

TECHNICAL DATA SHEET

HS-CIDE 315 for Paper

Bio-cide for coating color

HS-CIDE 315 is the antiseptic of industrial alcohol type without harmful accumulative components in human.

The effective PH field of it is from neutral to alkali.

Especially, it make good performance when applied in coating color or resin emulsion.

Appearance	: Clear light yellow liquid.
P H	: 10 (1% dilution)
Specific	: 1.15 (25°C)
Viscosity	: 200cps (25°C)
Solubility	: Soluble in cold water.

1. HS-CIDE 315 sustains the effect as a antiseptic for a long period.
2. HS-CIDE 315 protects microbe such as the bacteria, fungi etc. from growth and protects those from continuous growth
3. HS-CIDE 315 has high compatibility with coating color, paints, resin emulsion, other ingredients etc. and can be simply applied because of low viscosity
4. HS-CIDE 315 makes no adverse effect on the quality of coating film.
5. HS-CIDE 315 has no unpleasant odor. It is free from toxic materials such as heavy metals and has low toxicity.
 - I. HS-CIDE 315 is applied for the following work
 1. Aqueous Coating color, emulsion paint
 2. Resin emulsion, Rubber Latex
 3. Adhesives, Starch, Animal glue, etc
 4. Metal processing oil, oil and emulsion such as textile oil,
 5. Aqueous ink, wax emulsion products
 - II. **While adding HS-CIDE 315 into the process, mix uniformly by stirring at room temperature.**
 - III. **Normal dosage**
 1. Coating color: 0.05 - 0.2%
 2. Emulsion product such as resin emulsion & rubber latex: 0.05 - 0.1%
 3. When diluted in metal processing oil, etc.: 0.05 - 0.2%

1. Acute oral toxicity LD 50 770mg/kg
2. Toxicity for Fish TLm 48hrs=40ppm

1. HS-CIDE 315 causes irritation to the eyes and skin. When used, wear safety glasses and rubber gloves. If it contacts with the eye and skin, wash thoroughly the affected parts with water and soap.
2. No problem is encountered in its normal application but as it is toxic for fish, keep out of lakes, ponds and streams.
3. Though it has low toxicity, avoid allowing it to contaminate foodstuff, cosmetics, etc.
4. It is liable to be decomposed at acid stage. Thus, we recommend it used at over PI-17. During storage, it should be kept in a cold and dark room away from direct sunlight.

When leaked HS-CIDE 315 and its containers to be discarded, it should be first decomposed with over 10 times amounts of 5% sodium hypochlorite for the existing HS-CIDE315

Type of Packing : 20kg in a poly can
200kg in a poly drum
1,000kg in a container.

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TECHNICAL DATA SHEET

TK- 60A

SHORT DESCRIPTION OF THE PRODUCT

Ultra-fine, high purity, very white lime stone powder with very good dispersion properties. Selected fine, high purity white ground calcium carbonate powder.

CHEMICAL ANALYSIS OF THE RAW MATERIAL

CaCO ₃	97 % Min
Fe ₂ O ₃	0.05 % Max
MgO	0.1 % Max
Al ₂ O ₃	0.02 % Max
SiO ₂	0.02 % Max

SPECIFIC PRODUCT DATA:

Particle Size :	
• Top Cut (D97 / Mastersizer 3000E)	60±5 µm
• Mean particle Size (D50 / Mastersizer 3000E)	14 ± 2 µm max
Whiteness :	
• Whiteness (L*)	97 % Min
• Brightness (Y)	93 % Min
• Moisture Ex-work	0.2 % Max

GENERAL PRODUCT DATA :

Handness	3 Mohs
Specific Gravity	2.7 g/cm ³
pH value	8-9
International Marine time Organization (IMO)	Non Dangerous

MAIN APPLICATIONS :

- Detergent
- PE and PP Masterbatch for Film, Raffia, Moulding
- Rubber and Rubber Compound
- Powder coating
- Solvent / Water Base Paints
- Paper

The data quoted are determined by the use of Tan Ky Mineral Processing Joint Stock company Test Methods, copies of which will be supplied on request. Every precaution is taken to ensure the products conform to our published data, but since the products are based on naturally occurring raw materials, we reserve the right to change these data should become necessary. Sale are in accordance with our "Conditions of Sale", copies of which will be supplied on request.

