Sample Preparation

for the Laser Particle Sizer ANALYSETTE 22

Sample preparation

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It is always astounding that the market for highly precise, fully automatic analytical instruments is permanently growing, while no emphasis is placed on the equally important sample preparation or sampling.

One of the most common mistakes during analysis is already made during the sampling stage and drawn into the analytical procedure right from the beginning. Again and again, it surprises process technicians how often samples are drawn carelessly and how the achieved analysis results are readily accepted.

Initially the capabilities of the measuring instrument are often doubted when repeat measurements deviate, but the source of the error is deeper though: in an inhomogeneous sampling.

Therefor the results are only reproducible if the analysed sample ***represents*** the goods to be tested with a high degree of exactness, i.e. the sample taken can be equated with the entire batch.

1. Sample division

The sample for the **Laser Particle Sizer ANALYSETTE 22** (approximately 200 mg – 1 g) shall correspond in the contained particle type and particle distribution with the entire batch of material.

The **Rotary Cone Sample Divider LABORETTE 27** is very well suited for the division of dry laboratory samples or suspensions, since different dividing heads with different division ratios can be selected. Depending on the division head up to 3000 dividing steps per minute can be achieved.

Possible division: 1:8, 1:10 and 1:30

Example: a laboratory sample of 50 ml (g) respectively 100 ml (g), could initially be divided with the dividing head 1:10 and then with the dividing head 1:30, so that for the Laser Particle Sizer ANALYSETTE 22 required amount of 200-400 mg is available.

Now the **representative** sample will be deglomerated.

2. Sample preparation

Via pre-tests it must determined in which manner the sample material can be moistened and dispersed.

The liquid should possibly completely and spontaneously wet the solid matter.

The additional ultrasonic support (if possible with maximum power) in general reduces the dispersion duration.

- The particles of the solid matter shall be individually and free of agglomerates in the suspension.
- The dispersion condition must be *stable* during the entire measurement, coagulating / flocculating of the particles may not occur.
- Coagulating in a suspension can be recognized by a slight, slushy bottom deposit, which will swim in the sample glass at slight movements of the glass, as a second phase respectively layer and displays a *cloudlike* shape.
- Floating of the sample material on the surface of the liquid is a sign of non-wetted sample material, i.e. the already added share of dispersants like tensides/ wetting agents or salts is too low.
- The sample may not be destroyed during the dispersion, respectively comminuted. With thin, platelet shaped material like mica, kaolin, clay and inorganic salts this is especially important.

  Here it is also recommended to paste a small sample amount on a specimen holder with a little bit of liquid and wetting agent. Now under the microscope the particle spectrum and the maximum particle size can be determined.

  After the finished dispersion it is also microscopically checked if the coarse particles are still present or were destroyed.
- The vehicle liquid/ measuring liquid must in all cases have a smaller, max. equal specific weight (density) than the solid material to be measured.
- The sample may not partially dissolve, dissolve or swell!

2.1 Dispersion

Unproblematic samples, which submerge without any great effort directly into the surface of the water and possess no large amount of fine share, are added to the dispersion unit as a *solid material* with a spatula portion by portion and after a brief ultrasonic treatment/ dispersion (30-60s) measured reproducibly.

Shows the conducted *double measurement* too large differences in the particle size distribution it may be attributed to several reasons:

- pump speed too low – the coarse material deposits
- the agitator speed is too great – air bubbles are created, respectively air is stirred in
- dispersion duration is too brief

- Increasing fine share
  - Longer ultrasonic treatment necessary
  - Addition of dispersion aids
  - Fine particles stick to the measuring cell glass
  - Clogging due to coarse particle >2 mm
  - Coarse material deposits: specific weight too high

- Seemingly coarser appearing curve
  - Sample swells or flocculates
  - Sample agglomerates
  - Sample is magnetic

- Declining coarse- and fine range
  - Sample dissolves
  - Beam absorption drops

Additionally faulty measurements due to jammed or bent hose connections can occur.

Samples hard to disperse may display the following characteristics: static charge (for example plastics), adhesive forces or cohesive powers – samples tend to conglutinate/ agglutinate – (for example clays, soil samples, kaoline), magnetism, hydrophobic characteristics – water repellent molecule components (for example drugs, medications, toner, graphite, titanium dioxide, waxes), coagulation (for example clays, kaoline, chalk, gypsum).

a) *Static charge respectively also hydrophobic characteristics*:
Here a spatula amount of the material should be added to a small 50 ml Erlenmeyer flask and then at first 1 (up to 2) drops of a wetting agent (surfactant or diluted surfactant solution) added, then mixed into a paste until the sample is completely wetted. Water is added drop by drop and stirred. The now created suspension (approximately 20 - 30 ml) is dispersed in an ultrasonic bath.

If the sample is already inside the dispersion unit and floats on top of the surface, the sample can be wetted as follows:
With a glass rod or with the tip of a spatula, a *small* drop of the wetting agent (for example Dusazin 901, Teepol, Tween 80 or dish soap) is added/ touched on the surface of the liquid and distributed. Immediately it can be seen, that the formed skin on the surface breaks open and the fine portion enters the suspension.

b) *Adhesive powers:*
are *clinging* powers of the particle. A reduction of these surface powers can be obtained by creating on the boundary phase areas from solid/ liquid, adsorption layers from surface-active agents or macromolecules. It is considered a covering, a guarding or masking of the solid material respectively wetting. For this reason in most cases for example tetra-Na-diphosphat (sodium pyrophosphate: Na4P2O7) or poly sodium approximately at 0.5-1% are utilized.

c) *Cohesive powers and magnetism:*
The effects of the forces of attraction between atoms or molecules of a body are described as cohesive power or polarity respectively magnetic characteristics. The magnetic characteristics are difficult to eliminate: with only slight magnetism a highly viscous liquid like for example ethylene glycol or a glycerine/ water mixture may be used or the sample is heated above several 100°C.
This is hardly possible in a laboratory and seldom realisable. Therefor are such materials with a high degree of magnetism are not suitable for the particle size analysis.

d) *Coagulation:*
is the flocculation of a sample caused by the agglomeration of colloid particles in a suspension. This can happen with too great amounts of solids or an unfavourable ph-range. By adding several drops of undiluted acid (for example hydrochloric acid) prior to adding the sample!! for the acidly range or through diluted lies (for example caustic lye, ammonia or even soda solution) in the alkaline range, may the ph-value be lowered respectively increased, so it counteracts the reaction of the sample (for example with chalk, kaolin, hydrated lime and clay). Suitable are here also Na2HPO4 (alkaline) or KH2PO4 (acidy) as a 0.1-1% solution.

2.2 Tips and Tricks

The larger the fine share of a sample, the greater is the dispersion effort. A necessary ultrasonic treatment lasting several minutes (or even longer) should be conducted in an external ultrasonic bath.

