



The expert in metallic pigments

# Metallic pigments for coatings

*Metallic pigments are used in a wide variety of coating applications.*

*The AVL pigments are well known for their very performing metallic effects as well as functional performance in different fields :*

*Can coating, Industrial coatings, Aerosols, Powder coatings, ...*



## Metallic pigments for can coatings

Aluminium grades are used to conceal imperfections of the metal in the coating of food and beverage cans. Only very fine aluminium pigments are suitable because of the very thin coating as well as the high coverage required .

### Aluminium pigments for can coatings

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

\* methoxypropanol also available in solvent naphtha

### User recommendations for can coating

The AVL range of fine aluminium pigments (powders and pastes) is most suited for the can coating requirements , in epoxy- phenolic and other formulations .

The properties required including the particle size range , metallic effect, coverage , and electrical conductivity are optimal .

Other solvents /carriers than methoxypropanol (PM) such as solvent naphtha can be made available on request .

#### Note

Using a high rotation mixer may break the particles and as a result lower the shine and metallic effect.



## Metallic pigments for industrial coatings

The metallic effect finishes (special effects) combined with the excellent hiding power have resulted in the use of aluminium and gold bronze pigments for a wide variety of industrial coatings, including consumer goods, interior design, floor coverings ...

### Gold bronze and copper pigments for Industrial coatings

Available in Rich Gold, Rich Pale Gold, Pale Gold and Copper shades

Powders	Pastes	Water based Aquistab Pastes	Particle size			Optical Characteristics	
			D10	D50	D90	Brilliance	Coverage
2500	2500/WS/85-15	2500/BG8B**/80-20	16	42	78	★★★★★	★★★★
3000	3000/WS/85-15	3000/BG8B/80-20	15	40	79	★★★★★★	★★★★
36	36/WS/85-15	36/BG8B/80-20	10	28	58	★★★★★	★★★★
3900	3900/WS/85-15	3900/BG8B/80-20	12	31	54	★★★★★★	★★★★
4000	4000/WS/85-15	4000/BG8B/80-20	4	19	43	★★★★	★★★★
5000	5000/WS/85-15	5000/BG8B/80-20	5	15	37	★★★★	★★★★
6000	6000/WS/85-15	6000/BG8B/80-20	3	12	25	★★★★	★★★★
9000	9000/WS/85-15	9000/BG8B/80-20	3	9	20	★★★★	★★★★
13000	13000/WS/85-15	13000/BG8B/80-20	2	7	16	★★★	★★★★★
FT	FT/WS/85-15	FT/BG8B/20	1	3	7	★★	★★★★★★

\* mineral spirits/also available in solvent naphtha

\*\* butylglycol + stabilizers

## Aluminium pigments for Industrial coatings

Conventional		Water based	UV based	Particle size			Optical Characteristics	
Powders	Pastes	Aquastab Pastes	Pastes	D10	D50	D90	Brilliance	Coverage
O2	O2/WS*/70-30	O2/BG9B**/65-35	O2/UV4***/66-34	28	86	180	★★★★★	★★★★★
O4	O4/WS/70-30	O4/BG9B/65-35	O4/UV4/66-34	23	76	165	★★★★★	★★★★★
O6	O6/WS/70-30	O6/BG9B/65-35	O6/UV4/66-34	16	58	135	★★★★★	★★★★★
O8	O8/WS/70-30	O8/BG9B/65-35	O8/UV4/66-34	13	45	110	★★★★★	★★★★★
880	880/WS/70-30	880/BG9B/65-35	880/UV4/66-34	9	32	78	★★★★★	★★★★★
8880	8880/WS/70-30	8880/BG9B/65-35	8880/UV4/66-34	6	21	55	★★★★★	★★★★★
8980	8980/WS/70-30	8980/BG9B/65-35	8980/UV4/66-34	4	14	42	★★★★★	★★★★★
O24	O24/WS/70-30	O24/BG9B/65-35	O24/UV4/66-34	3	10	30	★★★★★	★★★★★
76000	76000/WS/70-30	76000/BG9B/65-35	76000/UV4/66-34	2	9	24	★★★★★	★★★★★
O30	O30/WS/70-30	O30/BG9B/65-35	O30/UV4/66-34	2	8	20	★★★★★	★★★★★
O32	O32/WS/70-30	O32/BG9B/65-35	O32/UV4/66-34	2	7	20	★★★★★	★★★★★
80000/A	80000A/WS/70-30	80000/A/BG9B/65-35	80000/A/UV4/66-34	2	7	20	★★★★★	★★★★★

\* mineral spirits/also available in solvent naphtha

\*\* butylglycol + stabilizers

\*\*\* tridecanol + stabilizers

## User recommendations for Industrial coatings, conventional systems

### Indicative Formulation

Bronze/Aluminium: 5-10%

Binder: 95-90%

### Suggestion

Suggested binder: paraloid B66 acrylic binder (Dow Construction Chemicals) in butylacetate ratio 30/70.