* All properties are measured before coating by acid stearic

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TECHNICAL DATA SHEET

TK- 901

SHORT DESCRIPTION OF THE PRODUCT

Ultra-fine, high purity, very white lime stone powder with very good dispersion properties. Selected fine, high purity white ground calcium carbonate powder.

CHEMICAL ANALYSIS OF THE RAW MATERIAL

CaCO ₃	98 % Min
Fe ₂ O ₃	0.02 % Max
MgO	0.1 % Max
Al ₂ O ₃	0.2 % Max
SiO ₂	0.2 % Max

SPECIFIC PRODUCT DATA:

3000E)	Particle Size :	
	• Top Cut (D97 / Mastersizer 3000E)	90±5 μm
	• Mean particle Size (D50 / Mastersizer	22 ± 5 μm max

Fineness :

• Fineness Pass 500 mesh wet sieve	100 % Min
• Residue on 500 mesh wet sieve	0 % Max

Whiteness :

• Whiteness (L*)	98 % Min
• Brightness (Y)	95 % Min
• Moisture Ex-work	0.2 % Max

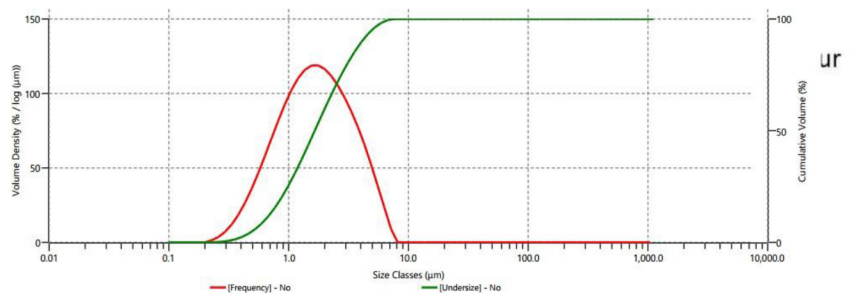
GENERAL PRODUCT DATA :

Handness	3 Mohs
Specific Gravity	2.7 g/cm ³
HCl Insoluble Content	0.15% max
pH value	8-9
International Marine time Organization (IMO	Non Dangerous

MAIN APPLICATIONS :

- Plastics:
 - Rigid PVC and Plasticized PVC (Pipes, Windows profiles, Plastisols, PVC Floor tile, PVC sheet, Wires and Cables)
- PE and PP Masterbatch for Film, Raffia, Moulding
- Rubber and Rubber Compound
- Powder coating
- Solvent / Water Base Paints
- Paper

PARTICLE SIZE DISTRIBUTION Mastersizer 3000E



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TECHNICAL DATA SHEET
Certificate of Analysis

