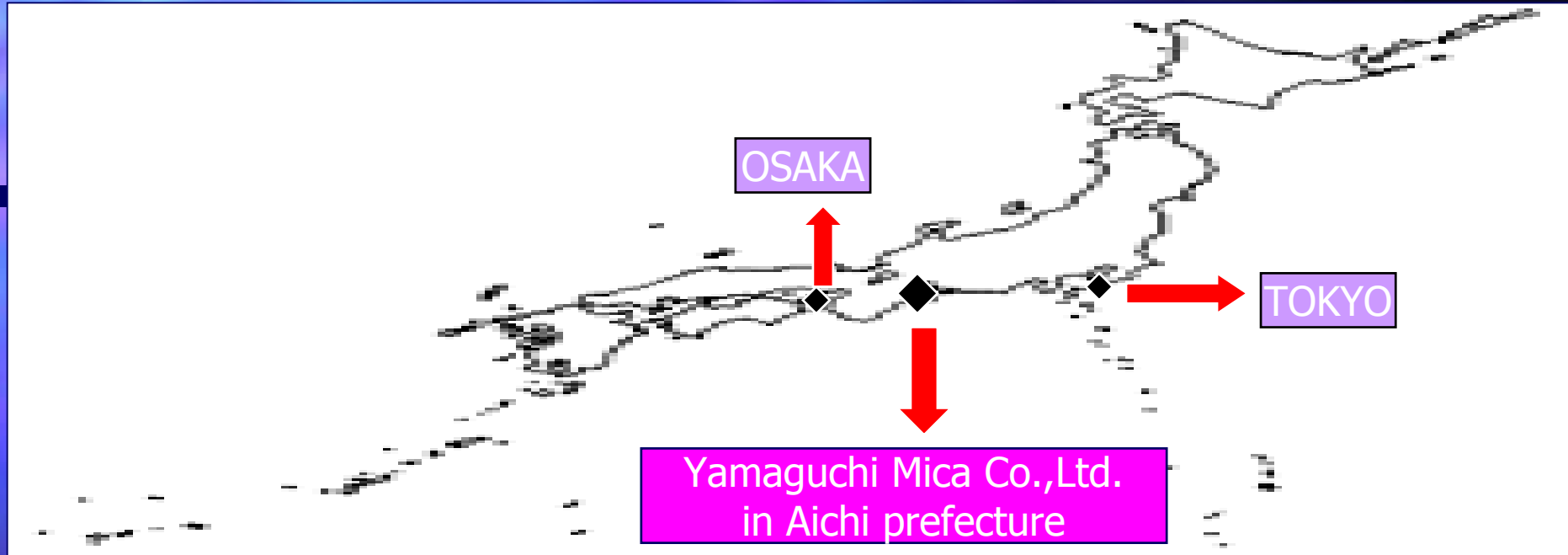


Mica For Cosmetics

Yamaguchi Mica Co., Ltd.



INTRODUCTION



Company outline

- Capital: 47.6 million-yen
- Head office factory
 - Factory site: 4,950m²
 - Factory building: 1,690m²
- Toyohashi factory
 - Factory site: 5,057m²
 - Factory building: 2,900m²

Products

- Various kinds of mica and talc powder
- Capacity
 - Dry ground mica powder: 500t/month
 - Wet ground mica and talc powder: 300t/month
 - Colored mica powder: 30t/month
 - Pelletized mica powder: 150t/month
 - Surface treatment: available

THE HISTORY OF YAMAGUCHI MICA CO., LTD.

1951. 4. Started manufacturing of mica powder.

Cosmetic grade

1978. The major Japanese cosmetic companies started to adopt Yamaguchi's mica powder.



The present

Many Japanese cosmetic companies have been using our products for many years.

We are a leading manufacturer of mica powder in Japan.

Industrial grade

1989. Began to be used for engineering plastics as filler.

It has been well received because Yamaguchi's mica powder gives high properties to resin, as it is far thinner than the others.

2000. Started to offer Yamaguchi's products to overseas cosmetic companies.

YAMAGUCHI'S SPECIAL TECHNOLOGIES

1. Manufacture of thin mica and talc powder
 - Grinding technologies by our specially designed grinding machine.
 - Accurate and strict control of particle size, which is prepared by combination of three kinds of methods.
2. Calcination at high temperature (up to 900 degrees)
3. Surface treatment using silicon

WHAT IS MICA?

Mica is a crystallized minerals, gathered through numerous materials. It takes many years to form in a high temperature and pressure environment.

Mica is the most unique clay mineral.

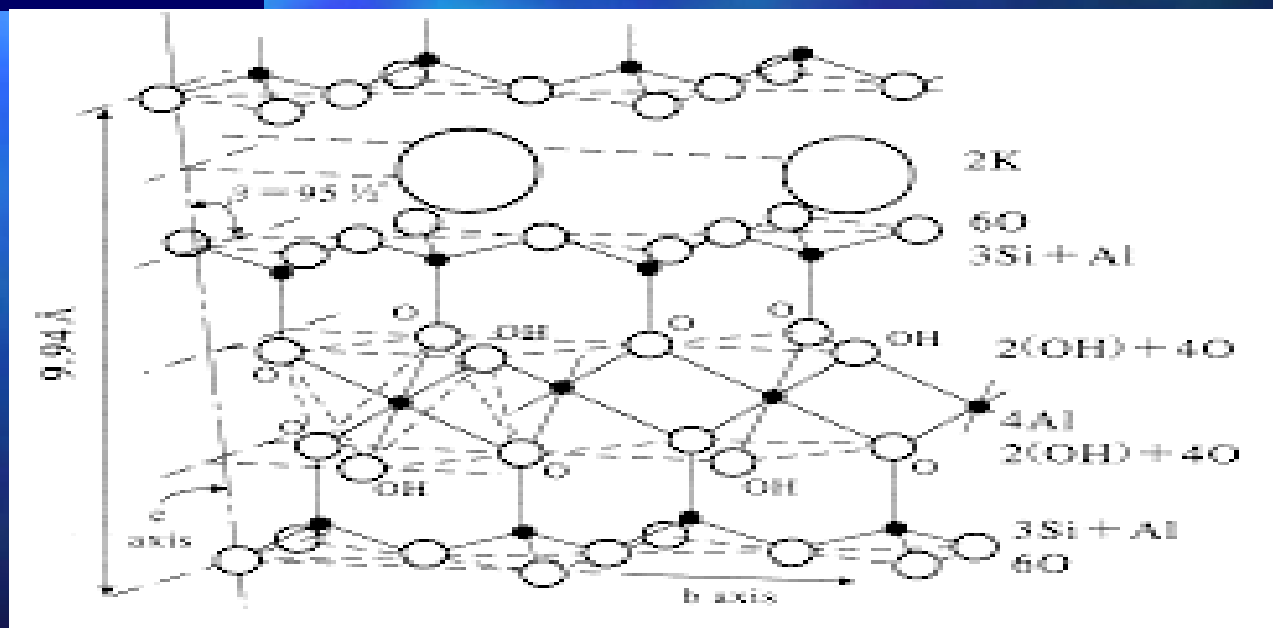
The condition of the formation of mica defers from place to place. Therefore the characters are various and numerous.