### How to Use

1. Mix a small quantity of solvent to the bronze / aluminium grades to obtain a homogeneous pre-dispersion.
2. Add pre-dispersion gradually to binder using a slow rotation mixer (50 rpm)
3. Spray formulation at 20 seconds Zahn 2 or Ford 4.stems-

### Note

The diameter of the spray nozzle should be at least three times larger than the dimension of the largest particles.

## User recommendations for Industrial coatings, water based systems

### The Aquastab range of AVL Aluminium and bronze Pastes

The Aquastab range of AVL aluminium and bronze pastes was developed to provide increased stability in water based systems.

#### Pre-dispersion

The Aquastab range of leafing pastes is available in a range of three carriers: methoxypropanol / butylglycol/ and a very low VOC carrier: methoxyproxypropanol; We do recommend in all cases to first mix the Aquastab grades in a pre-dispersion of, as following:

1. Add a small quantity (up to 10% of the total formulation) of water to the paste.
2. Mix with a slow rotation mixer max. 50RPM until a homogeneous mix is obtained.
3. Add the binder and other additives and more water (in case recommended).

### Indicative Formulation

1. Prepare vehicle:
  - 78,90% Hybridur 580 of Air Products (urethane/ acrylic hybrid base)
  - 0,20% Kelzan AR Xanthan gum thickener.
  - 13,90% water (keep a small quantity of water for the pre-dispersion of the paste).
  - 7% coalescent glycol ether dpnb. Viscosity will be around 18 sec. Zahn 3, PH will be about 8.2
2. Add between 5-10% of the aquastab paste (pre-dispersed with water) to the vehicle and adjust viscosity. Dapro DF 1161 defoamer from Elementis can be used if necessary.
3. Sieve formulation before spraying to eliminate all potential agglomerates.

#### Note

Aquastab 80000A/PM9B/65-35 (pasted in methoxypropanol) is also used when high opacity and smooth finish is required.

### Coatings with a Very High Brilliance i.e. Covers of Textile

Grades for industrial coatings, water based

#### Qualities

Aluminium	
Aquastab 04/PM9B/65-35	(pasted in methoxypropanol)
Aquastab 06/PM9B/65-35	(pasted in methoxypropanol)
Aquastab 08/PM9B/65-35	(pasted in methoxypropanol)

#### Note

The combination of fine and coarse aluminium grades (i.e. ratio 80% 80000A and 20% 06) will provide a sparkling effect .



## Metallic pigments for aerosol spray cans

### Gold bronze and copper pigments for aerosol spray cans

Available in Rich Gold, Rich Pale Gold, Pale Gold and Copper shades

Conventional		Water based	Particle size			Optical Characteristics	
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FT	FT/WS/90-10	FT/PM8B/85-15	1	3	7	★★	★★★★★★

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\* mineral spirits/also available in solvent naphtha

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### User recommendations for aerosol spray cans, conventional systems

A first rule for the use of metallic pigments in aerosol spray cans is that opening of the nozzle should be at least 3 x as large as the D90 particle size of the metallic pigment in the formulation .

Metallic pigments Pastes for aerosol spray cans tend to have a very high solid content to reduce the quantity of solvent in the formulation (ie AVL Rich Pale gold 36/WS/90-10).

### User recommendations for aerosol spray cans, water based systems

The AVL range of Aquastab products (in methoxypropanol or butylglycol) is very well suited for the requirements of water based systems .

When preparing formulations with the Aquastab range of products , please ensure that the Aquastab paste first is pre-dispersed with some water or alcohol in order to ensure an homogeneous mix prior to adding the rest of the formulation.

#### General note

Please ensure that only agitators of a low rotation (50RPM) are being used, as high speed agitators tend to break the metallic particles and reduce the metallic effect after application.

The diameter of the spray nozzle should be at least three times larger than the dimension of the largest particles.



## Metallic pigments for powder coatings

The use of metallic pigments in powder coating applications has certain advantages as there are less compatibility issues with the other (dry) components when preparing the formulation.

Please refer to the user recommendations which contains tips and guidelines when using AVL metallic pigments.

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5000	5	15	37	★★★★★	★★★★★
6000	3	12	25	★★★★★	★★★★★
9000	3	9	20	★★★★★	★★★★★
13000	2	7	16	★★★	★★★★★
FT	1	3	7	★★	★★★★★★

\* isopropyl acetate also available in ethyl acetate

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O30	2	8	20	★★★★	★★★★★
O32	2	7	20	★★★★	★★★★★
80000/A	2	7	20	★★★★	★★★★★

## User recommendations for powder coatings

The AVL metallic pigments are best suited for the free blending process in order to keep an optimal metallic effect and brilliance. Any extrusion or milling of the pigment with monomer/polymer will break the pigment particles and reduce the metallic effect and other properties as a result.

The pigment can be mixed directly in the drum containing the monomer at the required 2-5% concentration.

Generally, finer grades are used to ensure a smooth and homogeneous texture of the substrate to be coated.

Aluminium pigments will withstand the curing temperature of 180°C .

The color of bronze pigments will be affected when the exposure to a temperature higher than 100°C is longer than 5 minutes. We recommend in such case to reduce the exposure in time when items are cured at a temperature higher than 100°C, until the optimal compromise is found between the curing temperature and time of exposure.