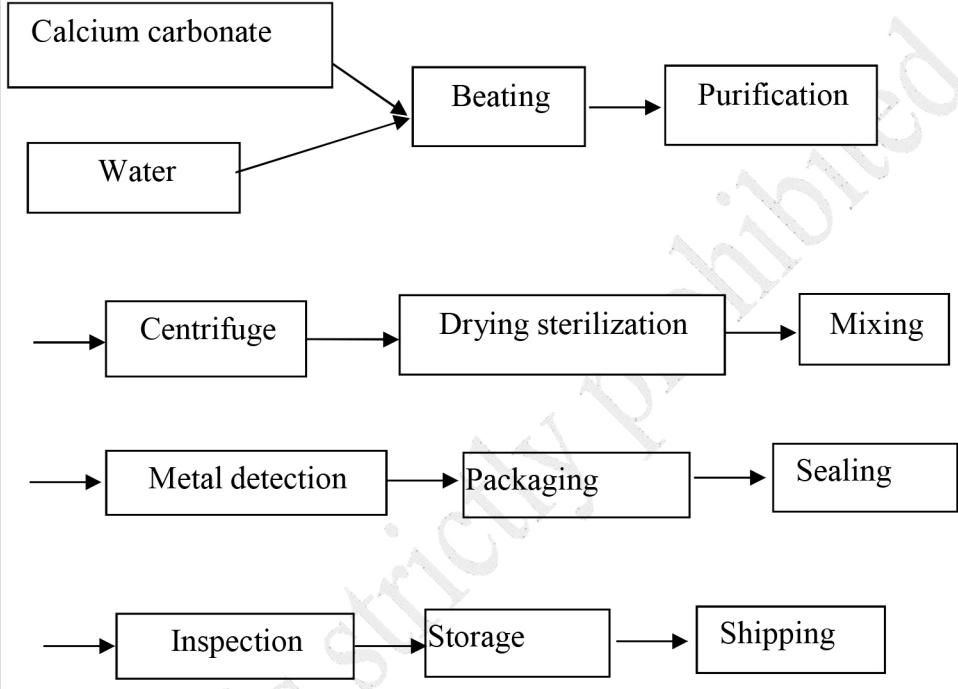
产品名称	Product Name	重质碳酸钙 Calcium Carbonate Heavy	
批号	Batch No.	TGF22078	
检验日期	Test Date	20231210	
生产日期	Manufacture Date	20231210	
保质日期	Expiry date	20251209	
检验依据	According	USP44	
外观形状	Description	白色粉末 White powder	
理化指标	Inspection		
项目 Items	指标 Specification	结果 Results	
鉴别试验 Identification	Pass A	Pass A	
碳酸钙(干基)CaCO ₃ (Dry base)	% 98.0~100.5	98.8	
干燥失重(Loss on drying)	% ≤2.0	0.5	
盐酸不溶物 Acid-insoluble substance	% ≤0.20	0.1	
铁 Iron	% ≤0.1	<0.1	
镁盐及碱金属 Magnesium and alkali salts	% ≤1.0	0.9	
钡 Barium	Pass the test	Pass the test	
氟限量(Limit of fluoride)	ppm ≤50	<50	
重金属(以 Pb 计) Heavy metals	ppm ≤20	<20	
铅 Lead	ppm ≤3	<3	
砷 Arsenic	ppm ≤3	<3 ur	
汞 Mercury	ppm ≤0.5	<0.5	
结论 Conclusion	合格 Qualified		
检验者 Checker	张美彦	审核者 Inspector	赵友莉



TECHNICAL DATA SHEET

Calcium carbonate

产品名称 Product name	碳酸钙 Calcium carbonate		
分子式 Molecular formula	CaCO ₃	海关编码 HS CODE	2836500000
分子量 Molecular weight	100.09	联合国编码 UN number	N/A
美国化学文摘社编号 CAS NO	471-34-1	国内编码 Domestic coding	N/A
国际海运危险货物规则页码 The international maritime dangerous goods code page	N/A		
欧洲现有商业化学品目录编号 EINECS	EINECS 207-439-9	结构式 Structural formula	
化学物质毒性数据库编号 The toxicity of chemicals database code	N/A		
外观 Appearance	白色粉末 White powder		
鉴别试验 Identification	Pass A		
碳酸钙(干基)CaCO ₃ (Dry base)	98.0%~100.5%		
干燥失重 Loss on drying	≤2.0%		
盐酸不溶物 Acid-insoluble substance	≤0.20%		
铁 Iron	≤0.1%		
钡 Barium	Pass the test.		
氟限量 Limit of fluoride	≤50ppm		
重金属(以 Pb 计) Heavy metals	≤20ppm		

铅 Lead	≤3.0ppm
砷 Arsenic	≤3.0ppm
汞 Mercury	≤0.5ppm
镁盐及碱金属 Magnesium and alkali salts	≤1.0%
生产工艺 简述 The production process	 <pre> graph LR A[Calcium carbonate] --> B[Beating] C[Water] --> B B --> D[Purification] D --> E[Centrifuge] E --> F[Drying sterilization] F --> G[Mixing] G --> H[Metal detection] H --> I[Packaging] I --> J[Sealing] J --> K[Inspection] K --> L[Storage] L --> M[Shipping] </pre>
使用量 Usage amount	按生产需要适量使用 According to production need to use
包装方式 Manner of packing	PE内袋，牛皮纸外袋或根据客户要求 PE bag inside, outside the kraft paper bag or according to customer's requirements
检测仪器 Detecting instrument	原子荧光光谱仪、电子天平、烘箱 Atomic fluorescence spectrometer, electronic balance, oven
用途 Usage	食品添加剂 Food additives 食品营养强化剂 Food nutrition enhancer