Here it is recommended to add to a 50 ml Erlenmeyer flask a spatula tip full (approximately 0.5-1 g) of sample and via simple wetting adding approximately 20 ml of the measuring liquid + the dissolved/ mixed dispersion aid (surfactant).
We recommend when utilizing surfactants those with low foam tendencies like for example Dusazin 901.

After briefly shaking the Erlenmeyer flask, it is fastened with laboratory clip inside the ultrasonic bath so the inner level of liquid is below the surface of the liquid of the ultrasonic bath.

After during the pre-tests determined deagglomeration period, the necessary suspension amount for the measurement will be added with a shaking motion via a pipette into the dispersion unit of the Laser Particle Sizer ANALYSETTE 22.

Is the needed amount of solids exactly known, it may be weighed directly into the Erlenmeyer flask and after the dispersion the *complete* contents can be conveyed with a wash bottle, so no separation due to sampling with a pipette occurs.

With a few small tricks difficult samples like for example fly ash, sulphur, coal, plastics or pigments can be quickly dispersed even in water.

The sample is mixed with ***one*** drop of surfactant and after adding **one to two** drops of water with a glass stirrer or spatula mixed to a *paste*. Due to the relatively high share of surfactant compared to the share of water the cavitation is reduced and the sample quickly wetted.

After further addition of several drops of water and stirring at the same time it can be checked if not already wetted particles are swimming on top of the surface of the liquid.

Now the suspension is diluted down to approximately 20-30 ml and deagglomerated in the ultrasonic bath.

When using simple surfactants like dish soap it often occurs that when *pasting* and mixing the sample "foam" evolves which after the dispersion swims on top of the surface and is traversed into the particle sizer.

A too high stirring intensity pulls the foam into the measuring circuit and *"coarse particles"* are measured which are not present.

In order to avoid this "faulty measurement" it is possible to destroy the *"foam"* inside the Erlenmeyer flask: the tip of a glass stirrer is dipped into *n-butanol* so the glass stirrer is just wetted but no drops are recognizable.

By slightly touching the surface of the foam it collapses and the suspension can easily be analysed for particle size.

An additional possibility – with poor wetting – would be the addition of 2 to 3 drops of alcohol (for example ethyl alcohol) directly on the dry laboratory sample, which immediately absorbs the alcohol like a sponge. Now again water and a wetting agent can be added and dispersed accordingly.

The user, working with the "Small Volume Wet Dispersion Unit" of course has the possibility to utilize alcohol, alkanes, high-boiling benzines or other organic liquids.

It should be mentioned, that the Small Volume Wet Dispersion Unit is **not** explosion protected – please select the corresponding liquids – and only operate in well ventilated areas.

The exchange of the measurement liquid for example alcohols to other organic liquids is relatively easy, since many liquids can be mixed easily amongst each other.

The compatibility of solvents with the connective hoses should also be kept in mind. The seals in the measuring cell and the connective hoses are made of Viton.
Acetone (ketones), acetates and enamel thinner cannot be used.

The *resistance lists* available from hose manufacturers contain for the most common elastomers a rating of the chemical resistance against various operating mediums (liquids).

After a conducted measurement with the ANALYSETTE 22 it should become habit to *directly* rinse

the measuring system in order to avoid an unnecessary “depositing” or “adhering” of particles in the measuring circuit and especially on the measuring cell.

An „in-between rinsing“ with a surfactant is very helpful.

Residue on the measurement cell may be caused by tap water respectively limy water. Either it should be switched to distilled water or the measurement cell has to be cleaned from time to time.

The lime residue is removed in a few minutes by rinsing with 10% hydrochlorid acid.
Afterwards it should be rinsed twice with regular water.

On the following pages you find a list of materials with the suitable dispersion liquids and additives. Please note the list is only available in German. Should you have questions please contact the FRITSCH laboratory: **gerber@fritsch.de**

Materials and suitable measuring liquids

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Ackerboden (s.a.Boden, Erde)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Natriumoxalat	0,67
		Wasser	Ammoniakwasser	5,8 Vol. %
Aktivkohle (s.a.Kohle)	2,0	Wasser	Ammoniakwasser	5,8 Vol. %
		Isopropanol	-	-
		Wasser	Tetranatriumpyrophosphat	o.A.
		Wasser	Natriumlinoleat	o.A.
		Wasser	Natriumoxalat	o.A.
Alaunerde	1,8	Wasser	-	-
		Wasser	Natriumtartrat	1,0
		Wasser	Natriumoxalat	ohne Angabe
		Wasser	Natriumhexametaphosphat	1,0
		Wasser	Salzsäure	ohne Angabe
		Tetrachlorkohlenstoff	-	-
Alaunerdezement		Ethylenglycol	Cobaltchlorid	ohne Angabe
Alkalisalze		Leinöl + Xylol	-	-
		n-Butylamin	-	-
		Cyclohexanon	-	-
		Cylohexanol	-	-
		n-Butanol	-	-
Aluminium •	2,7	Tetrachlorkohlenstoff	-	-
		Wasser + 50 Vol.% Ethylenglycol	-	-
		Wasser	-	-
		Wasser	Natriumhexametaphosphat	o.A.
		Wasser	Natriumtartrat	o.A.
		Wasser	Natriumoxalat	o.A.
		Wasser + Ethylenglycol	Trinatriumphosphat	o.A.
		Ethylenglycol	Trinatriumphosphat	o.A.
		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Chloroform	-	-
		Isopropanol	-	-
		Wasser	Salzsäure	pH = 3
Aluminiumfluorid		Ethylenglycol	Calciumchlorid	0,05 - 0,5
		Ethylenglycol	Strontiumchlorid	0,05 - 0,5
		Ethylenglycol	Cobaltchlorid	0,05 - 0,5
Aluminiumhydroxid	2,3...2,4	Wasser	-	-
		Wasser	Saccharose	40 %
Aluminiumoxid (s.a.Tonerde, Korund	3,5...4,1	n-Butylamin	-	-
		Tetrachlorkohlenstoff	-	-
		Wasser	Natriumhexametaphosphat	0,5 - 1,0
		Wasser	Natriumcarbonat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Natriumtartrat	1,0
		Wasser	Salzsäure	pH = 3
		n-Butanol	-	-
		Cyclohexanon	-	-
		Leinöl + Xylol	-	-