It seems that mica has boundless possibilities.

CHARACTERISTICS OF MICA

- Mica is the thinnest natural mineral.
- Mica has elasticity .
- The layers of mica can be peeled off easily. This is due to the weakness of molecular bounding.

<crystal structure of Muscovite>



Sorts of Mica

The composition of mica, raw materials, are Muscovite, Phlogopite and Biotite.

<chemical structure>

Muscovite	$K(AlSi_3O_{10})(OH)_2Al_4(OH)_2(AlSi_3O_{10})K$
Phlogopite	$K(AlSi_3O_{10})(OH)_2Mg_6(OH)_2(AlSi_3O_{10})K$
Biotite	$K(AlSi_3O_{10})(OH)_2(Mg,Fe)_6(OH)_2(AlSi_3O_{10})K$

- We choose Indian Muscovite, which has the highest quality for producing mica powder.



WHAT KIND OF BENEFIT DOES THE MICA GIVE TO THE COSMETICS?

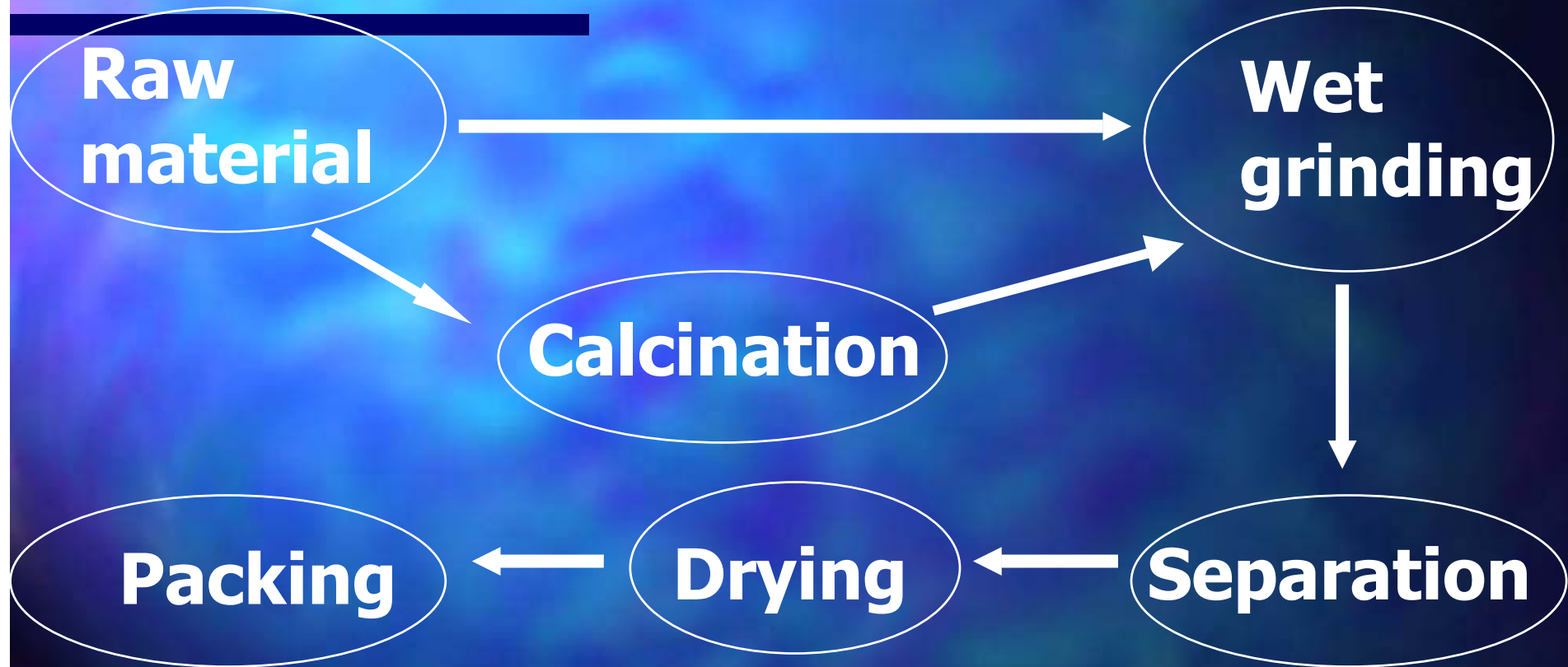
1. Good feeling, smooth, soft, fine-texture and the like.
2. Natural gloss.
3. Transparency .