Technical Data Sheet WC-1500(Cationic Starch) for Paper

Product name : Cationic Starch

Product type : Modified Starch
(Corn starch, cationized by quaternary ammonium compound)

Application : Wet-end additive for paper

Packing : 4ply kraft paper bag containing 25kgs net

Stuffing : 17mts without pallet

Analytical data

Appearance	White Powder
Moisture (%)	Below 15
pH (30% W/W)	6.0 ± 1.0
Degree of substitution	0.070 ~ 0.080

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TECHNICAL DATA SHEET

CERTIFICATE OF ANALYSIS

Production name	Ion-Exchange-membrane anhydrous caustic soda (Caustic soda flakes)		Quantity	300MTS
Product Batch No.	20210405		Production date	Apr. 05 2021
Product spec	IS-IT-I		Packing	IN 25 Kgs PLASTIC WOVEN BAG
Standard	GB 209-2006		Period of Validity	2 YEARS
Address	BINHAI DEVELOPMENT ZONE, WEIFANG CITY, SHANDONG 262737, CHINA			
Tel	0086-0536-8164977			
Index	Index value			Inspection result
	Superior class	First class	Qualified	
NaOH % \geq	99.0	98.5	98.0	99.1
NaCl % \leq	0.03	0.05	0.08	0.03
Fe₂O₃ % \leq	0.005	0.008	0.01	0.005
Na₂CO₃ % \leq	0.5	0.8	1.0	0.5
Result	<p>These production NaOH quality has 99% ,inspected and accorded with index request of standard GB 209-2006 IS-IT- I –First class, and was judged of qualify.</p> <p style="text-align: right;">Special Inspection print</p>			

Responsibility person: 刘超 **Reviewer:** 张丽丽 **checker** 李志华



Technical Data Sheet

WWT-100S (Sodium hydroxide/Caustic Soda)

WWT-100S commonly known as caustic soda, lye, or sodium hydrate, is a caustic compound which attacks organic matter.

© **Properties and specific character**

- . Appearance: colorless, odorless viscous solution
- . Melting Point: 12 °C
- . Boiling Point: >100 °C
- . Specific gravity: 1.30
- . Solubility in water: Completely miscible
- . pH: 14.
- . Flash point: Not considered to be a fire hazard
- . Stability: Stable under ordinary conditions

© **Applications**

Direct application, (pulp and paper, soaps and detergents, alumina, petroleum, textiles, water treatment,); organic chemicals, (propylene oxide, polycarbonate, sulfur-containing compounds, sodium cyanide,)

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TECHNICAL DATA SHEET

NOPCO DF-112-NS Defoamer for Paper Coatings

NOPCO DF-122-NS is a powerful non-silicone antifoaming and defoamer for all pigmented coatings. This product is especially effective in coatings with substantial amounts of latex binders. It also performs well in coatings bound with starches, caseins and proteins.

Appearance	: Hazy, yellow amber liquid
Emulsifier Type	: Nonionic
Density, g/ml	: 0.91
Flash point °C	: 171
pH, 2% emulsion	:5.0
Hard water stability	: Stable
Solubility, aqueous	: Form milky emulsion
Viscosity,BM,cps	: 300

APPLICATION

For maximum results, Nopco DF-122NS should be added early in the coating preparation; high shear equipment ensures proper dispersion and prevents spot and "fish-eye" problems if additional defoamer is needed at recirculation tanks or standpipes, a more soluble defoamer is recommended. Normal application rates for Nopco DF-122NS are 0.1 to 0.3% of dry coating pigment.

Nopco DF-122NS is recommended as a defoamer in pulp mills and bleach plants. It is an excellent defoamer for alkaline pulp washing and screening, high alkalinity black liquor and deinking, washing and screening operations in bleach plants and oxidation tower liquors. Concentrated Nopco DF-122NS can be added directly to pulp mill and bleach plant systems: it can also be added at any concentration from stock emulsions. Mild agitation is recommended with stock emulsions to maintain uniform stability. No special equipment is needed for Nopco DF-122NS; it can be added with conventional metering or feed systems.

Nopco DF-122NS defoamer is approved by the FDA under the following indirect foodcontact sections of 21 CFR:

Section Title

175.105 Adhesives

176.200 Defoaming agents used in coatings

176.210 Defoaming agents used in the manufacture of paper and paperboard

177.1200 Cellophane

Freezing has no adverse effect on the product. If product is exposed to temperatures below its pour point, 7°C, it should be allowed to warm to room temperature and maintained at this temperature until uniform. Storage above 10C is recommended.