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Aluminiumsilicid		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Trinatriumphosphat	o.A.
Ammoniumperchlorat	2,0	Isobutanol	-	
		Benzol	Naphthalinstearosulfosäure	einige Tropfen
Anhydrit		Methanol	-	-
Anthracenpaste	1,2	Wasser	Trinatriumphosphat	o.A.
Anthracit	1,4...1,7	Wasser	Trinatriumphosphat	0,5
		Wasser	Natriumalkylnaphthalen-sulfonat	1,0
Antimonoxid	3,8...5,3	Wasser	Tetranatriumpyrophosphat	0,3 - 1,5
		Wasser	Kalium/Natriumhexameta-phosphat	0,5
		Wasser	Natriumhexametaphosphat	o.A.
Apatit		Wasser	Trinatriumphosphat	7,8
		Wasser	Aluminiumchlorid	0,24
Arsenate (nicht wasser-löslich)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Arsenige Säure		Cyclohexanon	-	-
		n-Octanol	-	-
Arsentrioxid	3,8	n-Octanol	-	-
		Cyclohexanol	-	-
		Petroleum	Ölsäure	1,8
Asche (s.a.Flugasche, Kraft-werksasche)		Wasser	Tetranatriumpyrophosphat	1,0
Bariumcarbonat	4,4	Cyclohexanon	-	-
		Methanol	-	-
		Wasser	Tetranatriumpyrophosphat	1,0
Bariumsalze (nicht wasser-löslich)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Bariumstrontiumcarbonat		Wasser + Ethanol	-	-
		Wasser +Methanol	-	-
		Cyclohexanon	-	-
Bariumsulfat, Baryt	4,3... 4,5	Wasser	Alkylphenolethylenoxid-Kondensat	1,0
		Wasser	Tetranatriumpyrophosphat	0,3...2,25
		Wasser	Tetranatriumpyrophosphat + Salzsäure	0,3...1,5 3,65
		Wasser	Trinatriumphosphat	o.A.
		Wasser + Ethylenglycol	-	-
		Wasser	Natriumhexametaphosphat	0,5
		Wasser + Methanol	-	-
Bariumtitanat	5,3...5,8	Wasser	Natriumhexametaphosphat	0,5
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Cyclohexanon	-	-
		Wasser + Ethylenglycol	-	-
Baurit	3,3	Wasser	Tetranatriumpyrophosphat	o.A.

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Bentonit	2,7	Wasser	Natriumcarbonat	0,5
		Wasser	Ammoniak	0,15 %
		Wasser	Natronlauge	o.A.
		Wasser	Tetranatriumpyrophosphat	o.A.
		Wasser	Natriumoxalat	0,05
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Natriumsilikat (Wasserglas)	0,2
Berlinerblau		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Beryll		Wasser	Natriumsilikat	o.A.
		Wasser	Natriumhexametaphosphat	o.A.
Bimsstein		Wasser	-	-
Bismutverbindungen		Wasser	Tetranatriumpyrophosphat	1,35
Blanc fixe		Wasser	Tetranatriumpyrophosphat	0,9
Blei	11,3	Wasser	-	-
		Aceton	-	-
		Cyclohexan	-	-
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Isoamylalkohol	-	-
Bleicherde		Wasser	Trinatriumphosphat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	-	-
Bleicyanamid		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Bleifarben (s.a.Bleioxid, Mennige)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Cyclohexanol	-	-
Bleioxide (s.a.Bleifarben, Mennige)	8...9,5	Ethylenglycol	-	-
		Wasser	Tetranatriumpyrophosphat	0,5...1,5
		Xylol	-	-
		Cyclohexanon	-	-
		Paraffinöl + Benzol	-	-
		Wasser	Natriumhexametaphosphat	0,5
			Kalium/Natriumhexameta-phosphat	1
Bleisulfat	5,6	Wasser	Trinatriumphosphat	o.A.
Bleisulfid	7,3	Cyclohexanol	-	-
Boden (s.a.Ackerboden, Erde)		Wasser	-	-
		Wasser	Natriumoxalat	0,67...20 g/l
		Butylphthalat + Ethanol	-	-
Borcarbid	2,5	Wasser	Tetranatriumpyrophosphat	o.A.
Braunkohle (s.a.Kohle)	1,2... 1,4	Wasser	Netzmittel	einige Tropfen
		Isobutanol	-	-
		Diethylphthalat	-	-
		Cyclohexanon + 10 Masse-% Methanol	-	-
		Cyclohexanol + 10 Masse-% Methanol	-	-

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Braunstein	4,9	Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser + Ethylenglycol	Trinatriumphosphat	-
Bronze	8,7...8,9	Cyclohexanol	-	-
		Cyclohexanon	-	-
Cadmiumarsenat	4,2	Wasser + 50 Vol.-% Methanol	-	-
Cadmiumfarben		Wasser	Natriumhexametaphosphat	1,0
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Cadmiumsulfid		Wasser	Tetranatriumpyrophosphat	o.A.
		Ethylenglycol	-	-
Calciumarsenat		Wasser + 50 Vol.-% Ethanol	-	-
		Wasser + 50 Vol.-% Methanol	-	-
Calciumcarbonat, Kalkspat (s.a.Kreide)	2,7 - 2,9	Ethylenglycol	-	-
		Wasser	-	-
		Wasser	Ammoniakwasser	5,8 Vol.-%
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,3...2,25
		Wasser	Natriumsilikat (Wasserglas)	2,0
		Wasser	Natriumhexametaphosphat	0,5...2,0
		Wasser	Natriumsilikat (Wasserglas) + Kaliumcitrat	20,0 32,4
		Wasser	Natriumsilikat + Tetranatriumpyrophosphat	1,0 1,0
		Wasser	Natriumcitrat + Tetranatriumpyrophosphat	1,0 1,0
		Wasser	Natriummethylendinaphthylsulfonat	1,0
		Xylol	-	-
		Wasser + 20 Vol.-% Glycerin	-	-
		Cyclohexanon + 10 Vol.-% Isoamylalkohol	-	-
		Wasser + 50 Vol.-% Ethylenglycol	-	-
Calciumfluorid, Flußspat	3,2	Wasser	Ammoniakwasser	1 Vol.-%
		Wasser	Kaliumchlorid	0,074
		Wasser	Salpetersäure	0,126 (0,002 n)
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Gelatine + Natriumcarbonat	1...2,5 1...2,5
		Methanol	Kaliumchlorid	0,074
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Aceton	-	-
Calciumhydroxid	2,3	Cyclohexanol	-	-
		Ethanol	-	-
		Isopropanol	-	-
		Wasser	Natriumhexametaphosphat	0,5