CHARACTERISTICS OF YAMAGUCHI'S MICA AND TALC

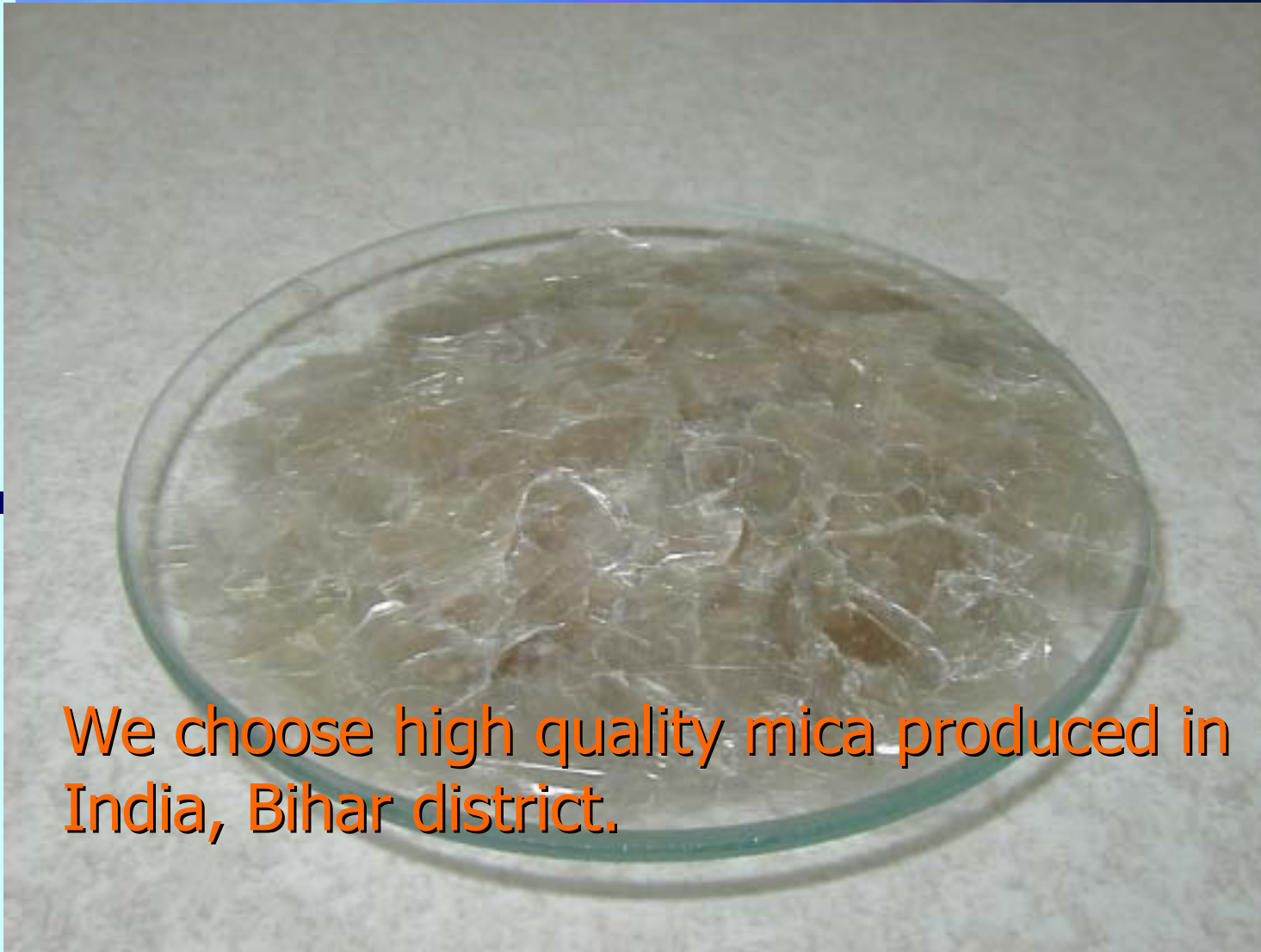
Yamaguchi's mica and talc are superior to the others in these respects.

- Very thin
- Flat and smooth surface
- High slip
- Excellent skin adhesion
- High spread
- High degree of transparency
- Many variations of particle size

Manufacturing process



RAW MATERIAL



We choose high quality mica produced in India, Bihar district.

CALCINATION

Calcination of the material at the high temperature. (from 750 to 900 degrees)



Mica come to peel off thin when a water of crystallization which belongs in between the layers are vaporized.

WET GRINDING (use water for grinding)

FACILITY

We developed our specially designed grinding machine.



It gives physical load to a lamellar mica or talc in a completely different way from other machines.

TECHNICAL FEATURE

Control of grind time and amount of water



Achievement of high quality mica powder with very thin and fine, flat surface and high aspect ratio.

CONTROL OF PARTICLE SIZE

Our separation system of particle size is very accurate and sophisticated. There are three kinds of methods. Which are.

1. Sieve: 60-325 mesh
2. Centrifuge: control of rotational speed
3. Natural sedimentation:
Control of sedimentation time



DRYING

Drying condition: Temperature 150 degrees

Hour 8-19 hr

True fungi die out at this point.



FINISHING PACKING

Loosen
Packing



LINES OF PRODUCTS

PRODUCT SERIES	PROPERTIES	PRODUCT NAME
Y SERIES	Ground with proper amount of water. Yamaguchi's original product.	Y-1800, Y-2300, Y-2400, Y-3000
SA SERIES	Ground with larger quantity of water. Luster type.	SA-110, SA-310, SA-350
CALCINE SERIES	Calcined raw material before wet grinding. Very thin and high degree of skin adhesion.	NCF-322, YC-180, NCC-322, NCC-180
SILKY TALC	Wet ground talc powder, Excellent skin feel due to the thinness.	FK-300S, FK-500S
OTHERS	Low cost type, high luster type, creamy type, white type and the like.	AB-25S, FA-450, NCR-300, YW-2300X

Y series

Y series are matte finish.

It is used a proper amount of water for grinding.

Product name	Average Particle Size (μm)	Properties
Y-1800	7.0-12.0	The finest type in the Y series.
Y-2300	18.0-21.0	Removed coarse and finer particle. Natural sheen and luster.
Y-2400	18.0-21.0	Lowest degree of gloss in our products.
Y-3000	22.0-26.0	Removed coarse and finer particle. Natural sheen and luster.

SA series

SA series are luster finish with soft texture. It is used a larger amount of water than Y series for grinding.

Product name	Average Particle Size (μm)	Properties
SA-110	8.0-12.0	The finest type in the SA series with good skin adhesion.
SA-310	24.0-28.0	Removed coarse and finer particle. Excellent skin feel.
SA-350	35.0-45.0	Wide range of particle distribution.

Calcination series

Calcination series are very thin, excellent skin adhesion and high oil adsorption. It is ground after calcination of raw material at high degree of 800-900.

Product name	Average Particle Size (μm)	Properties
NCF-322	22.0-26.0	Silver, moderate luster. Calcination of Muscovite.
YC-180	8.0-12.0	Used the same material as NCF-322 and finer finish.
NCC-322	21.0-27.0	Gold color and excellent skin adhesion. Calcination of different kind of Muscovite from NCF and YC series.
NCC-180	8.0-12.0	Used same materials with NCC-322 and finer finish.

OTHER MICA

Product name	Average Particle Size (μm)	Properties
NCR-300	22.0-25.0	Used a Phlogopite as raw material. High degree of skin adhesion and the moderate creamy touch.
YW-2300X	18.0-21.0	Used a Muscovite as raw material. Yellowish white color. Restrained a color change to dark and dull when it get wet with oil.
AB-25S	22.0-26.0	Used a Muscovite as raw material. Low cost type.
A-41	44.0-55.0	Used a Muscovite as raw material. Low cost type.