Additional handling information is contained in a material safety data sheet which is available on request.

Drum Net 180 kgs

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TECHNICAL DATA SHEET

JI-1000 (Insolubilizer) for Paper

■ PHYSICOCHEMICAL PROPERTIES

• Main component	modified polyamide condensate
• Appearance	yellowish liquid
• pH (@25°C)	7.0 ± 1.0
• Viscosity (@25°C)	< 100 cps
• Solid content	30 ± 1.0
• Specific gravity (25/4)	1.0 ± 0.1
• Ion type	nonionic

■ FUNCTION / ADVANTAGE

- Increase wet-picking strength
- Enhance printability including ink-setting
- Compatible with other coating additives

■ APPLICATION

- | | |
|---|-------------------------------------|
| • Applying point | mixing T/K |
| • Applying time | after SB-latex addition |
| • Applying dosage recommendation (solid basis)
weight of the pigments. | - About 0.3-0.5% based on the total |

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TECHNICAL DATA SHEET

SB LATEX

HITEX S108 for Paper Coating

Applications

SB Latex is particularly suited for high quality coated paper where high binding strength and good print gloss are required. It can be generally applicable multipurpose latex to the paper, which needs coating process necessarily.

Art Sheet offset	Art Web Offset	Paper Board	Roto gravure
O.K		O.K	O.K

Characteristics

SB Latex is designed for high speed Coating process, which can be obtained through realizing rather a small particle size. It exhibits outstanding high shear rheological properties, necessary for high solids, high-speed blade coatings.

Major Benefits

Required Field	Properties	Satisfaction
Process	LSV*	
	HSV**	
	Water Retention	
Paper	Paper Gloss	
	Stiffness	
	Porosity	
Print	Dry Pick	
	Wet Pick	
	Print Gloss	
	Ink Set-off	

Latex Properties

Properties	Unit	Value
Appearance		Opaque, White Liquid
Solid Content	%	49.0 ~ 51.0
Viscosity***	cps	Max.400
Particle Size	Nm	110 ~150
pH		7.0 ~ 8.5
Tg	°C	10, 12

Packing

- *200 kg PE Drum
(16 MT is minimum order)
- *20 Ft. ISO Tank Container
(20 MT is minimum order)

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TECHNICAL DATA SHEET

LUBRICANT NOPCOTE C-155S for Paper

Calcium Stearate Dispersion

Nopcote C-155S is a liquid, 55% solids calcium stearate dispersion for use in starch, protein or latex coatings. It improves the application of coatings and imparts a superior finish to coated paper. Among its outstanding features are its economy and ease of use.

Nopcote C-155S has set the industry standard for years by providing maximum dispersion stability and strict quality standards. Control of free calcium at a minimal level protects against the possibility of coating destabilization.

By lubricating the coating, Nopcote C-155S improves flow and leveling characteristics, making possible smooth, even application. It also plasticizes the dry coating and improves its printability, gloss and smoothness.

Nopcote C-155S prevents dusting at the supercalenders and during slitting and printing operations, resulting in higher operating speed.

Where supercalendering is not required, Nopcote C-155S gives a high finish with machine calenders alone.

Appearance	: Mobile, white opaque liquid
Density, g/ml	: 1.03
pH, 2% emulsion	: 10.5
Solubility, aqueous	: Dispersible
Viscosity, BM, cps	: 800

Nopcote C-155S is normally used at a level of 0.5-1.5% on the weight of the dry solids in the coating. Being a mobile liquid, no predispersion is necessary. It may be mixed directly with the coating color at any convenient point in the make-down of the color. When starch is the adhesive, however, it should not be added until the starch has been cooked.

Nopcote C-155S dispersion is stable in the presence of alkalis and dilute acid solutions. it should not be subjected to strong acid solutions, since decomposition of the calcium stearate will result.

