HYDREX®

Bright Future: **HYDREX® P** silicates for enhanced paper functionality

Precipitated Synthetic Silicates to Enhance Paper Properties, Improve Quality and Cost Savings

HYDREX® P Silicate – Key benefits

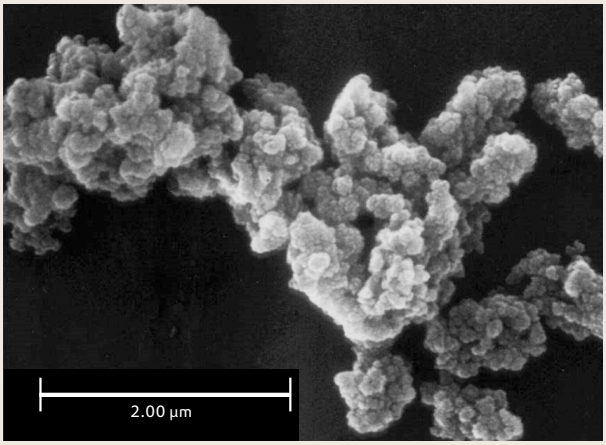
High pigment brightness	High light scattering powder	Improved coefficient of friction (CoF)	Porous / Fluffy structure	Improved print quality	No abrasive impurities	High purity
Higher brightness, whiteness and shade	Increased opacity in low basis weight grades	Less winder reject	Increased thickness, bulk and stiffness	Minimized printthrough	Lowest abrasion	Approved for food contract applications
Decreased need for pulp bleaching and OBA	Excellent performance in TiO_2 replacement	Improved production efficiency	Possibility to decrease basis weight and use less chemical pulp	Higher print density	Low wear of paper machine parts	Suitable for acid and alkaline paper making
	Enables basis weight reduction			Lower ink demand	Higher paper machine uptime	
				Less missing dots		
				Fast ink drying		
				Less set-off		

HYDREX® P Silicate – Functional properties

HYDREX® P has a unique structure which gives superior optical, printing and physical properties to the paper products when added to the machine wet-end or to the coating layer. This multifunctional additive offers numerous benefits to paper and carton board products including improved brightness, opacity, printability, bulk and enhanced friction control. Furthermore, HYDREX® P silicate has excellent efficiency as TiO_2 extender for cost savings by the formulators. HYDREX® P silicate is available in dry and slurry forms.

HYDREX® P Silicate – Effects and End-Use Application

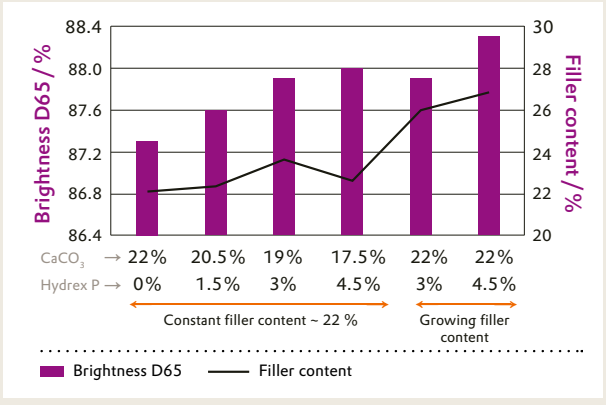
TiO_2 extension	Cost saving in decor and thin printing paper applications
Higher opacity	Decreased need for chemical pulp in speciality fine papers, white-top and folding box board
Higher brightness	Better visual appearance in specialty fine papers and improved newsprint
Improved print quality	Good contrast ratio and high definition in all paper grades
Reduced print-through	Prevents ink strike through in thin printing paper grades
Increased bulk	Improved stiffness in book paper, white-top and folding box board
Higher friction in winding	Perfect reeling of mechanical printing papers



HYDREX® P Silicate – Technical details:

1. Brightness

HYDREX® P Silicate brightness is close to 100 % and its unique pore structure provides paper with a significant number of light scattering interfaces, boosting optical properties of paper and impart desired bluish-white shade. Typically, 1 % of HYDREX® P addition increases brightness by one unit in unfilled papers. Because of improved visual appearance of paper, it is possible to reduce pulp bleaching to gain better fiber quality and strength as well as to decrease need for kraft pulp.