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Calcium-Magnesium-carbonat, Dolomit	2,9	Wasser	Trinatriumphosphat	o. A.
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Ammoniak	5,8 Vol. %
Calciumoxid	3,3 - 3,6	Äthylenglycol	-	-
		Chinolin	-	-
		Aceton	-	-
		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Äthylenglycol	-	-
		Petroleum	-	-
		Äthylenglycol	Calciumchlorid	0,05...0,5
		Äthylenglycol	Strontiumchlorid	0,05...0,5
		Äthylenglycol	Cobaltchlorid	0,05...0,5
Calciumphosphat (wasserlöslich)	2,3	Isobutanol	-	-
		Hexan	-	-
		n-Octanol	-	-
Calciumphosphat (nicht wasserlösl.)	2,2...3,2	Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	o.A.
		Wasser	Natriumhexametaphosphat	0,5...1,0
		Wasser	Natriumsilikat (Wasserglas)	1,0
		Wasser	Trinatriumphosphat	o.A.
		Wasser + Äthanol	-	-
		n-Butanol	-	-
		Äthanol	-	-
Calciumsalze (nicht wasserlöslich)		Wasser	Tetranatriumpyrophosphat	0,9
Calciumstannat		Wasser	Tetranatriumpyrophosphat	1,0
Calciumsulfat (s.u.Gips, Anhydrit)				
Calciumwolframat		Wasser	Natriumcitrat	0,5
Carborundum (s. Siliciumcarbid)				
Cellulose		Benzin	-	-
		Testbenzin	-	
		Benzol	Trinatriumphosphat	1,0
Cerussit		Wasser	Natriumhexametaphosphat	o.A.
China clay		Wasser	Trinatriumphosphat	-
Chrom		Isobutanol	-	-
Chromfarben		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Chromgelb	3,3	Cyclohexanon	-	-
Chromoxid	2,7...5,3	Wasser	Tetranatriumpyrophosphat	0,3...2,25
		Cyclohexanol + 10 Vol.% Isoamylalkohol	-	-
		Wasser	Kalium/Natriumhexametaphosphat	0,6
			+ Natriumcarbonat	0,12
Cobalt (s. Kobalt)				
Cordierit	3,0	Wasser	Natriumsalz der polymerisierten Carboxylsäure	einige Tropfen einer wäßrigen Lösung

Feststoff Art	Dichte g/cm³	Sedimentationsflüssigkeit	Zusatzstoff Art	Konzentration g/l
Diamant	3,5	Olivenöl	-	-
		Wasser	Gelatine + Natriumcarbonat	1,0...2,0 pH = 9
		Wasser	Trinatriumphosphat	o.A.
		Ethanol	-	-
		Wasser	Natriumhexametaphosphat	0,5
Diatomeenerde		Wasser	Natriumhexametaphosphat	1,0
		Wasser	-	-
Dicalciumphosphat	2,3	Methanol	-	-
		Wasser + Ethanol	-	-
Dolomit (s. Calcium/ Magnesiumcarbonat)	2,9			
Eisen	7,8	Cyclohexan	-	-
		Wasser + Ethylen-Glycol	-	-
		Sojaöl + 50 Vol. % Aceton	-	-
		Rüböl + Aceton	-	-
		Wasser + Ethylenglycol	Trinatriumphosphat	o.A.
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Wasser	Tetranatriumpyrophosphat	1,0
Eisenoxide	3,4...5,7	Wasser	Kalium/Natriumhexametaphosphat	0,5
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Paraffinöl + Benzol	-	-
		Wasser	Natriumhexametaphosphat	0,5
Eisenoxidrot		Wasser	Tetranatriumpyrophosphat	1,0
		Xylenollösung	-	-
Eisenschwarz	nicht möglich, da magnetische Flockung			
Eisensulfat	1,8...3,0	Isobutanol	-	-
Eisensulfid (s.a.Pyrit)	4,8	Cyclohexanon	-	-
Email		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Enstatit	3,0...3,3	Wasser	Kalium (Natriumhexametaphosphat	1,0
		Wasser	Natriumcarbonat	o.A.
		Wasser	Tetranatriumpyrophosphat	1,0
Erde (s.a.Boden, Ackerboden)		Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	0,45 - 1,35
		Wasser	Natriumoxalat	20,0
		Wasser + Ethylenglycol	-	-
		Butylphthalat + Ethanol	-	-
Farben, mineralische		Wasser	Kaliumcitrat	30
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Feldspat	2,6	Wasser	-	-
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Natriumoxalat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,45...1,35

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
FeSiCr	4,9	Cyclohexanol	-	-
		Cyclohexanon	-	-
Flint	2,7	Wasser	-	-
		Wasser	Natriumoxalat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Flugasche (s.a.Asche, Kraftwerksasche)	2,2-2,3	Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Na-Salz der polymerisierten substituierten Alkylbenzolsulfonsäure	0,57
Fluoride		Wasser	Natriumcarbonat + Gelatine	1...2,5 1...2,5
Flußspat (s.Calciumfluorid)				
Formsand		Wasser	Natronlauge	o.A.
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
Forsterit		Wasser	Tetranatriumpyrophosphat	1,0
Fritten		Wasser	-	-
		Wasser	Tetranatriumpyrophospht	0,45...1,35
		Wasser	Natronlauge	o.A.
Füller		Wasser	Trinatriumphosphat	o.A.
Getreidemehl	1,5	Isobutanol	-	-
		Isobutanol + Diethylphthalat	-	-
		Diethylphthalat	-	-
		Petroleum	-	-
Gips	2,3	Ethanol	Calciumchlorid	10
		Ethylenglycol	Cobaltcitrat	o.A.
		Ethanol	-	-
		Methanol	-	-
		n-Amylalkohol	-	-
		Methanol + Ethylenglycol + Ethanol	Calciumchlorid	o.A.
		Ethylenglycol	Cobaltcitrat	o.A.
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
Gips (Stuck-)	3,0	Ethylenglycol + 50 Vol.% Ethanol	Natriumcitrat	1,29
		Ethylenglycol + 50 Vol.% Ethanol	Calciumcitrat	0,5
		Ethylenglycol	Cobaltcitrat	o.A.
		Methanol	-	-
Gips (Roh-)	2,3	Wasser	Kaliumcitrat	30,0

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Glas	2,4...3,0	Wasser	Tetranatriumpyro-phosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
		Wasser	-	-
		Wasser	Kalium/Natriumhexameta-phosphat + Natriumcarbonat	0,3 0,06
		Butanol	-	-
		Cyclohexanol	-	-
		Wasser + Ethylenglycol	-	-
		Methanol	-	-
		Ethylenglycol	-	-
		Ligninlösung	-	-
		Wasser	Natriumhexametaphosphat	0,5
Glasuren		Wasser	Tetranatriumpyrophos-phat	0,3...1,5
Glimmer	2,8	Wasser	Tetranatriumpyrophos-phat	o.A.
Granat	3,8-3,9	Wasser	Natriumhexametaphosphat	0,5
Graphit	2,0...2,5	Wasser	Gerbsäure	0,5
		Wasser	Natriumlinoleat	5,0
		Wasser	Ammoniak + Natriumlinoleat	0,8...3,2 o.A.
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Lignosulfonat	10
		Ethanol Wasser Wasser	Carboxymethylcellulose Dioctylester der Natrium-sulfobernsteinsäure	10,0 0,5 Vol.%
Hämatit	5,2	Wasser	-	-
		Wasser	Tetranatriumpyrophos-phat	1,0
Hexachlorcyclohexan		Wasser	Trinatriumphosphat	o.A.
Hochofenschlacke	2,5...3,0	Wasser	Natriumhexametaphosphat	1,0
		Wasser	Tetranatriumpyrophos-phat	0,45...1,35
		Chinolin	-	-
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Isopropanol	-	-
Hydrargillit	2,4	Wasser	Tetranatriumpyrophosphat	1,0
Ilmenit	4,7	Wasser	-	-
Kagrun		Wasser + Ethylenglycol	-	-
Kakao	1,5	Diethylphthalat	-	-
		Isobutanol	-	-
		Benzol	-	-
		Isobutanol + Diethylphthalat	-	-
		Aceton	-	-
		Cyclohexanon	-	-
Kaliumchlorat	2,3	Cyclohexanon	-	-
		Cyclohexanol	-	-