Nopcote C-155S contains ingredients which comply with the following indirect foodcontact applications listed in 21 CFR:

Section	Title
175.105	Adhesives
176.170	Components of Paper and Paperboard in Contact with Aqueous and Fatty foods (subject to extractive limitations)
176.180	Components of Paper and Paperboard in Contact with Dry Food.
176.200	Defoaming agents used in coatings

Freezing will seriously damage the product. Protect against low temperatures in storage. Containers should be kept tightly closed when not in use to avoid evaporation losses. Additional handling information is contained in a material safety data sheet which is available on request.

Drum Net 210kgs

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Technical Data Sheet

SS-1450(OXIDIZED STARCH)

As industrial use oxidized starch with low viscosity of remaining liquid and strengthened property, SS-1450 is widely used in the paper industry and paints industry, as it has high fluidity, film printability and adhesiveness typical of starch.

Characteristics

It allows the rationalization of gelatinization or additive process, as its chemical, mechanical treatments is simple

It allows the same oxidized starch to be used for various purposes such as paper surface sizing and pigment coating.

It makes high-concentration cooking possible, as its paste viscosity low and maintains its properties even used for a long period of time, as it has excellent stability.

It has excellent compatibility with other materials such as synthetic resins or CMC when applying oxidized starch.

Purpose of use

Paper surface sizing, pigment coating, textile sizing and finishing agent, gum board adhesive

Standards

Classification	SS-1450
Exterior	White power
Moisture	Below 13.5%
Whiteness	Above 92%
pH	6.5 ~ 8.0
Viscosity (10% sol'n, 50 °C)	11 cps ~ 17 cps

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Packing & Storage

22kg bag, 500kg bag; store in dry and shaded area; 2years of expiration period



TECHNICAL DATA SHEET

JOP-450 (Hollow Plastic Pigment for Paper)

■ PHYSICOCHEMICAL PROPERTIES

• Main component	polyacrylate-styrene copolymer
• Appearance	milky whitish emulsion
• pH (@25°C)	9.0 ± 1.0
• Viscosity (@25°C)	< 100 cps
• Solid content	27.5 ± 1.0%
• Specific gravity (25/4)	1.02 ± 0.05
• Ion type	anionic

■ FUNCTION / ADVANTAGE

- Increase optical properties (opacity, paper gloss, brightness)
- Enhance printability including printing gloss
- Low viscosity & liquid state
- Lower specific-gravity

■ APPLICATION

- | | |
|--|--|
| • Applying point | deliteur, mixing T/K |
| • Applying time | before SB-latex addition |
| • Applying dosage recommendation (solid basis) | Can replace about 5-10% of kaolin clay |

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TECHNICAL DATA SHEET

Starch spraying for Paper

Starch spraying is one of the easiest and the Most cost-effective methods to increase paper strength and to achieve proper inter-ply bond. Starch can be applied by sprayers whereby uncooked starch in slurry form is sprayed on the wet web at the wire section and the starch is then gelatinized by heating at the first drying section.

Properties

DAESANG's starch products for spraying are native corn starch, MTB series, Oxistar #500 and Supercat D-40. The gelatinization temperature of these starches is remarkably lowered by the introduction of functional groups. Because these starch granules must be easily gelatinized in the first drying section, the bonding (adhesive) strength is higher than pearl starch.

Application

The most important requirements of the starch spraying are that 1) the starch slurry has to be uniformly distributed in the cross direction; and 2) the completed gelatinization of starch has to be accomplished during the first drying section.

Specification

Item	Corn starch	MTB #1200	Supercat D-40	Oxistar #500
Apperance	White power	White power	White power	White power
Whiteness(%)	88.0↑	89.0↑	87.0↑	94.0↑
Moisture (%)	10.0 ~ 13.0	10.0 ~ 13.0	14 ± 2	10.0 ~ 13.0
Ash (%)	1.0↓	1.0↓	1.0↓	1.0↓
Grits (%)	0.1↓	0.1↓	0.1↓	0.1↓
Viscosity (at 50°C, conc. 4%)	800 ~ 1200	20 ~ 45	200↑	10 ~ 20
Gelatinization Temperature (°C)	80 ~ 85	70 ~ 75	60 ~ 65	67 ~ 70

DAESANG offers a full range of modified starches for your end-use requirements. A team of technical service will assist you in choosing the right type of starch, the addition level and the addition points by performing initial surveys and on-site measurements. A full assistance during the start-up period, as well as after-sales service, is available.