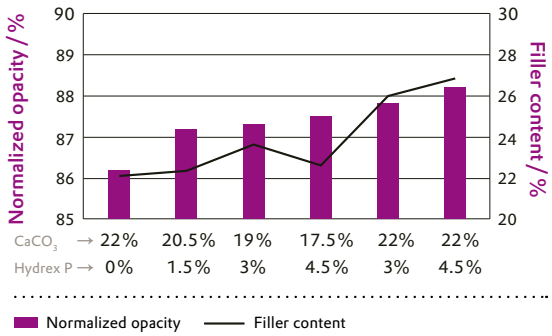


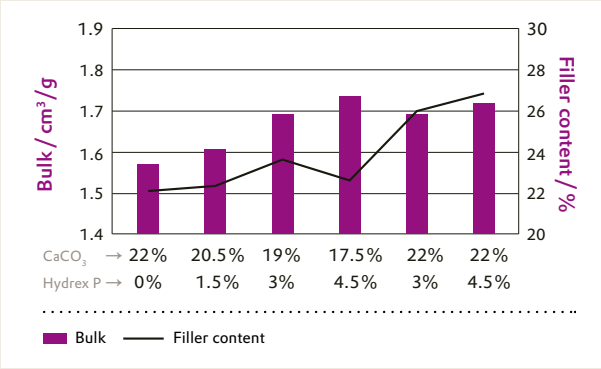
2. Printability

Light-weight, fine papers are particularly susceptible to ink strike- and print-through. Highly porous structure of HYDREX® P Silicate reduces the risk by quickly immobilizing the printing ink at the paper surface resulting in high definition print quality and a reduction in total ink demand, enabling uniform color and low level of print mottling due to even ink absorption.

3. Opacity

HYDREX® P properties are optimized to provide both high brightness and opacity to many paper grades such as thin printing paper, tipping paper, folding boxboard and white top liner boards. Paper strength is maintained in low weight paper grades due to low HYDREX® P addition levels. HYDREX® P enables TiO_2 replacement and high quality multi color printing in thin printing paper grades and considerable cost savings through the reduced need for chemical pulp and optical brighteners.



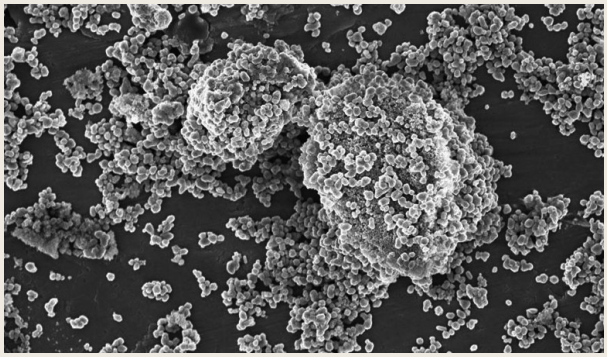


4. Bulk

In contrast with common fillers (e.g. clays), HYDREX® P Silicate provides substantial bulk improvement in paper and cartonboard due to its low density, porous structure and optimized particle size distribution, which leads to better stiffness in book paper as well as improved control of paper thickness and smoothness during calendaring. Basis weight reduction is possible while maintaining paper thickness, stiffness and opacity. Gravure print quality is improved due to better contact of paper and printing plate.

5. Titanium dioxide replacement

Excellent efficiency as TiO_2 extender is based on the optimized particle size distribution, high optical efficiency and unique internal structure. TiO_2 optical efficiency is improved by preventing its self-agglomeration tendency and optimizing inter-particle distance for light scattering. When TiO_2 is properly spaced, opacity is increased, and the appearance of the paper products is enhanced. Fixing of TiO_2 particles to the porous surface of HYDREX® P Silicate improves filler retention and gives substantial saving potential in total pigmentation cost.



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Evonik Operations GmbH
Smart Effects business line
Rodenbacher Chaussee 4
63457 Hanau
Germany

ask-se@evonik.com
www.evonik.com
www.evonik.com/smarteffects

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