



The expert in metallic pigments and powders

Metallic pigments for the printing industry

The use of metallic pigments in printing inks provides an eye catching effect and makes all advertisements/printed items with gold and silver stand out. AVL has since 1937 over the years continuously improved its range of gold bronze, copper, and aluminium pigments for screen printing, gravure, flexo, and offset processes. The metallic pigments produced by AVL for the printing inks industry excel on product performance while remaining conform with all legislative demands. The range of AVL products is available worldwide through the distribution network.



Metallic pigments for screen printing

Screen printing gives the advantage to print on a very wide range of surfaces such as paper, cardboard, plastic, leather, textile, metal. Very performing metallic pigments provide an improvement in gloss and metallic effect which are further enhanced when using coarse metallic pigments with a D50 up to 40-50µm. In order to avoid the clogging of the screen mesh at any time, it is recommended to use grades with a D90 value which is 3 times smaller than the mesh size.

Gold bronze (Rich gold, Rich pale gold, Pale gold) and copper pigments for screen printing

Powders	Pastes	Particle size			Optical Characteristics	
		D10	D50	D90	Brilliance	Coverage
2500	2500/DI/85-15	16	42	78	★★★★★	★★★
3000	3000/DI/85-15	15	40	79	★★★★★	★★★
36	36/DI/85-15	10	28	58	★★★★★	★★★
3900	3900/DI/85-15	12	31	54	★★★★★	★★★
4000	4000/DI/85-15	4	19	43	★★★★★	★★★★
5000	5000/DI/85-15	5	15	37	★★★★★	★★★★
6000	6000/DI/85-15	3	12	25	★★★★	★★★★
9000	9000/DI/85-15	3	9	20	★★★★	★★★★★
13000	13000/DI/85-15	2	7	16	★★★	★★★★★
FT	FT/DI/85-15	1	3	7	★★	★★★★★

* hexylene glycol

Aluminium pigments for screen printing

Powders	Pastes	Particle size			Optical Characteristics	
		D10	D50	D90	Brilliance	Coverage
O6	O6/DI*/80-20	16	58	135	★★★★★	★★★★
O8	O8/DI/80-20	13	45	110	★★★★★	★★★★
880	880/DI/80-20	9	32	78	★★★★★	★★★★
8880	8880/DI/80-20	6	21	55	★★★★	★★★★
8980	8980/DI/80-20	4	14	42	★★★★	★★★★★
O24	O24/DI/80-20	3	10	30	★★★★	★★★★★
76000	76000/DI/80-20	2	9	24	★★★★	★★★★★
O30	O30/DI/80-20	2	8	20	★★★★	★★★★★
O32	O32/DI/80-20	2	7	20	★★★★	★★★★★
80000/A	80000/A/DI/80-20	2	7	20	★★★★	★★★★★

* hexylene glycol

User recommendations for screen printing

Indicative Formulation

- Gold bronze/Copper/Aluminium pigments: 6 - 10%
- Binder: 90 - 94%
- Suggested water based binder: metallic clear LFW (sun chemicals)

How to Formulate

1. Add maximum 10% of water to lower viscosity.
The addition of a crosslinker may be required.
2. Mix the pigment gradually to binder using a slow rotation mixer (50 rpm).
3. After printing, dry and cure for 3 minutes at 160° Celsius.

Note on the formulation

- Use a binder with a neutral PH or low acidity degree for optimal stability results.
- Ammonia and derivates will attack the pigment and lower the metallic effect.
- A coarse screen should be used to avoid clogging.
- The metallic printing paste should be applied last of all colours.

Particle Size of Metallic Pigments

The D90-particle size of metallic pigments needs to be at least three times smaller than the size of each square of the screen mesh.

Note on the process

Gold bronze/Copper/ Aluminium pigments for screen printing on textile are usually applied last after all the other colours; this is done:

1. to prevent the metallic pigment from being taken away with the next screen while the coating is not fully dry yet;
2. to retain an optimal metallic effect, which will not be the case if the coating with gold bronze/copper/aluminium pigments is printed over with other colours.



Metallic pigments for gravure/flexo printing

Metallic pigments are widely used in gravure/flexo printing processes for its special effects. A touch of gold or silver on decorative products such as wallpaper covering, on food label or any other packaging will make any products stand out. Metallic effects of the highest quality are available for these processes.