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Technical Data Sheet Surface sizing Starch

Surface sizing of paper with starch is well established and has many advantages: improved dry strength, internal bond strength, stiffness, surface properties, printing properties and reduced dusting and moisture adsorption. The use of modified starch, instead of unmodified starch, for surface applications is desirable for several reasons.

Properties

Oxistar series have some grades with viscosity and hydrophilic groups. The presence of carboxyl and carbonyl groups in starch hinders the retrogradation of starch molecules and increase the stability of cooked starch slurry. Once hydrolyzed, they also penetrate into the sheet, increasing strength values by 25 to 35%.

Supercat #3000 series are the oxidized cationic starch grades for the paper industry, especially applied for surface sizing of papers and boards. The following shows advantages of these starches.

Reduced BOD & COD of the effluent

In contrast of traditional starch, about 80% of Supercat #3000 series remain on fibers after repulping of broke, resulting in the reduction of effluent problems. This creates more benefits for paper grades generating a significant amount of broke (like printing and writing paper).

Highly cost-effective

The reduced loss in raw material from waste water plus the ability to save on expensive fibers by increasing the filler level make the supercat #3000 series highly cost-effective.

Reduced dusting and increased pick strength

Supercat #3000 series' cationic charge retards their penetration into the paper, keeping the starch solution nearer the surface of paper. Hence, the improved pick strength and reduced dusting can be obtained at lower starch addition level.

Better printability

The cationic charge of the Supercat #3000 series is attributable to better printability. Since the pigments in printing inks are anionic in nature, they can be very nicely fixed to the cationic sites of the cationic starch while they tend to be repelled by anionic starch. Consequently, cationic starch improves the printability of paper, even in ink-jet printing.

Application

Whether the conversion takes place in the paper mill or in our plant, it is very important to guarantee a constant viscosity and a narrow molecular weight distribution.

Viscosity of Oxistar series & Supercat #3000 series is controlled to compromise between the runnability of size press, the penetration of sizing solution into the sheet, and the strength and the surface properties of paper. These starches are already hydrolyzed to the most suitable viscosity for a traditional size press and a metered size press application. They can be cooked (batch or jet) at 15 to 20% concentration. Oxistar #100 and supercat #3050 can be used for a pigmented-metered size press application.

Size press starches have to be diluted to working concentration: 7 to 10% for conventional size press, 10 to 15% for metered size press, undiluted for pigmented metered size press.

Specification

Oxistar series

Item	Oxistar #5030	Oxistar #5050	Oxistar #5070
Appearance	White power	White power	White power
Whiteness(%)	97.0↑	97.0↑	97.0↑
Moisture (%)	10.0 ~ 13.0	10.0 ~ 13.0	10.0 ~ 13.0
Ash (%)	1.0↓	1.0↓	1.0↓
pH (10% sol)	6.5~7.5	6.5~7.5	6.5~7.5
Grits (%)	0.1↓	0.1↓	0.1↓
Brookfield viscosity(at 50°C, conc. 10%, cps)	9 ~ 13	13 ~ 18	18 ~ 25

Supercat #3000 series

Item	Supercat #3050	Supercat #3060
Appearance	White power	White power
Moisture(%)	12 ± 1	12 ± 1
pH (10% sol)	6 ~ 8	6 ~ 8
Brookfield viscosity(at 50°C, conc. 10%, cps)	10 ± 2	15 ± 2
Degree of substitution	Tailored to the customer's requirements	

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TECHNICAL DATA SHEET

SN-Thickener 920

Rheology Modifier for Paper Coatings

SN-Thickener 920 is newly developed alkali swellable rheology modifier. This product is effective as rheology modifier and water retention agent for paper coatings and rheology modifier for water based paints.

Appearance	: White emulsion
Solid content(%)	: 30%
Viscosity(mPa.s)	: 10 Brookfield viscometer, 25°C
pH	: 3 as is
Specific gravity	: 1.06 (20°C)
Ionic charge	: Anionic
Solubility	: Easily dispersible in water

SN-Thickener 920 is a low viscosity, high solid alkali swellable polymer emulsion. Pre-neutralization or dilution is not needed.

SN-Thickener 920 can be added directly to coating color under good agitation because it is easily neutralized with alkali in the coating color.

As SN-Thickener 920 is a high solid emulsion, addition of this causes little affect to coating color solid.

