined with lower viscosity developed for gravure printing inks
Decomet 3508/10			9-11	methoxypropyl acetate	increased coverage; for screen inks with high mesh numbers for fine details & mirror like surface effects
Decomet 4004/10			11-14	ethyl acetate	extra high coverage; dark „Chrome“ effect Vacuum Metallized Pigment
Decomet 4008/10			11-14	methoxypropyl acetate	extra high coverage; dark „Chrome“ effect Vacuum Metallized Pigment

different solvents and/or plasticizers upon request

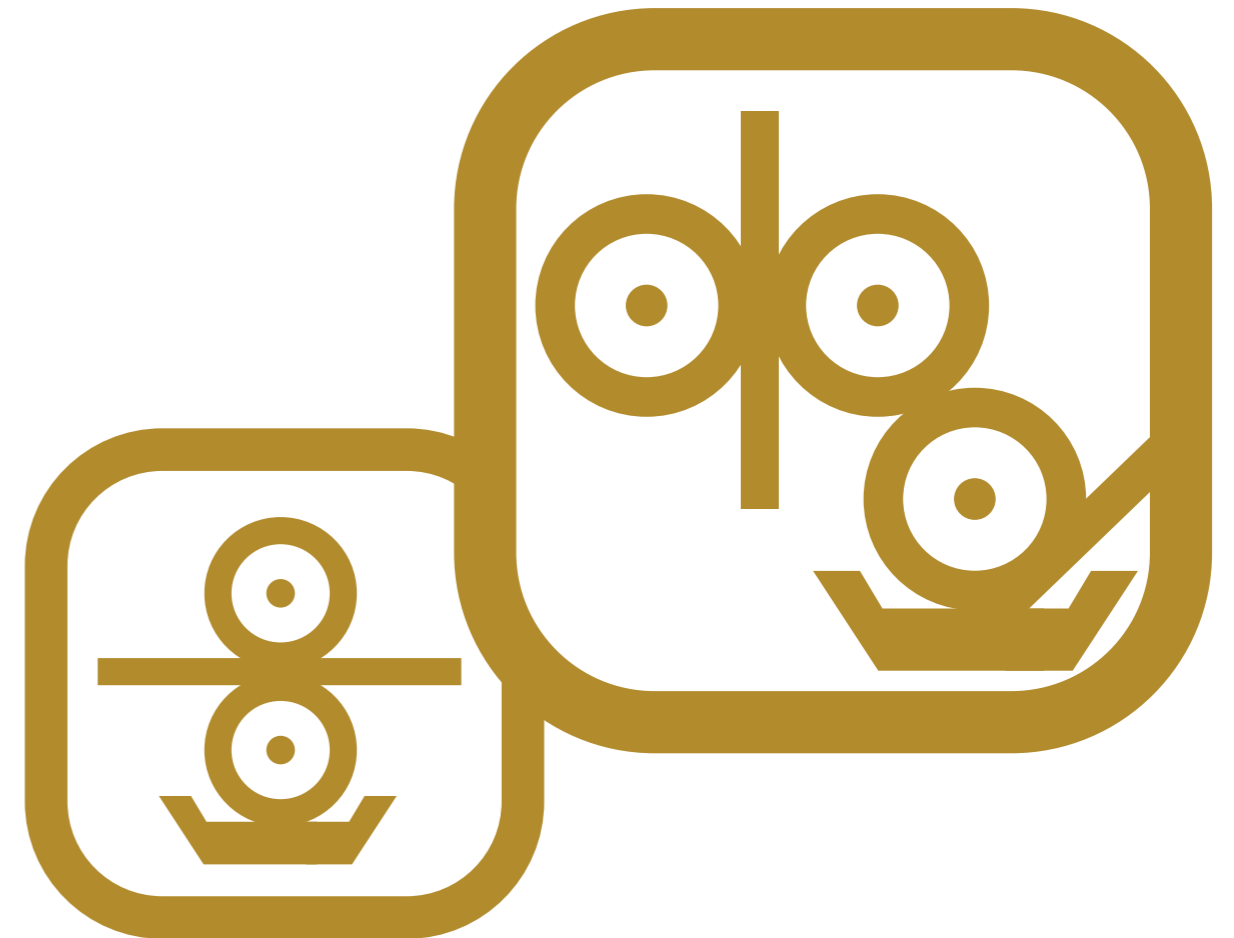
recommended rate of pigmentation for Gravure and Flexo Printing Inks: approx. 20 - 40%