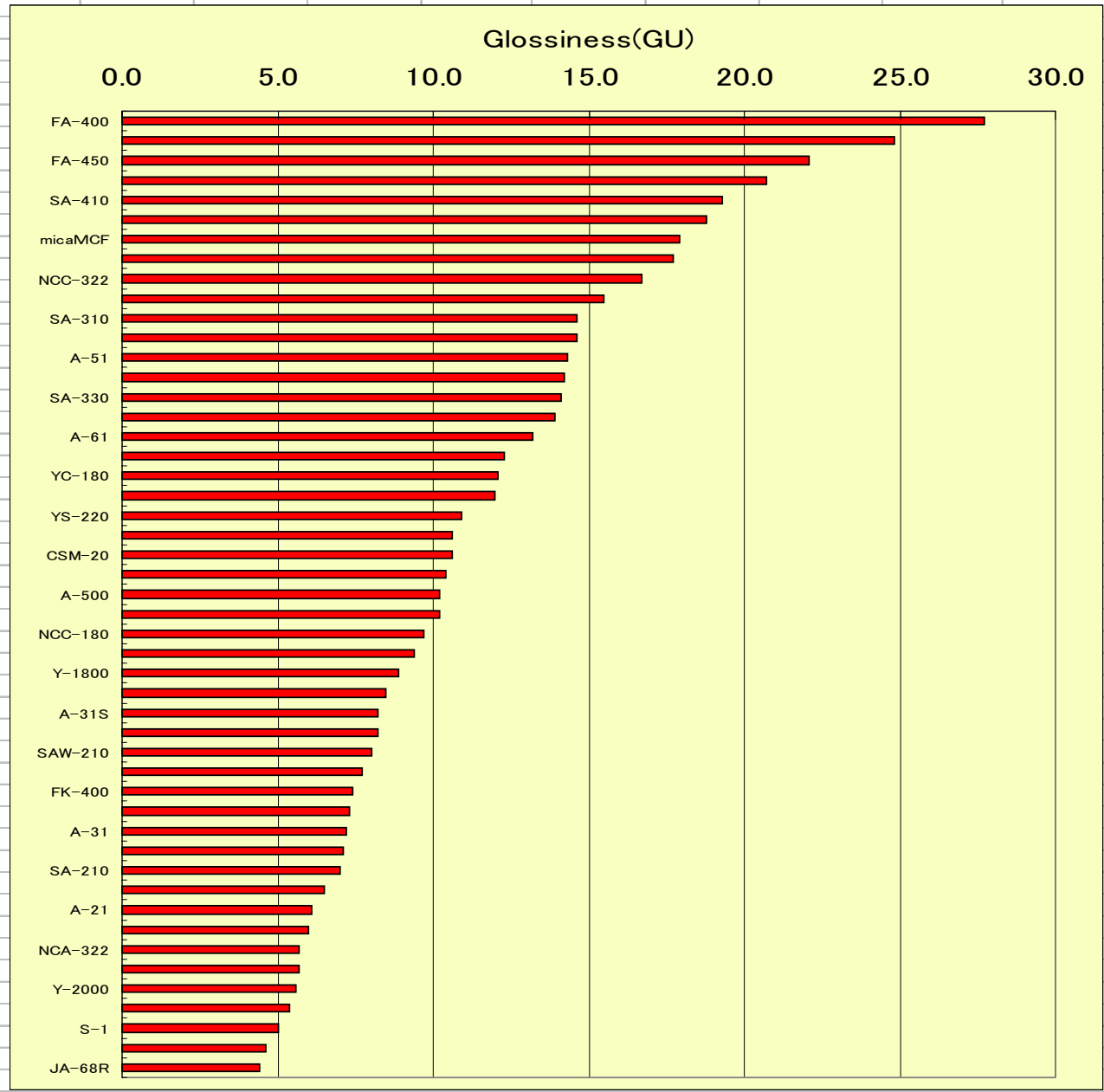
Silky Talc

Silky talc is very unique powder.

There are FK-type and CT-type which are obtained by grinding talc produced in China.

Product name	Average Particle Size (μm)	Properties
FK-type FK-300S FK-500S	16.0-19.0 9.5-11.5	Smooth and soft skin touch. Sharp distribution of particle size.
CT-type CT-33	7.0-11.5	Thin finish. Made out of different raw material, china talc, from the one for FK-type.

	Product	GI
MICA	FA-400	27.7
MICA	FA-250	24.8
MICA	FA-450	22.1
MICA	FA-500	20.7
MICA	SA-410	19.3
MICA	SA-350	18.8
× MICA	micaMCF	17.9
MICA	NCR-300	17.7
MICA	NCC-322	16.7
MICA	A-41	15.5
MICA	SA-310	14.6
× MICA	micaMJV	14.6
MICA	A-51	14.3
MICA	NCF-932	14.2
MICA	SA-330	14.1
MICA	AB-25	13.9
MICA	A-61	13.2
MICA	YW-2300X	12.3
MICA	YC-180	12.1
MICA	Y-3000	12.0
MICA	YS-220	10.9
MICA	Y-2300	10.6
TALC	CSM-20	10.6
MICA	Y-2400	10.4
MICA	A-500	10.2
MICA	SA-110	10.2
MICA	NCC-180	9.7
MICA	NCA-321	9.4
MICA	Y-1800	8.9
TALC	FK-280S	8.5
MICA	A-31S	8.2
MICA	Y-2200	8.2
MICA	SAW-210	8.0
TALC	FK-500S	7.7
TALC	FK-400	7.4
TALC	FK-300S	7.3
MICA	A-31	7.2
MICA	Y-1500	7.1
MICA	SA-210	7.0
MICA	NCB-321	6.5
MICA	A-21	6.1
TALC	CT-30	6.0
MICA	NCA-322	5.7
MICA	NCB-322	5.7
MICA	Y-2000	5.6
TALC	CT-35	5.4
× TALC	S-1	5.0
MICA	A-11	4.6
× TALC	JA-68R	4.4



Specification of Each Mica							
	SA-310	Y-2400	Y-3000	YW-2300	M (Other)	NCF-322	NCC-322
	mica	mica	mica	mica	mica	calcined	calcined
Particle Size (average) μ	25.70	18.35	24.42	19.59	30.03	23.63	21.96
(10%)	8.03	6.25	7.68	6.12	9.95	7.56	7.81
(50%)	23.07	17.19	21.80	17.89	26.07	21.61	20.30
(90%)	45.57	31.51	43.36	34.87	53.62	41.46	37.30
Particle Range (10-90%)	37.54	25.26	35.68	28.75	43.67	33.90	29.49
Aspect Ratio	40.0	38.0	26.5	26.0	25.3	55.6	33.3
Glossiness (GU)	14.6	10.4	12.0	13.8	17.9	14.2	16.7
Brightness (L)	92.20	92.55	81.90	95.46	92.60	92.67	78.93
Whiteness (Y)	80.50	82.50	81.90	88.59	80.86	70.30	54.40
Coefficient of Dynamic Friction	0.36	0.58	0.53	0.56		0.52	0.47
Oil Absorption (Linseed Oil) (ml/g)	39.72	51.90	52.75	53.40	49.62	55.08	59.13
Degree of Dullness (ΔE) (Dry Powder -Absorbing liquid paraffin)	23.55	25.58	23.54	18.35	22.37	40.34	27.32
Bulk Density (cc/g)	5.72	5.95	3.94	5.41	6.30	6.48	6.80
Loss on Drying (%)	0.1	0.2	0.1	0.1		0.2	0.1
As (ppm)	0.9	0.9	0.5	<0.5		0.9	0.5
Pb (ppm)	2.3	2.3	1.0	<1.0		2.3	4.4
Hg (ppm)	<0.01	<0.01	<0.01	<0.01		<0.01	<0.01
Acid Soluble (%)	0.4	0.4	0.4	0.4		0.4	0.8