Because of its chemical nature, SN-Thickener 920 is stable from bacteria attack.

By increasing water retention, SN-Thickener 920 stabilizes viscosity of color, prevent streak, uneven coating, uneven absorption to base paper and binder migration.

SN-Thickener 920 is compatible with satin white.

SN-Thickener 920 is added at the last stage of color making at pH of 9.5 to 10 under good agitation. Final pH should be higher than 8.5.

SN-Thickener 920 is recommended to add at a range of 0.05 to 0.3% per pigment of coating color on dry basis.

TECHNICAL DATA SHEET

Wet-end starch for Paper

Starches added to the wet-end improve the dry strength of paper, the filler and fines retention and drainage. Cationic charge is required so that the starch can be easily adsorbed on the surface of particles and bridge anionic cellulose fibers and fillers. In a papermaking furnish - which consists of fibers, fines, fillers, sizing agents, etc.- most of the particles have a negative charge and hence are stabilized by electrostatic repulsion. Adding cationic starch to the stock increases polymer bridging between particle, resulting in improvement of retention and for-mation.

Fig.1 A cohesive network between starch and fiber or filler

Properties

Increased dry strength

The cationic starch is adsorbed on the anionic fiber surface by electrostatic interaction. The adsorbed cationic starch improves the retention of fiber fines in the sheet and also the cationic starch itself provides additional hydrogen bonding area between fibers. The increased bonding area will result in the reinforcement of the strength properties of paper.

Increased retention of filler and fines

Cationic starches are easily adsorbed on anionic particle surfaces (fiber, fines and filler). The adsorbed starch molecules improve bridging between fiber and filler or fines, resulting in the increase in fines and filler retention.

General effects on printability

Improved printability may be one of the greatest benefits resulting from the use of cationic starch. Cationic starch eliminates the problems of picking caused by weakly bonded filler, fiber fines, and hardwood vessel segments, and increases internal bond (Scott bond) strength and surface strength.



Reduced load of save-all

The cationic starch is permanently adsorbed on fiber and filler or fines surface, particularly when it is repulped, and hence the cationic starch is retained on the fiber with the filler and fines. This results in cleaner white water and reduced COD and BOD in the effluent.

Improved sizing effect in alkaline sized paper

In alkaline sizing, specifically, cationic starch performs two important functions. First, cationic starch acts as a stabilizer for alkenyl succinic anhydride(ASA): cationic starch allows them to function with maximum effectiveness. M-tac and Supercat also improve sizing effect and sheet strength when used as wet-end additives with alkyl ketene dimer(AKD).

Application

Cationic starch is prepared by mixing with water and cooking in a jet or batch type cooker. It should be diluted to 1 % or less solid content prior to addition to the machine.

Optimum application rates vary from mill to mill and from grade to grade. Concerning the strength properties of paper, cationic starches should be added to the system as early as possible, e.g. at the mixing chest. The most efficient dosage is between 0.5 and 2.0% of dry starch per dry fiber. To improve retention and drainage, 0.4 - 0.8% of cationic starch per dry fiber should be added at the closest location to the headbox. In some cases, a separated addition is advised. Cationic materials like alum can compete with cationic starches for adsorption sites. Thus, it is important to introduce cationic starch at different points.

Specification

M-tac series

Item	M-tac #5030	M-tac #5050	M-tac #5070
Appearance	White power	White power	White power
Moisture(%)	12 ± 1	12 ± 1	12 ± 1
pH (10% sol)	5.5~7.5	5.5~7.5	5.5~7.5
Ash (%)	0.35↓	0.5↓	0.5↓
Brookfield viscosity(at 50°C, conc. 10%, cps)	1000↓	1000 ~ 1500	1000↓
Degree of substitution	0.02~0.027	0.02~0.027	0.035 ± 0.005

Supercat series

Item	D-40	D-60	D-80	D-100
Appearance	White power	White power	White power	White power
Moisture(%)	14 ± 1	14 ± 1	14 ± 1	14 ± 1
pH (10% sol)	5↑	5↑	5↑	5↑
Brookfield viscosity(at 50°C, conc. 10%, cps)	200↑	250↑	300↑	350↑
Degree of substitution	0.04±0.005	0.06±0.005	0.08±0.01	0.1±0.01

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