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Kalkhydrat (s.Calciumhydroxid)				
Kalkstein (s. Calcium-carbonat, Kreide)				
Kalomel	7,2	Cyclohexanon	-	-
		Cyclohexanol	-	-
Kaolin	2,2...2,6	Wasser	Ammoniak	0,2
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Salzsäure	pH = 3
		Wasser	Tetranatriumpyro-phosphat	0,3...2,25
		Wasser	Tetranatriumpyro-phosphat	2,25
			+ Natriumsilikat (Wasserglas)	1,0
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Kalium/Natriumhexameta-phosphat	0,573
			+ Natriumcarbonat	0,127
		Wasser	Natriummetaphosphat	0,45
			+ Natriumcarbonat	0,011
		Wasser	Natriumoxalat	0,67
		Wasser	Natronlauge	einige Tropfen
		Wasser	Natriumcarbonat	0,5
		Wasser	Natriumsilikat (Wasserglas)	0,2 - 1
		Wasser	Natriumpolyacrylat	4o
Kartoffelmehl		Isobutanol	-	-
		Cyclohexanon	-	-
		Isobutanol + Diethylphthalat	-	-
		Diethylphthalat	-	-
Keramische Massen		Wasser	Tetranatriumpyro-phosphat	0,45...1,4
		Wasser	Kalium/Natriumhexa-metaphosphat	1,0
		Wasser	Kalium/Natriumhexameta-phosphat	o.A.
			+ Natriumcarbonat	o.A.
Kieselgur		Wasser	-	-
		Wasser	Natriumsilikat (Wasserglas)	o.A.
		Wasser	Natriumoxalat	0,67
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Ammoniak	2,0
Kieselgut		Wasser	-	-
	2,2...2,3	Wasser	Tetranatriumpyro-phosphat	1,0
Kleie		Wasser	Trinatriumphosphat	o.A.
Knochenasche		Wasser	-	-

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Kobalt	8,8	Isobutanol	-	-
		Cyclohexan	-	-
		Cyclohexanon	-	-
		Diethylphthalat	-	-
		Cyclohexanol	-	-
		Ethanol	-	-
		Rüböl + Aceton	-	-
		Wasser + Ethylenglycol	Trinatriumphosphat	o.A.
		Ethanol + 5 % Wasser	-	-
Kobaltoxid		Wasser	Kalium/Natriumhexameta-phosphat + Natriumcarbonat	0,6 0,12
Kohle (s.a.Aktivkohle, Braunkohle, Steinkohle)		Wasser	Calciumchlorid	1,0
		Ethanol	Calciumchlorid	10...15
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
		Cyclohexan	-	-
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Ethanol	-	-
		Petroleum	Ölsäure	1...10
		Benzin	Ölsäure	1...10
		Cyclohexanol + 50 Vol.% Methanol	-	-
Koks	1,6...1,9	Isobutanol	-	-
		Wasser	Natriumalkylnaphthalen-sulfonat	1,0
		Wasser	Natriumlinoleat	1,0
		Wasser	Natriumoleat	10,0
		Wasser	Gerbsäure + Ammoniak	0,5 0,8...3,2
		Ethanol	Calciumchlorid	1,0
		Ethanol + 50 Vol.% Ethylenglycol	Calciumchlorid	1,0
Korund (s.a.Aluminium-oxid, Tonerde)	4,0	Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
Kraftwerksasche (s.a. Asche, Flugasche)		Wasser	Tetranatriumpyrophosphat	1,0
Kreide (s.a. Calcium-carbonat)	2,6	Wasser	-	-
		Wasser	Natriumsilikat (Wasserglas)	2,0
		Wasser	Kaliumcitrat	5,5
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Ammoniak	2,0
		Aceton	-	-
		Petroleum	-	-
		Isopropanol	-	-
Kreide (gefällt)		Isopropanol	-	-
Kryolith	3,0	Wasser + 20 Vol.% Glycerin	-	-
		Ethylenglycol	-	-
		Wasser	Tetranatriumpyrophosphat	o.A.
		Ethylenglycol	-	-
Kunststoffe		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
		Isobutanol		

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Kupfer	8,9	Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	20
		Aceton	-	-
		Rüböl	-	-
		Rüböl + Aceton	-	-
		Sojaöl + 50 Vol.% Aceton	-	-
		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Isoamylalkohol	-	-
Kupferhydroxid		Wasser	Natriumhexametaphosphat	0,5
Kupferoxychlorid		Wasser	-	-
Kupferphthalocyanin		Wasser	-	-
Kupferschlacke		Wasser	Tetranatriumpyrophosphat	1,0
Kupferverbindungen (nicht wasserlösl.)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Natriumhexametaphosphat	0,5
Lippulver		Wasser	Trinatriumphosphat	o.A.
Leuchtstoffe		Wasser	Natriumcitrat	0,5
Lignit		Isobutanol	-	-
		Diethylphthalat	-	-
		Cyclohexanol + 10 % Methanol	-	-
Lithopone	4,2	Diethylphthalat	-	-
		Glycerin	-	-
		Wasser	Natriummethylendinaphthylsulfonat	1,0
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Trinatriumphosphat	o.A.
		Wasser + 33 % Glycerin	-	-
LSS		Wasser	Trinatriumphosphat	o.A.
		Wasser	Ammoniak	0,1
		Wasser	Natriumsilikat (Wasserglas)	o.A.

