

	SODIUM ALUMINIUM SILICATE			MLA <hr/> GROUP
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NK-20 AHS

About the product

UNISIL NK-20 AHS is a precipitated amorphous sodium aluminium silicate produced from precipitation technology. Its small primary particle size and its high degree of whiteness make it especially suitable for use as a white pigment in the production of different coatings such as :

- Waterborne dispersion paints (for exterior or interior)
- Solvent based paints
- Industrial coatings
- Lacquers
- Printing inks

Advantages of the NK-20 AHS

- Improved levels of whiteness and hiding power (opacity)of the paint.
- Cost reduction as titanium dioxide is partially replaced.
- Increased stability of paint during storage due to alkaline pH. It also acts as an anti-settling agent and a viscosity and pH regulator due to its buffering action.
- Gives exterior paints good weathering properties and reduces the tendency to pick up dirt. Reduces the specific gravity of the paint.
- Decreases tendency to yellowing

TYPICAL PHYSIOCHEMICAL PROPERTIES

PROPERTY	UNIT	VALUE
Whiteness	--	95-98
Specific surface area	m ² /g	60-80
Mean particle size	µm	4-6
Tamped density (after storage)	g/l	200-250
Loss on drying (2 hrs at 105°C)	%	5-7
Loss on Ignition (2 hrs at 1000°C)	% max	8
pH value	--	9.5-10.3
DBP absorption	g/100g	160-180
SiO ₂ content	%	82
Al content as Al ₂ O ₃	%	9.5
Na content as Na ₂ O	%	8
Fe content as Fe ₂ O ₃	%.	0.03
Sulfate content as SO ₃	% max	1.0
Sieve residue 45 µm	% max	0.1
Packing	Kg/bag	25

Dosage and method of use :

Aluminium silicate UNISIL NK-20AHS can substitute between 20 and 30% of the white pigment (TiO₂) so as not to modify the optical properties of the paint manufactured without aluminium silicate. On the whole, it is advisable not to introduce more than 5% by weight of aluminium silicate in the formula of the paint.

Given the small particle size of this aluminium silicate and its high absorption, when a part of the TiO₂ is replaced, an increase in the final viscosity of the paint is expected. For this reason, it is recommended to reduce the amount of thickeners used or to use a thickening agent of less viscosity.

Mechanism of action :

a)- Increase in the hiding power :- The hiding power of a paint depends mainly on the relation between the light reflected and absorbed (naturally in function of the longitude of the light wave). All products that increase the reflection of light make the film of paint more opaque or its hiding power more superior. Hence the principle of action of NK-20AHS.

In the case of titanium dioxide the hiding power is based on the difference of the refractive indices, in the case of the aluminium silicate, it is based on the

small particle size, that induces a greater dispersion of light by occupying the vacant spaces between the relatively larger TiO₂ particles, hence increasing the PVC (pigment volume concentration). Therefore, using aluminium silicate NK-20 AHS, increases the hiding power and the coefficient of dispersion of light.

b)- Increase in the whiteness :- The power of whiteness of a white pigment is attributed to the power of dispersion of the pigment. When the concentration of this pigment increases, the distance travelled by the light that enters and leaves the film of the paint, is reduced given the fact that it is better reflected.

In the case of precipitated aluminium silicate NK-20 AHS, the small particle size is capable of filling the existing gaps between the TiO₂ particles, and the ease with which it disperses in organic emulsions allows a better dispersion of the entering light on the paint and therefore guarantees an increase in the whiteness value of the paint.

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