Gold bronze (Rich Gold, Rich Pale Gold, Pale Gold) and copper pigments for gravure/flexo printing

Conventional		Water based	Particle size			Optical Characteristics	
Powders	Pastes	Aquastab pastes	D10	D50	D90	Brilliance	Coverage
9000	9000/IPA*/85-15	9000/PM8B/80-20	3	9	20	★★★★★	★★★★★
13000	13000/IPA/85-15	13000/PM8B/80-20	2	7	16	★★★	★★★★★

* isopropyl acetate / also available in ethyl acetate

Aluminium pigments for gravure/flexo printing

Conventional		Water based	UV based	Particle size			Optical Characteristics	
Powders	Pastes	Aquastab pastes	Pastes	D10	D50	D90	Brilliance	Coverage
8980	8980/EA*/80-20	8980/PM9B**/65-35	8980/UV4***/66-34	4	14	42	★★★★★	★★★★★
O24	O24/EA/80-20	O24/PM9B/65-35	O24/UV4/66-34	3	10	30	★★★★★	★★★★★
76000	76000/EA/80-20	76000/PM9B/65-35	76000/UV4/66-34	2	9	24	★★★★★	★★★★★
O30	O30/EA/80-20	O30/PM9B/65-35	O30/UV4/66-34	2	8	20	★★★★★	★★★★★
O32	O32/EA/80-20	O32/PM9B/65-35	O32/UV4/66-34	2	7	20	★★★★★	★★★★★
80000/A	80000A/EA/80-20	80000/PM9B/65-35	80000/UV4/66-34	2	7	20	★★★★★	★★★★★

* ethylacetate / other solvents ie isopropylacetate(IPA)/methoxy-propanol(PM) also available

** methoxypropanol

*** tridecanol +UV stabilizers

User recommendations for gravure/flexo printing, conventional systems

Indicative Formulation

- Aluminium : 20%
- Binder : 80%

- GoldBronze/Copper : 30%
- Binder : 70%

How to Formulate

1. Make first a pre-dispersion with the recommended aluminium /Gold bronze /Copper pigment.
2. The obtained liquid dispersion is then to be mixed gradually to the binder using a slow rotation mixer (50rpm).
3. Add remainder quantity of solvent and eventually other additives.

Note on the formulation

- Use binders with a low degree of acidity (neutral) to improve the stability of the ink.
- Aggressive binders (i.e. nitrocellulose) can provoke a reaction of the metallic pigment in the binder.
- When using aggressive binders, keep the quantity of binder to a minimum and increase the solvent loading.
- Using a high rotation mixer may break the particles and as a result lower the shine and metallic effect.

User recommendations for gravure/flexo printing, water based systems

Aquastab grades are recommended for one pack water based systems with shelf life requirements

Indicative Formulation

Gold bronze/Copper

- Aquastab grade : 35%
- Water : 10%
- Binders : 55%

Aluminium

- Aquastab grade : 20%
- Water : 10%
- Binders : 70%

Note

Use binders and additives of a neutral PH for optimal stability results.

How to Formulate

1. Add a small quantity of water to Aquastab Gold bronze- /Copper-/Aluminium paste and mix until pre-dispersion is homogeneous.
2. Add predispersion to binder using a slow rotation mixer (50RPM).
3. Add remainder quantity of water and eventually other pre-dissolved additives.



Metallic pigments for offset printing

Metallic pigments in offset inks need to be very fine to ensure good transfer on the roller system as well as good coverage.

Gold bronze (Rich Gold, Rich Pale Gold, Pale Gold) and copper pigments for offset printing

Powders	Pastes	Particle size			Optical Characteristics	
		D10	D50	D90	Brilliance	Coverage
FT	FT/IS4*/85-15	1	3	7	★★	★★★★★★

* mineral oil

Aluminium pigments for offset printing

Powders	Pastes	Particle size			Optical Characteristics	
		D10	D50	D90	Brilliance	Coverage
O30	O30/IS4*/80-20	2	8	20	★★★★	★★★★★
O32	O32/IS4*/80-20	2	7	20	★★★★	★★★★★
80000/A	80000A/IS4*/80-20	2	7	20	★★★★	★★★★★

* mineral oil

User recommendations for offset printing, oil based systems

Indicative formulation	
Bronze /Aluminium	45%/20%
Binder	50%/75%
Dryer	2%
Wax paste (polyethylene)	3%