Specification of Each Mica					
	NCR-300	AB-25S	FA-450	YS-220	Y-2300
	Phologopite	mica	mica	mica	mica
Particle Size (average) μ	21.40	23.75	28.01	9.05	18.16
(10%)	6.82	7.15	11.19	2.22	5.74
(50%)	18.96	21.11	26.08	7.56	16.43
(90%)	38.50	42.58	46.08	16.40	31.91
Particle Range (10-90%)	31.68	35.43	34.89	14.18	26.17
Aspect Ratio	45.0	40.0	45.0	40.0	28.0
Glossiness (GU)	17.7	12.2	22.1	10.9	11.9
Brightness (L)	88.82	81.50	90.75	93.54	91.21
Whiteness (Y)	73.47	83.75	77.75	84.10	78.66
Coefficient of Dynamic Friction					
Oil Absorption (Linseed Oil) (ml/g)	48.43	46.64	44.81	54.32	45.68
Degree of Dullness (ΔE) (Dry Powder -Absorbing liquid paraffin)					23.59
Bulk Density (cc/g)	6.53	6.23	6.53	5.60	3.39
Loss on Drying (%)	0.2	0.1	0.2	0.1	0.1
As (ppm)	0.2	0.2	0.2	0.3	0.3
Pb (ppm)	<0.1	0.9	0.9	1.0	1.0
Hg (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01
Acid Soluble (%)	1.8	0.4	0.4	0.4	0.4

Specification of Each Talc				
	FK-300S	FK-500S	A(Other)	S (Other)
	talc	talc	talc	talc
Particle Size (average) μ	17.84	9.09	12.60	24.50
(10%)	5.40	2.42	3.83	5.67
(50%)	16.13	7.99	10.39	21.99
(90%)	31.88	16.52	23.62	46.18
Particle Range (10-90%)	26.48	14.10	19.79	40.51
Aspect Ratio	30.3	27.0	20.0	18.5
Glossiness (GU)	7.3	9.0	4.4	4.9
Brightness (L)	98.31	97.78	98.57	97.52
Whiteness (Y)	95.96	95.04	94.38	93.62
Coefficient of Dynamic Friction	0.28		0.27	
Oil Absorption (Linseed Oil) (ml/g)	43.83	39.89	44.75	34.27
Degree of Dullness (ΔE) (Dry Powder -Absorbing liquid paraffin)	10.25	11.01	12.72	14.94
Bulk Density (cc/g)	3.91	4.22	3.82	2.15
Loss on Drying (%)	0.1	0.3		
As (ppm)	1.3	1.3		
Pb (ppm)	1.0	1.0		
Hg (ppm)	<0.01	<0.01		
Acid Soluble (%)	0.1	0.1		

SILKY TALC

It is not talc though it is talc

FK-300S

Characteristics

- The particle size is larger than general talc and the aspect ratio is high.
- The particle surface is smooth and flat.
- The particle edge is round.
- It peel off easier than common talc.

EXCELLENT PROPERTIES



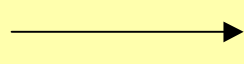
Silky talc will be offered as a product which gives something new benefit to cosmetics. Therefore we don't take it as substitutes for a general talc powder.

SILKY COLOR

Silky color is a wet ground talc colored with an organic pigment. It not only gives a smoother and softer skin touch to cosmetic formulations but also produces a visually attractive effect.

CHARACTERISTICS

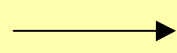
● Silky touch



Loose powder

Pressed powder

● Mild coloration



Control intensity of color cosmetics

APPLICATION

CFK-300 ROSE

CFK-300 AQUA

CFK-300 LEMON



SILKY COLOR

CFK-300 ROSE

CFK-300 AQUA

CFK-300 LEMON



SILKY COLOR SERIES				
		CFK-300S ROSE	CFK-300S AQUA	CFK-300S LEMON
Bulk Density		3.51	2.91	2.94
Phydrophobicity		O.K.	O.K.	O.K.
Hue Powder	L	67.08	73.47	94.79
	a	43.08	-12.98	-7.98
	b	11.28	-26.83	47.17
Hue Film	L	57.22	67.27	89.45
	a	54.53	-18.74	-8.10
	b	24.06	-35.51	47.63
Cohesion		$\leq 60 \mu$	$\leq 30 \mu$	$\leq 30 \mu$
Elution	IPA	○	○	○
	Liq.PFN	○	○	×
PH		9.94	6.45	7.06
Oil Absorption		47.73	36.22	45.51
Loss On Drying		0.06	0.02	0.07

SILICON TREATMENT

Yamaguchi Mica offers a silicon treatment which changes hydrophilic powders into hydrophobic ones and enhances a skin feel.

We have two kinds of processes for silicon treatment. These are.

Conventional process

Stir with mixing machine



Drying

Yamaguchi's original process

Pre-mix



Knead with specially designed machine



Drying



Achievement of price reduction
due to mass production methods.

Products.....AB-25PS21, TM-20PS39 and the like.

We are pleased to offer a silicon treatment for other powders besides Yamaguchi's mica and talc powders.

Please ask us for more information.

AB-25PS21

AB-25PS21 is obtained by silicon (methicon) treatment of wet ground mica powder (AB-25S). We succeeded in reducing the price by utilizing an industrial production method which has made mass production possible. We are sure that the quality is not lower than conventional products. AB-25PS21 will give you satisfaction in the merits of silicon treatment such as hydrophobicity and improvement of skin feel for a lower price.

AB-25S(before silicon treatment)

Particle Size (average) μ	23.75	Oil Absorption (Linseed Oil) (ml/100g)	46.64
-10%	7.15		
-50%	21.11	Degree of Dullness (ΔE)	10.25
-90%	42.58	(Dry Powder -Absorbing liquid paraffin)	
Particle Range (10-90%)	35.43	Bulk Density (cc/g)	6.23
		Loss on Drying (%)	0.10
Aspect Ratio		As (ppm)	0.20
		Pb (ppm)	1.00
Glossiness (GU)	12.20	Hg (ppm)	<0.01
		Acid Soluble (%)	0.10
Brightness (L)	81.50		
Whiteness (Y)	83.75		

TM-20

We succeeded in developing far thinner mica by our original grinding technology.