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Magnesiumcarbonat	3,5	Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Methanol	-	-
		Wasser	Ammoniakwasser	5,8 Vol. %
		Cyclohexanon	-	-
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
		Ethylenglycol	-	-
Magnesiumoxid	2,8...3,6	Ethylenglycol	-	-
		Methanol	-	-
Magnesiumsilicid		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Magnesiumsilikate (s.a. Enstatit)	3,0...3,3	Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Natriumcarbonat	s.A.
		Wasser	Tetranatriumpyrophosphat	1,0
		Wasser	Kalium/Natriumhexameta-phosphat + Natriumcarbonat	o.A. o.A.
Magnetit		Wasser	-	-
		Ethanol	-	-
		Methanol	-	-
		Nitrobenzol	-	-
Mangan		Cyclohexanon	-	-
		Isobutanol	-	-
Mangancarbonat		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Tetranatriumpyrophosphat	1,0
		Cyclohexanon	-	-
Mangandioxid, Pyrolysit	4,7...4,8	Wasser	Tetranatriumpyrophosphat	0,3...2,25
Manganoxide	4,5...5,4	Wasser	Tetranatriumpyrophosphat	0,3...2,25
Mehl		Petroleum	Ölsäure	1,0...10,0
		Isobutanol	-	-
		Isobutanol + Diethylphthalat	-	-
		Diethylphthalat	-	-
		Benzin	-	-
		Benzol	-	-
		Cyclohexanon	-	-
		Benzin	Ölsäure	1,0...10,0
Mennige (s.a. Bleioxide, Bleifarben)	9,0	Paraffinöl + Benzol	-	-
		Cyclohexanon	-	-
		Ethylenglycol	-	-
		Wasser + Ethylenglycol	Trinatriumphosphat	o.A.
		Cyclohexanol	-	-
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Xylol	-	-
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Mergel	2,7	Wasser	Tetranatriumpyrophosphat	o.A.
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Kalium/Natriumhexameta-phosphat	o.A.
			+ Natriumcarbonat	o.A.
Metalle (s. direkt unter den Elementen)				
Methylmethacrylat		Wasser	-	-
Milchpulver	1,4	n-Octanol	-	-
		Isobutanol	-	-
Miloriblau		Wasser	Trinatriumphosphat	o.A.
Mineralfarben		Wasser	Kaliumcitrat	30,6
Mineralwolle		Cyclohexanon	-	-
Molybdän	10,2	Ethanol	-	-
		Aceton	-	-
		Glycerin	-	-
		Wasser + Glycerin	-	-
		Wasser + Ethylengly-col	-	-
		Ethylenglycol	-	-
Molybdänsulfid		Cyclohexanon	-	-
Natriumbicarbonat	2,2	Cyclohexanon	-	-
		Cyclohexanol	-	-
Natriumphosphat		Ethanol	-	-
Nickel	8,8	Cyclohexanon + 10 % Aceton	-	-
		Cyclohexan	-	-
		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Rüböl + Aceton	-	-
		Wasser + Glycerin	-	-
Nickeloxid	6,8	Wasser + Glycerin	-	-
Organische Pulver		Isobutanol + Diethylphthalat	-	-
		n-Octanol	-	-
		Isoamylalkohol	-	-
Penicillin		Isooctan	-	-
Petrol eumkoks		Methanol	-	-
Phosphate (s.a. Roh-phosphate)		Wasser	Tetranatriumpyrophosphat	0,9
			Natriumhexametaphosphat	1,0
Phosphor (rot)	2,2	Ethanol	-	-
		Wasser	Kaliumsilikat	0,12 Vol. %
		Wasser	Natriumhexametaphosphat	0,5
Phosphor (weiß)	1,8	Wasser	Natriumsalz der polymeri-sierten, substituierten Alkylbenzolsulfonsäure	0,2
			+ Kaliumsilikat	1,0

Feststoff Art	Dichte g/cm³	Sedimentations-flüssigkeit	Zusatzstoff Art	Konzentration g/l
Pigmente		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Isopropanol	-	-
		Wasser	Tetranatriumpyrophosphat	0,45...2,25
		Wasser + Ethylenglycol	-	-
Polymethylmetacrylat		Wasser	Trinatriumphosphat	-
Polyvinylacetat		Wasser	Tetranatriumpyrophosphat	o.A.
Polyvinylchlorid	1,4	Isopropanol	Natriumlinoleat	o.A.
		Isobutanol	-	-
		Wasser	Gerbsäure	1,0
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Natriumlinoleat	o.A.
Polyester		Paraffinöl	-	-
Portlandzement	3,1	n-Butanol	-	-
		Benzylalkohol	-	-
		Chinolin	-	-
		Cyclohexanol	-	-
		Cyclohexanon	-	-
		Cyclohexanon + Isoamylalkohol	-	-
		Ethylenglycol	-	-
		Ethanol	Calciumchlorid	0,05...0,2
		Ethanol	Strontiumchlorid	0,08...0,3
		Ethylenglycol	Calciumchlorid	0,11...0,45
		Ethylenglycol	Strontiumchlorid	0,11...0,45
		Ethanol	-	-
		Isobutanol	-	-
		Rizinusöl	-	-
		Steinöl	-	-
		Methanol	Tetranatriumpyrophosphat	gesättigt
		Paraffinöl	-	-
Porzellanpulver	2,4	Wasser	Natriumhexametaphosphat	0,5
Pumicit		Wasser	-	-
Puzzolane		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	-	-
Pyrit (s.a. Eisensulfid)	4,4	Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
		Methanol + Tetrachlorkohlenstoff	-	-
		Wasser	Tetranatriumpyrophosphat	o.A.
		Wasser + Glycerin	Tetranatriumpyrophosphat	o.A.
Quarz (s.a. Sand, Sandstein)	2,65	Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Natriumhexametaphosphat	0,5
		Wasser	Natriumoxalat	0,67
		Wasser	Trinatriumphosphat	o.A.
		Wasser	-	-
		Wasser	OH^--Ionen	pH = 7...8
Quarzgut		Wasser	Tetranatriumpyrophosphat	1,0

Feststoff Art	Dichte g/cm	Sedimentationsflüssigkeit	Zusatzstoff Art	Konzentration g/l
Quecksilberverbindungen (nicht wasserlösl.)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Resin		Wasser	Trinatriumphosphat	o.A.
Rohmehl, Rohschlämme (für Zement)		Cyclohexanol	-	-
		Cyclohexanol + 50 Vol. % Isoamylalkohol	-	-
		Isobutanol	-	-
		Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Rohphosphate (s.a. Phosphate)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
Rohrzucker (s.a. Zucker)	1,6	Diethylphthalat	-	-
		Isobutanol	-	-
		Isoamylalkohol	-	-
Ruß	1,7...2,0	Aceton	-	-
		Methanol	-	-
		Wasser	Dioctylester der Natriumsulfobernsteinsäure	1,0...10,0
		Wasser	Natriumlinoleat	10,0
		Wasser	Gerbsäure	1,0
Rutheniumoxid	7,0	Wasser	Natriumhexametaphosphat	0,5
Sand (s.a. Quarz, Sandstein)		Ethanol + Butylphthalat	-	-
		Wasser	-	-
		Wasser	Natriumsilikat (Wasserglas)	2,0
		Wasser	Trinatriumphosphat	o.A.
Sandstein (s.a. Quarz, Sand)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Trinatriumphosphat	o.A.
		Wasser + Cyclohexanon	-	-
Schamotte	2,6	Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Kalium/Natriumhexametaphosphat	1,0
		Wasser	Kalium/Natriumhexametaphosphat + Natriumcarbonat	o.A. o.A.
		Wasser	Natriumhexametaphosphat	o.A.
Schiefer	2,7	Ethanol	Calciumchlorid	o.A.
		Wasser	Tetranatriumpyrophosphat	1,0
Schlacke (s.a. Hochofenschlacke)		Wasser	-	-
		Isopropanol	-	-
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
Schleifmittel (s.a. Siliciumcarbid, Korund)		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Trinatriumphosphat	o.A.
Schwefel	2,1	Wasser	Natriumlinoleat + Natriumoleat	o.A. o.A.
Schwefelkies		Ethylenglycol	-	-
Schwermetallverbindungen (nicht wasserlösl.)		Wasser	Tetranatriumpyrophosphat	0,45...1,35