*TMP (EO)₃ TA

→ Goldbronze Pigments for Gravure & Flexographic Inks

PRODUCTS						CHARACTERISTICS	
powder	solvent based		water based		UV curable	D 50 value	Outstanding features
powder	paste	pellet	paste	pellet	paste		
Multiprint 4030			Aquador 4030			8.5	cost efficient grade with good value in use
Multiprint 4117	ET/4117		Aquador 4117			9.5	brilliant economy grade for gravure and flexographic printing
Multiprint 4120	ET/4120		Aquador 4120			8	good all-round performance economy grade for gravure and flexographic printing
Multiprint 4160	ET/4160		Aquador 4160		UV/4160	5	high coverage; improved transfer economy grade for gravure and flexographic printing
Multiprint 4220	ET/4220	Grandor 4220	Aquador 4220	Grandor W/4220		9	improved color strength; coverage and high brilliance for gravure and flexo printing - also available in outstanding oxidized color shades!
Multiprint 4270		Grandor 4270	Aquador 4270			4	superfine liquid ink grade bronze powder; very high coverage with good metallic effect
Multiprint 4310			Aquador 4310			10	this pigment offers very clean; bright metallic appearance
Multiprint 4320	ET/4320	Grandor 4320	Aquador 4320	Grandor W/4320		9	premium Multiprint grade for outstanding brilliance: sophisticated production control creates superior appearance effects, product consistency and optimized printability
Multiprint 4330	ET/4330	Grandor 4330	Aquador 4330	Grandor W/4330		8	premium Multiprint grade for outstanding brilliance: sophisticated production control creates superior appearance effects, product consistency and optimized printability
Multiprint 4350	ET/4350	Grandor 4350	Aquador 4350	Grandor W/4350		6	premium Multiprint grade for outstanding coverage/brilliance combination: sophisticated production control creates superior appearance effects, product consistency and optimized printability
Multiprint 4360		Grandor 4360	Aquador 4360		UV/4360	5	high coverage and color strength with superior metallic brilliance
		Grandor 426 nl				9	non leafing bronze pigment for solvent gravure and flexographic printing, giving lamination properties and high rub resistance
	ethylacetate paste with 88% metal content; different solvents like isopropanol upon request	pellet with 95% metal content and 5 % resin	stabilized water based paste containing 70% metal content	stabilized water based pellet	UV curable paste		

Available Color Shades: Richgold; Richpalegold; Palegold
 4220 also available in special color shades: Englishgreen, Deepgold, Firered, Maron, Lemon
 4120 and 4320 also available in Copper





Pigments for Screen Printing Inks

The main benefit of screen printing is the ability to print on a wide range of substrates, many of which cannot be printed on by any other method.

Therefore, screen printed metallic effects are found on all media in common use, including glass, self-adhesive films, cardboard packaging, textiles, papers, plastics, leather goods and metals.

Screen printing offers the greatest versatility with metallic pigments because a wide range of particle sizes up to 55 µm can be processed. The use of relatively coarse metallic pigments enables the most brilliant metallic and sparkle effects to be achieved. SCHLENK offers a wide range of powders, pastes and pellets to achieve a wide variety of effects with all screen printing processes.

→ Aluminium Pigments leafing for Screen Printing Inks

PRODUCTS			CHARACTERISTICS		
solvent based powder	water based paste	UV curable paste	D 50 value	Particle Shape	Outstanding features
PP/780	Aquasilber LPW/780		20	Cornflake	coarse leafing aluminium pigment
PP/980	Aquasilber LPW/980		17	Cornflake	coarse leafing aluminium pigment; also suitable for gravure and flexo printing
PP/1180	Aquasilber LPW/1180		13	Cornflake	leafing aluminium pigment; also suitable for gravure and flexo printing
PP/1380	Aquasilber LPW/1380		10	Cornflake	fine leafing aluminium pigment; also suitable for gravure and flexo printing
Metaface 2140	Aquasilber LPW/2140	Metaface UV-TE 2140	13	Cornflake	high brilliant leafing aluminium pigment; also suitable for gravure and flexo printing; chrome like effects

pure leafing metal pigments
 stabilized water based pigment paste with 65% metal content
 UV curable paste with 65% metal content

All metallic pigments in powder form are available as pastes as well different solvents and/or plasticizers upon request



→ Aluminium Pigments non leafing for Screen Printing Inks

PRODUCTS			CHARACTERISTICS			
solvent based powder	solvent based paste	solvent based pellet	water based paste	D 50 value	Particle Shape	Outstanding features
Powdal 320 n.l.	Alubright 3200		Aquamet NPW/3200	56	Silverdollar	very coarse sparkling aluminum pigment
Powdal 340 n.l.	Alubright 3400		Aquamet NPW/3400	34	Silverdollar	coarse Silverdollar with nice sparkling effect
	Alumet 1500	Grandal 1500	Aquamet NPW/1500	22	Cornflake	flake pigment with good metallic appearance
	Alumet 1700	Grandal 1700	Aquamet NPW/1700	18	Cornflake	finer flake with good overall performance
	Alucar 2600	Grandal 2600	Aquamet NPW/2600	24	Cornflake	light & bright pigment; good tinting properties
	Alucar 2900	Grandal 2900	Aquamet NPW/2900	11	Cornflake	fine pigment with a high gloss and metallic appearance
	Alubright 3250			47	Silverdollar	extra coarse pigment for special effects (high sparkle)
	Alushine 6900	Grandal 6900		15	Silverdollar	medium fine Silverdollar pigment for all high value applications
	Alushine 7600	Grandal 7600		14	Silverdollar	thick Silverdollar with very white appearance but low hiding power
	Alustar 8500	Grandal 8500	Aquamet NPW/8500	15	Silverdollar	exceptional tinting behavior (imitation gold), superior in brilliance
	Alustar 9400			18	Silverdollar	thin large Silverdollar with outstanding metal effect

paste in white spirit + aromatics 60 - 70% metal content
 pellet with 80 or 95% metal content and 20 or 5 % urea aldehyde resin
 stabilized water based paste with 60 - 65% metal content