CHARACTERISTICS

- Very thin particle (about 0.1 μm)
- Very smooth touch
- Good skin adhesion
- High glossiness
- High oil absorption
- High bulk density

APPLICATIONS

- PRESSED POWDER
- LIQUID FOUNDATION
- LOOSE POWDER



Yamaguchi Mica Co., Ltd.
10-2, 2-chome, Misono, Kozakai-cho,
Hoi-gun, Aichi 441-0106 JAPAN

Tel (81)-533-72-2188
Fax (81)-533-72-5157



Specification <TM-20>

Particle Size (average) μ	23.77	Oil Absorption (Linseed Oil) (ml/100g)	64.10
(10%)	8.44		
(50%)	21.40	Degree of Dullness (ΔE)	34.86
(90%)	41.24	(Dry Powder -Absorbing liquid paraffin)	
Particle Range (10-90%)	32.80	Bulk Density (cc/g)	11.30
		Loss on Drying (%)	0.2
Aspect Ratio	about 200	As (ppm)	0.3
		Pb (ppm)	0.9
Glossiness (GU)	24.10	Hg (ppm)	<0.01
		Acid Soluble (%)	0.4
Brightness (L)	87.91		
Whiteness (Y)	73.60		

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SUMMARY

Grinding technologies

Our specially designed grinding machine enables us to manufacture a high quality of mica powder, which the other makers doesn't have. We assure you of the thinness and fineness of our mica and talc.

Control of particle size

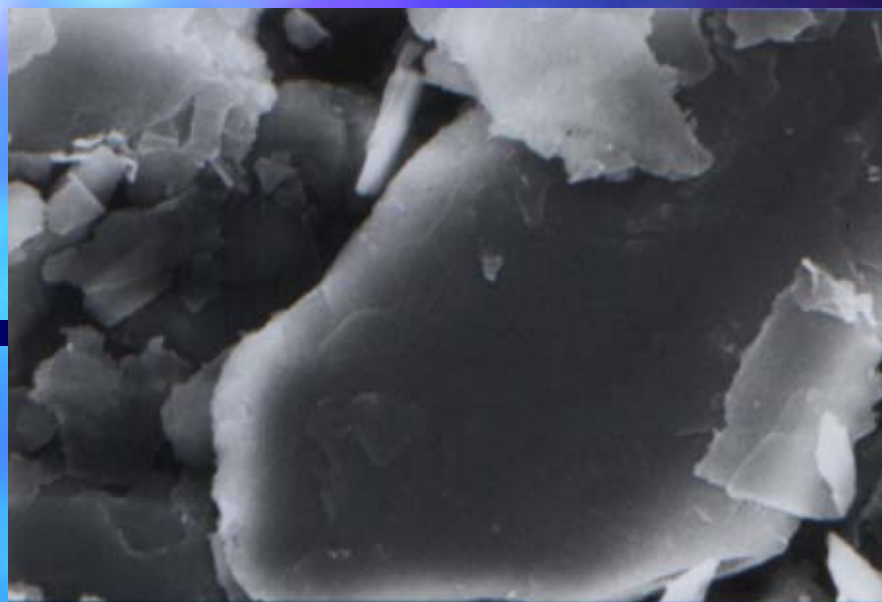
We can control of particle size strictly and accurately by combination of three kinds of separation system: sieve, centrifuge and sedimentation.

It is possible for us to comply with customer's request as far as we can.

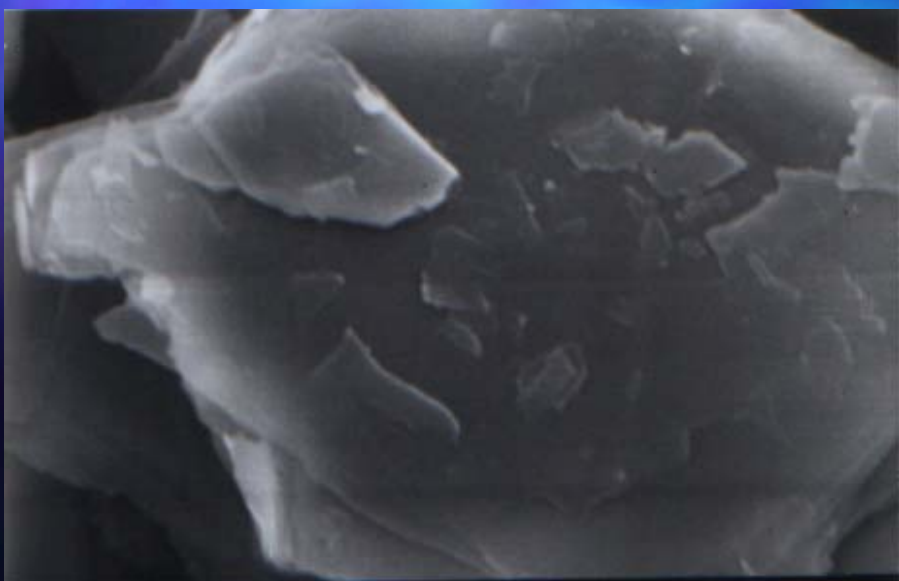
Silicon treatment

We can offer silicon treatment with reasonable price due to our special facility. Our surface treatment is assured of the high quality.

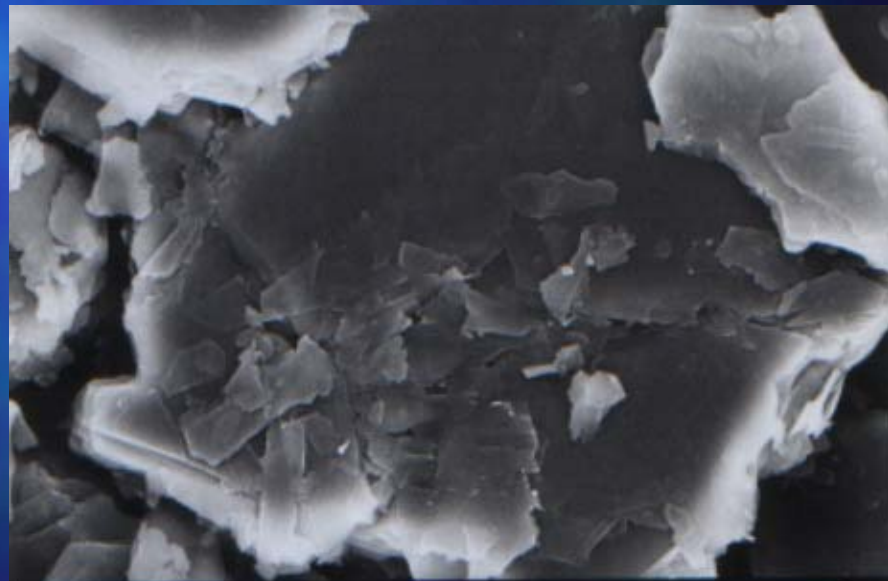
We will keep exploring every possibility of mica and talc for the benefit of cosmetics as well as we will do my best to meet customer's needs.