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Selen	4,5	Cyclohexanon	-	-
		Cyclohexanol	-	-
		Ethylenglycol	-	-
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Silberhalogenid	6,0	Wasser	Natriumhexametaphosphat	0,5
Silber - Palladium-paste	10,6	Toluol	-	-
Silicium	2,4	Wasser	-	-
		Wasser	Natriumhexametaphosphat	0,5
Siliciumcarbid	3,2	Methanol	Natriumsalz der Ethylendiamintetraessigsäure	10,0
		Wasser	-	-
		Wasser	Kalium/Natriumhexametaphosphat	1,0
		Wasser	Kalium/Natriumhexametaphosphat	o.A.
			+ Natriumcarbonat	o.A.
		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Wasser	Natriumhexametaphosphat	0,5
		Wasser	Trinatriumphosphat	o.A.
		Wasser + Ethylenglycol	Tetranatriumpyrophosphat	o.A.
		Wasser	Nonylphenoxypolyethanol	einige Tropfen
Siliciumoxid (s.a. Quarz, Kieselgut)		Wasser + 50 Vol. % Xylol	-	-
		Wasser	Natriumhexametaphosphat	0,5
		Wasser	9-10 Ethoxy-Octylphenol	einige Tropfen
		Wasser + Ethanol	-	-
Silikate (nicht wasserlösl.)		Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	0,45...2,25
		Wasser + 50 Vol. % Ethanol	-	-
		Wasser + 50 Vol. % Ethylenglycol	-	-
		Wasser + Ethylenglycol	Trinatriumphosphat	o.A.
		Wasser	Tetranatriumpyrophosphat	2,25
			+ Natriumoxalat	0,67
			+ Natriumhexametaphosphat	1,0
Sillimanit		Wasser	-	-
		Wasser	Tetranatriumpyrophosphat	24,8
		Wasser + 50 Vol. % Ethanol	-	-
Stahl	7,8	Wasser + Ethylenglycol	-	-
		Wasser + 50 Masse % Ethylenglycol	Cobaltchlorid	0,1
		Wasser	Alkylphenolethylenoxid-Kondensat	1,0

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Stärke	1,5	Isobutanol	-	-
		Diethylphthalat	-	-
		Isobutanol + Diethylphthalat	-	-
		Benzol	-	-
		Methanol	-	-
Steatit	2,7...2,8	Wasser	Kalium/Natriumhexametaphosphat	1,0
		Wasser	Kalium/Natriumhexametaphosphat + Kaliumcarbonat	o.A. o.A.
		Wasser	Tetranatriumpyrophosphat	-
Steinkohle (s.a. Kohle)	1,4	Aceton	-	-
		Cyclohexanol	-	-
		Cyclohexanol + 50 Vol. % Methanol	-	-
		Cyclohexanon	-	-
		Cyclohexanon + Methanol	-	-
		Ethylenglycol	-	-
		Ethanol	Calciumchlorid	11,0
		Ethanol	-	-
		Methanol	-	-
		Petroleum	-	-
		Wasser	Dioctylester der Natriumsulfobernsteinsäure	5,0...10,0
		Wasser + Ethanol	-	-
		Wasser + Ethanol	Natriumlinoleat + Calciumchlorid	o.A. o.A.
		Wasser + 50 Vol. % 1,3 Butylenglycol	-	-
		Wasser + 50 Vol. % 1,3 Butylenglycol	Natriumcitrat	0,362
		Wasser + 50 Vol. % 1,3 Butylenglycol	Netzmittel	0,2...0,3
		Wasser	Natriumlinoleat + sulfoniertes Lorol (Hauptanteil Dodecylalkohol)	10,0 o.A.
		Wasser	Gerbsäure	o.A.
		Xylol	-	-
Strontiumcarbonat	3,7	Cyclohexanon	-	-
		Wasser	Tetranatriumpyrophosphat	1,0
Strontiumsalze (nicht wasserlösl.)		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Strontiumtitanat		Wasser	Kalium/Natriumhexametaphosphat	1,0
Sulfide		Ethylenglycol	-	-
		Wasser	Saponin	o.A.
Sulfonamid	1,3	Isopropanol	9-10 Ethoxyoctylphenol	einige Tropfen
Talkum	2,7	Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Natriumhexametaphosphat	1,0
Tantal	16,6	Cyclohexanol	-	-
		Cyclohexanon	-	-
		Ethylenglycol	-	0,1
Thiogutt		Cyclohexanon	-	-

Feststoff Art	Dichte g/cm³	Sedimentationsflüssigkeit	Zusatzstoff Art	Konzentration g/l
Thorium		Wasser 33 % Glycerin	-	-
Titan	5,0	Wasser	Tetranatriumpyrophosphat	1,0
		Wasser	Natriumhexametaphosphat	1,0
		Wasser + 50 Masse % Ethylenglycol	-	-
Titancarbid	3,8	Wasser	Tetranatriumpyrophosphat	1,0
		Wasser	Natriumsalz der polymerisierten Carboxylsäure	einige Tropfen einer 25 %igen wäss. Lösung
Titandioxid (Rutil, Anatas)	3,8...4,2	Leinöl	-	-
		Wasser	Kalium/Natriumhexametaphosphat + Kaliumhydroxid	0,3 pH = 10,7
		Wasser + 50 Masse % Ethylenglycol	-	-
		Wasser	Natriumsalz der polymerisierten Carboxylsäure	einige Tropfen einer 25 %igen wäss. Lösung
		Wasser	Tetranatriumpyrophosphat	1,0
		Wasser	Natriumhexametaphosphat	0,5...1,0
		Cyclohexanon	-	-
		Cyclohexanol + 10 Vol. % Isoamylalkohol	-	-
		Ethylenglycol	-	-
		Xylol	-	-
Titaneisen		Wasser	-	-
Titanweiß		Wasser	Tetranatriumpyrophosphat	o.A.
		Xylenollösung	-	-
Toluidinrot		Wasser	Trinatriumphosphat	o.A.
Ton	2,5...2,6	Wasser	Natriumcarbonat	o.A.
		Wasser	-	-
		Wasser	Natriumoxalat	0,67
		Wasser	Natriumsilikat (Wasserglas)	20,0
		Wasser	Natriumhexametaphosphat	1,0
		Wasser	Natriumpyrophosphat	0,3...1,5
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Kalium/Natriumhexametaphosphat	1,0
		Buthylphthalat + Ethanol Wasser	-	-
			Natriumpolyacrylat	40
Tonerde (s.a. Korund, Aluminiumoxid)		Wasser	-	-
		Wasser	Kalium/Natriumhexametaphosphat	1,0
		Wasser	Natriumhexametaphosphat	1,0
		Wasser	Natriumtartrat	1,0
		Wasser	Salzsäure	pH = 3
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Tetrachlorkohlenstoff	-	-
		Cyclohexanon	-	-