All metallic pigments in powder form are available as pastes as well different solvents and/or plasticizers upon request

→ Vacuum Metallized Pigments for Screen Printing Inks

PRODUCTS			CHARACTERISTICS		
solvent suspension	water based suspension	UV curable suspension	D 50 value	solvent	Outstanding features
	Decomet 1050/10		12-15	water	foil replacement pigment giving mirror-like results, whiter shade
Decomet 1008/10			12-15	methoxypropyl acetate	Vaccum Metallized Pigment with extra white appearance
Decomet 2008/10			12-15	methoxypropyl acetate	standard grade foil replacement pigment for mirror-like results
Decomet 2010/10			12-15	methoxypropanol	standard grade foil replacement pigment for mirror-like results; excellent tinting behavior
		Decomet UV 2798/20	11-13	acrylic monomers*	mirror effect pigment available in UV compatible slurry; stabilized for UV systems
	Decomet 2033/20		12-15	butyl glycol	standard grade VMP in special high pigmentation ratio and high boiling solvent
Decomet 3010/10			11-14	methoxypropanol	increased coverage; deeper metallic look foil replacement pigment for mirror-like results
Decomet 4010/10			11-14	methoxypropanol	high coverage foil replacement pigment; strong, dark metallic appearance for chrome effect
Decomet 4033/10			11-14	butyl glycol	high coverage foil replacement pigment; strong, dark metallic appearance for chrome effect
Decomet 4077/10			11-14	3-methoxy-3-methyl-butylglycol (MMB)	high coverage foil replacement pigment; strong, dark metallic appearance for chrome effect
Decomet 4277/10			6-8	3-methoxy-3-methyl-butylglycol (MMB)	extra fine dark metallic pigment for very fine details and fine and sharp lines
Decomet 4210/10			6-8	methoxypropanol	extra fine dark metallic pigment for very fine details and fine and sharp lines
Decomet 5010/10			11-14	methoxypropanol	outstanding coverage; darkest „Chrome“-effect available for Vaccum Metallized Pigments
Decomet 5033/10			11-14	butyl glycol	outstanding coverage; darkest „Chrome“-effect available for Vaccum Metallized Pigments
Decomet 5077/10			11-14	3-methoxy-3-methyl-butylglycol (MMB)	outstanding coverage; darkest „Chrome“-effect available for Vacuum Metallized Pigments

different solvents and/or plasticizers upon request
recommended rate of pigmentation for screen printing inks: approx. 40 - 60% slurry

*TMP (EO)₃ TA



→ Goldbronze Pigments for Screen Printing Inks

PRODUCTS				CHARACTERISTICS		
solvent based powder		coated powder powder	water based paste	UV curable paste	D 50 value	Outstanding features
Luminor 2210		Constant 2210/N	Aquador 2210		50	economy grade for very coarse screen printings; very good brilliance and metal effect
Luminor 2250		Constant 2250/N	Aquador 2250		35	economy grade for coarse screen printings; good brilliance and metal effect; also available in oxidized color shades
Luminor 2550			Aquador 2550		35	premium grade for coarse screen printings; outstanding brilliance and metal effect
Luminor 2580			Aquador 2580		20	premium grade for medium screen printings; outstanding brilliance, color strength and metal effect; also available in outstanding oxidized color shades!
	Unicoat 3050		Aquador 3050		12	high brilliance standard grade for fine sreen printings; better brilliance and color strength than the finer 4117
		Multiprint 4160	Aquador 4160	UV/4160	5	high coverage; improved transfer
		Multiprint 4220	Aquador 4220		9	high brilliance for very fine screen printings; increased classification gives improved color strength and print performance; also available in outstanding oxidized color shades!
		Multiprint 4310	Aquador 4310		10	this pigment offers very clean; bright metallic appearance
standard coarse pigment range	standard pigment range	standard fine pigment range	coated pigments for stability in aggressive binder systems	stabilized water paste with 70% metal content	UV curable paste	

All metallic pigments in powder form are available as pastes as well. Different solvents and/or plasticizers upon request
Available Color Shades: Richgold; Richpalegold; Palegold; Copper 2210, 2250, 2580 and 4220 also available in oxidized color shades (Englishgreen, Deepgold, Firered etc.)

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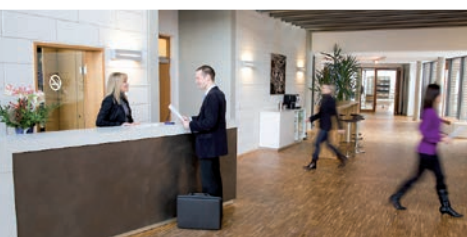
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