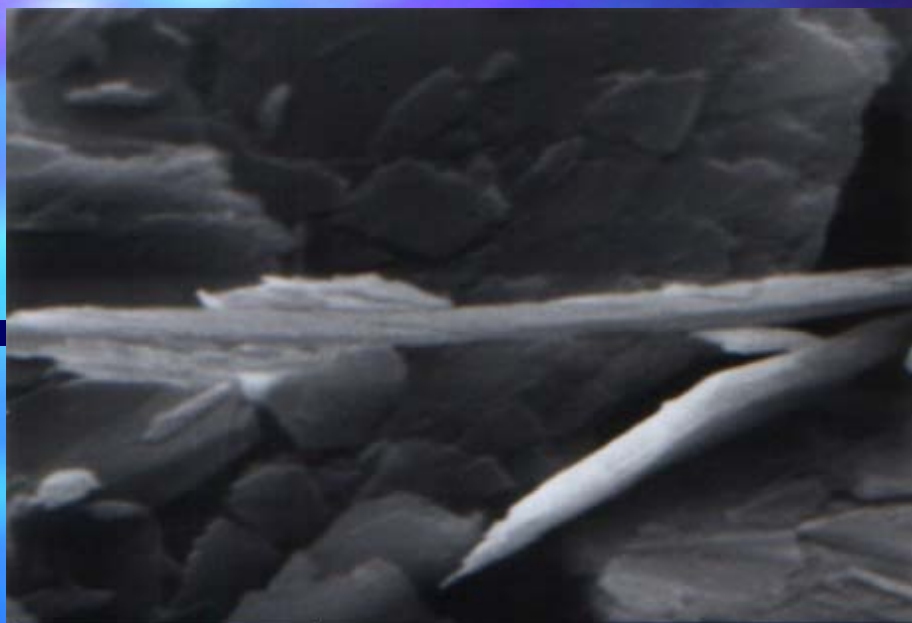
FK-300S x5.0k 0018 12kV 10µm



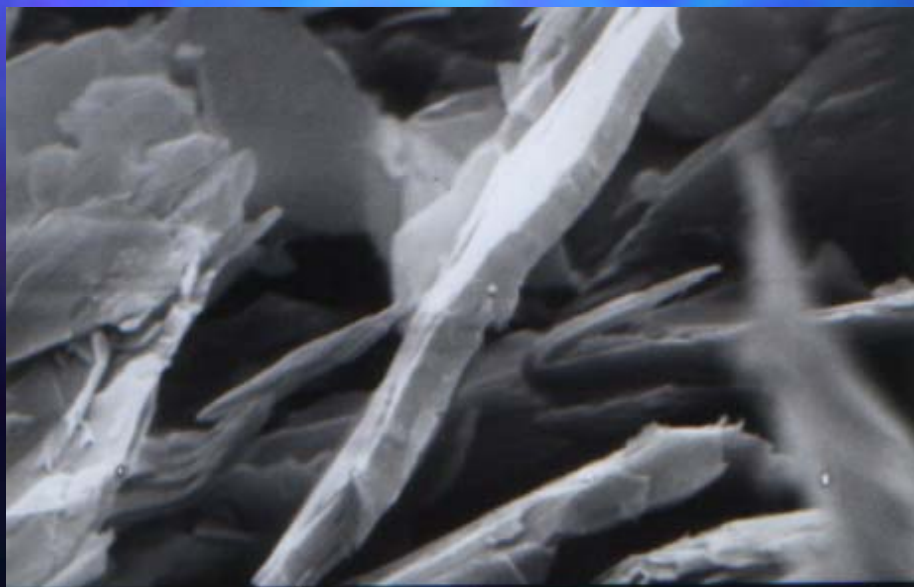
TALC-A x10k 0012 12kV 5µm



TALC-S x5.0k 0016 12kV 10µm



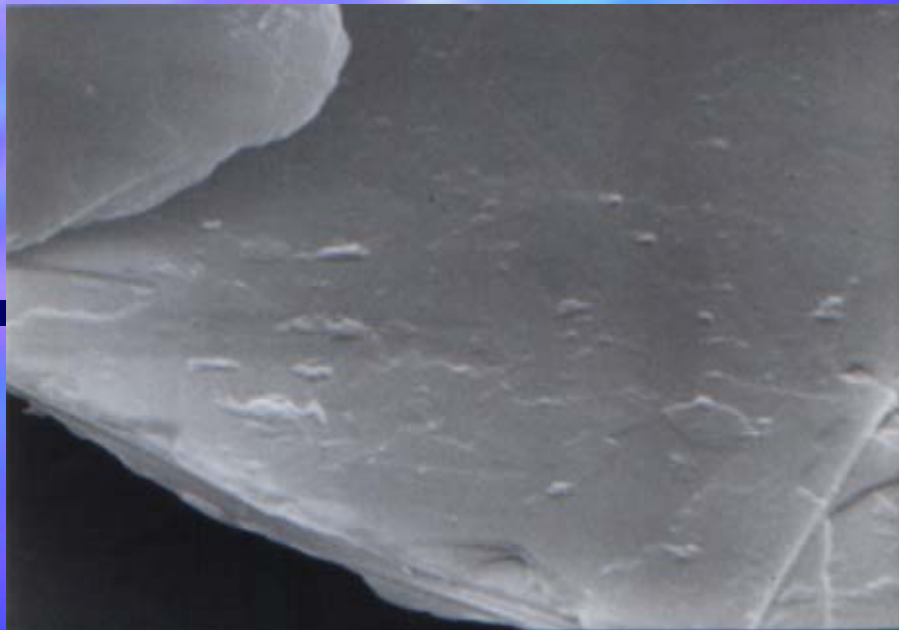
FK-300S x15k 0020 12kV 2μm



TALC-A x10k 0014 12kV 5μm