Feststoff		Sedimentationsflüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Tonerdezement (s.a. Zement)	3,2	Ethylenglycol	Calciumchlorid	1,0
		Ethylenglycol	Cobaltchlorid	0,65
		Cyclohexanol		
		Chinolin		
Tonschiefer (s.a. Schiefer)		Wasser	Trinatriumphosphat	o.A.
Traß		Isobutanol	-	-
Tricalciumphosphat		Wasser	Tetranatriumpyrophosphat	0,45...1,35
		Methanol	-	-
		Wasser	-	-
Tripolyphosphat		Methanol		
Trockenhefe		Wasser + Ethanol	-	-
Tuff (vulkan.)		Wasser	Natriumoxalat	0,67
		Wasser	Ammoniak	2,0
		Wasser	Natriumsilikat	o.A.
Ultramarin	2,3	Wasser	Tetranatriumpyrophosphat	o.A.
		Ethylenglycol		
Uranerz	7,3	Wasser	Natriumhexametaphosphat	0,5
Uranoxid	7,1	Isobutanol	-	-
	- 11,0	Wasser	Trinatriumphosphat	o.A.
		Wasser	Tetranatriumpyrophosphat	1,0
		Wasser	Natriumhexametaphosphat	0,5
		Wasser	Natriumsalz der polymerisierten, substituierten Alkylbenzolsulfonsäure	10,0
		Wasser + Glycerin	-	-
Waschpulver		Wasser + Ethylenglycol	-	-
Weicheisen (s.a. Eisen)	7,8	Wasser + Glycerin	-	-
Weizenmehl (s.a. Mehl)	1,5	Cyclohexanon	-	-
		Ethanol	-	-
		Diethylphthalat	-	-
		Isobutanol	-	-
		Isobutanol + Diethylphthalat	-	-
		Petroleum	-	-
Wismutverbindungen (s.u. Bismutverbindungen)				
Wolfram	19,1	Wasser	Ethoxyliertes Nonylphenol	einige Tropfen
		Glycerin	-	-
		Aceton + Rüböl	-	-
		Ethanol	-	-
		Aceton	-	-
		Methanol	-	-
		Wasser (Feststoff vorher in HF behandeln und waschen)	-	-
		Wasser + Ethylenglycol	-	-

Feststoff		Sedimentations-flüssigkeit	Zusatzstoff	
Art	Dichte g/cm³		Art	Konzentration g/l
Wolfram	19,1	Wasser	Sacharose + ethoxyliertes Nonylphenol	300 einige Tropfen
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
Wolframcarbid	15,9	Pflanzenöl	-	-
		Wasser	-	-
		Wasser + Ethylenclycol	-	-
		Ethylenglycol	-	-
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
Wolframoxide	7,2 12,1	Wasser	Tetranatriumpyrophosphat	1,0
		Cyclohexanon	-	-
		Wasser + Glycerin	-	-
Zahnzement		Ethylenglycol	-	-
Zement (s.a. Portlandzement, Tonerdezement)	2,9...3,2	Pyridin	-	-
		Petroleum	Ölsäure	1,0...10,0
		Benzol	-	-
		Isopropanol	-	-
		Methanol	Tetranatriumpyrophosphat	gesättigt
		n-Butanol	-	
		Isobutanol	-	
		Paraffinöl	-	
		Cyclohexanol	-	
		Cyclohexanol + 50 Vol. % Isoamylalkohol	-	
		Chinolin	-	
		Ethanol	Calciumchlorid	0,055...5,5
		Ethanol	Strontiumchlorid	0,075...0,32
		Ethylenglycol	-	-
		Ethylenglycol	Calciumchlorid	0,05...0,5
		Ethylenglycol	Strontiumchlorid	0,05...0,5
		Ethylenglycol	Cobaltchlorid	0,05...0,5
		Benzin	-	-
		Benzin	Ölsäure	1,0...10,0
		Methanol + Glycerin	-	-
Zink	7,1	Ethanol	-	-
		n-Butanol	-	-
		Aceton	-	-
		Cyclohexanon	-	-
		Cyclohexanol	-	-
		Ethylenglycol	Calciumchlorid	o.A.
		Isobutanol	-	-
Zinkoxid	5,5...5,8	Wasser	Natriumhexametaphosphat	0,5...1,0
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Trinatriumphosphat	o.A.
		Wasser	Kalium/Natriumhexametaphosphat	1,0
		Wasser	Natriumsalz der kondensierten Naphthalinsulfonsäure	5,0

Feststoff Art	Dichte g/cm³	Sedimentations-flüssigkeit	Zusatzstoff Art	Konzentration g/l
Zinksulfid		Cyclohexanon	-	-
Zinkweiß		Wasser	Tetranatriumpyrophosphat	0,9
Zinn	7,3	n-Butanol	-	-
		Isobutanol	-	-
		Isobutanol + n-Butanol	-	-
Zinndioxid	7,0	Wasser	Tetranatriumpyrophosphat	0,9
		Wasser	Natriumcitrat	o.A.
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Kalium/Natriumhexameta-phosphat + Natriumcarbonat	0,6 0,12
Zinnweiß		Wasser	Tetranatriumpyrophosphat	0,45...1,35
Zirkon	6,5	Methanol	Salzsäure	0,036 (0,001 n)
		Wasser	Tetranatriumpyrophosphat	0,3...2,25
		Wasser + 50 Vol. % Methanol	-	-
		Wasser	-	-
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Isobutanol	-	-
Zirkondioxid	5,5-5,7	Wasser	Ölsäure	o.A.
		Wasser	Tetranatriumpyrophosphat	0,3...1,5
		Wasser	Kalium/Natriumhexameta-phosphat	1,0
		Wasser	Natriumhexametaphosphat	o.A.
Zirkonsilikat	4,7	Wasser	Kalium/Natriumhexameta-phosphat + Natriumcarbonat	0,6 0,12
Zucker (s.a. Rohrzucker)	1,6	Isobutanol	-	-
		Diethylphthalat	-	-
		Isoamylalkohol	-	-
		Cyclohexanon	-	-
		Isopropanol	-	-

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