

## THE APPLICATION OF DISPERSING AGENTS

ACAT distributes a number of dispersing agents from Münzing Chemie. I want to introduce some fields of application of our various products.

First of all I want to deal with pigments and the dispersing process, primarily with the dispersion and stabilisation of the pigments in aqueous solutions. The key criteria are particle size and the specific surface of the different pigments and fillers. Some of the most important products are presented in table 1.

The dispersing process consists of three stages. First is the wetting of the pigment surface, thereby the adsorbed air is displaced from the particle surface. Then the pigment agglomerates are destroyed by mechanical shear forces.

Finally, the dispersion is stabilised to prevent a further agglomeration of the particles (see table 2). For mechanical dispersion dissolvers or mills are used.

The following parameters are the decisive factors for the dispersing properties of the pigments

- density
- chemical composition
- production process
- crystal structure

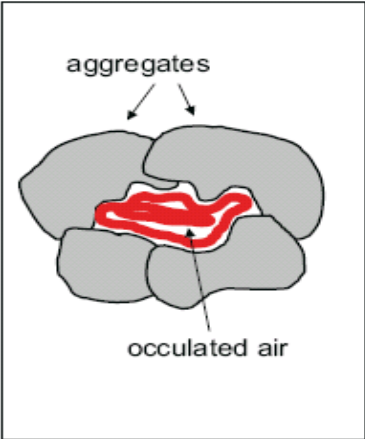
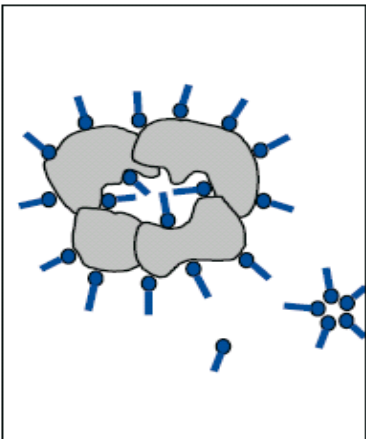
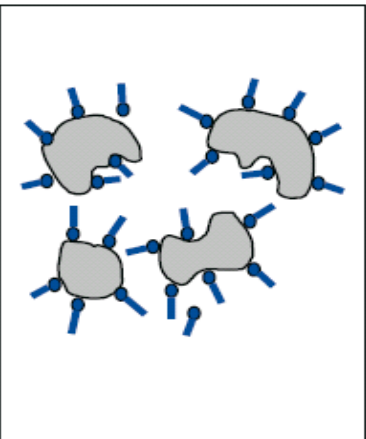
Table 1

### Particle sizes and surfaces

Dispersing Agents

	Particle size (µm)	Surface (m <sup>2</sup> /g)
<b>Inorganic Pigments and Fillers</b>	0,3 – 5,0	5 – 20
- Calcium Carbonate		3 – 8
- Titanium Dioxide	0,3 – 1,0	8 – 15
- Standard Iron Oxide Red	0,1 – 1,0	
<b>Organic Pigments</b>	0,05 – 1,0	50 – 100
- Phthalo Cyanine Blue	0,06 – 0,1	30 – 120
<b>Carbon Blacks</b>	0,05 – 0,5	30 – 1600
- furnace black	0,05 – 0,1	15 – 50
- gas black	0,005 – 0,03	100 - 1000
<b>Transparent inorganic pigments</b>		
- transparent Iron Oxide Red	0,001 – 0,01	500 - 5000

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Table 2 Dispersing process		Dispersing Agents
 <p>agglomerates in powderous form</p>	 <p>wetted agglomerate</p>	 <p>dispersed Pigment</p>

- size of particles
- surface treatment
- surface conditions

The dispersing agents have to meet the following requirements:

- wetting > displacement of air and humidity
- support of the grinding process > short dispersing time, optimal degree of grinding
- stabilisation of the dispersion > colour intensity, shine
- reduction of the viscosity of the grind > high charge of the pigments, viscosity
- good compatibility with resins > no flocculation or coagulation, wide range of possible applications
- no influence on coatings > water repellence, coating properties.

The stabilisation of the dispersion is based on several effects depending on the dispersion agent used. It may be either an electrostatic stabilisation, where the charge of the dispersing agent plays an essential part, or a steric stabilisation, where the chemical construction and the molecular weight of the dispersing agent are the key factors. If the wrong agent is used problems may occur:

- Bad dispersion
- agglomerates or aggregates will remain in the colour
- rub – out effects occur
- a low colour intensity
- Flocculation of the already settled ground pigment
- loss of shine, settling, bad flow behaviour
- Incompatibility of the binding agent
- reduced covering capacity, bad flow behaviour

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Our supplier Münzing Chemie, offers a large number of laboratory tests for the selection of the most suitable agent and we can offer this service also to our customers. Our sales team will be happy to advise you on the optimal use of our products.