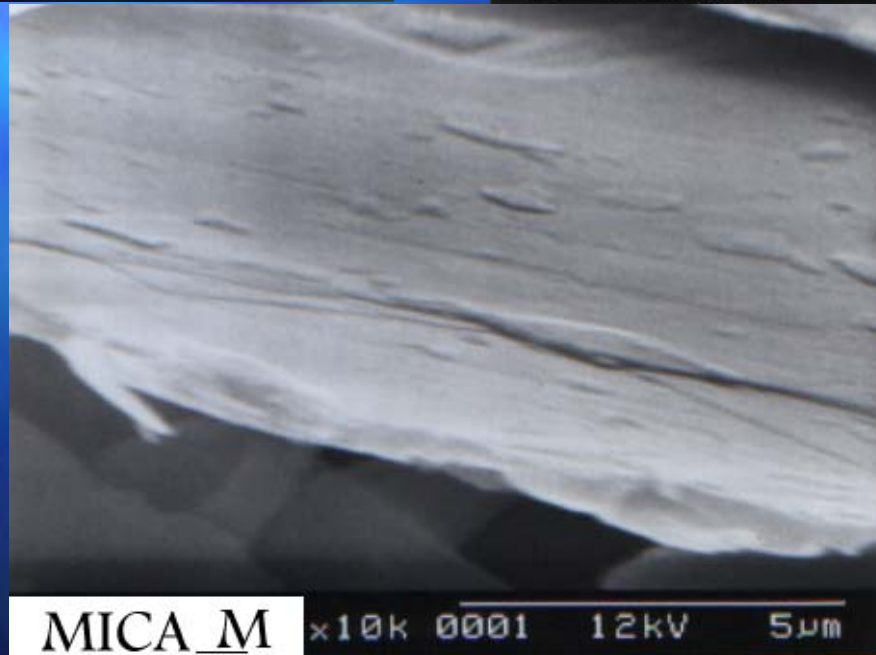
TALC-S x10k 0017 12kV 5μm



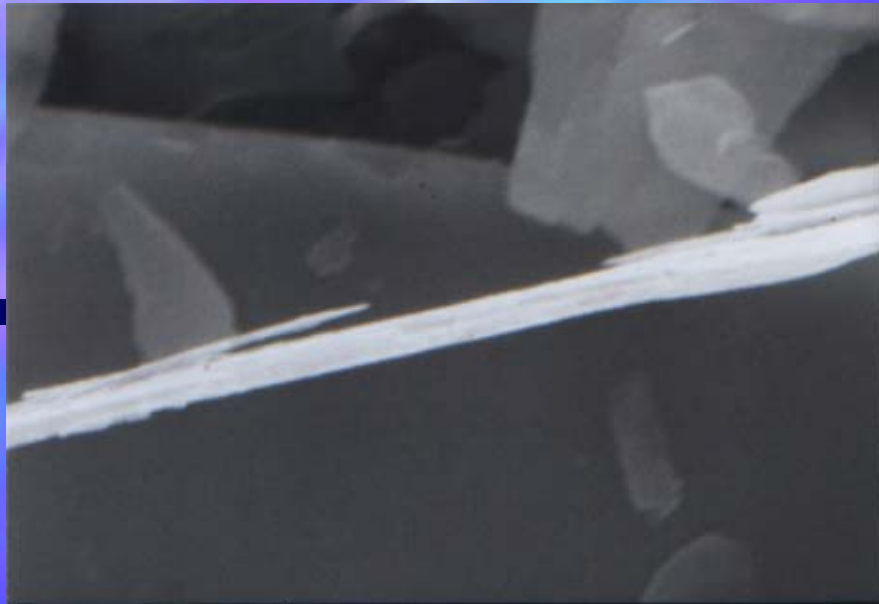
SA-310 x10k 0006 12kV 5µm



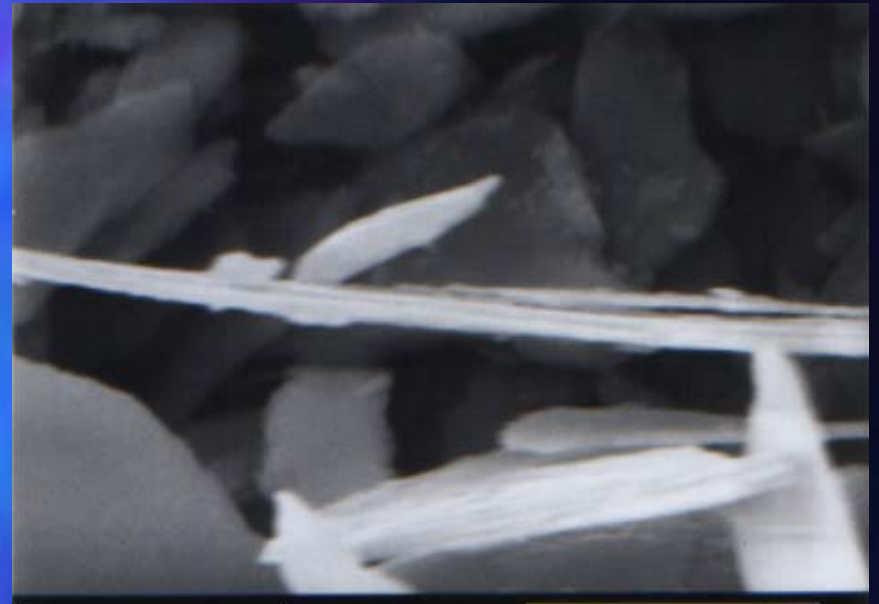
Y-2400 x10k 0009 12kV 5µm



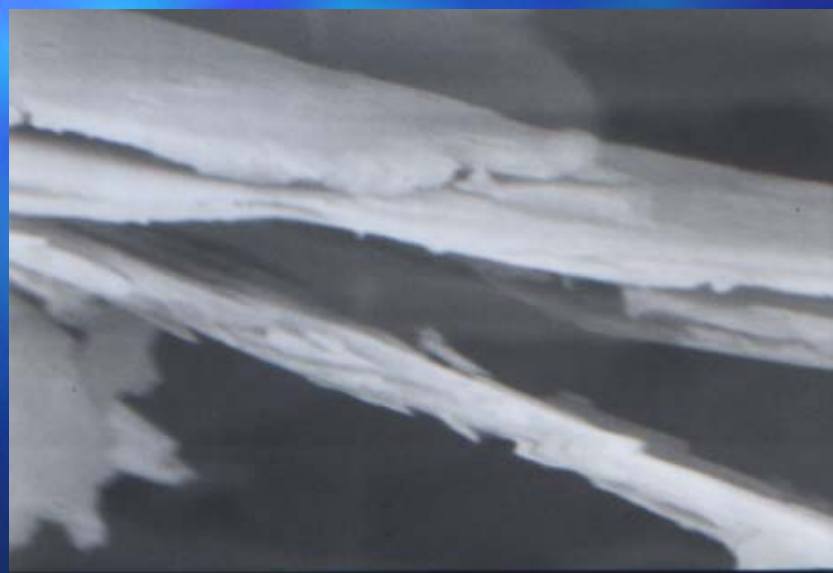
MICA_M x10k 0001 12kV 5µm



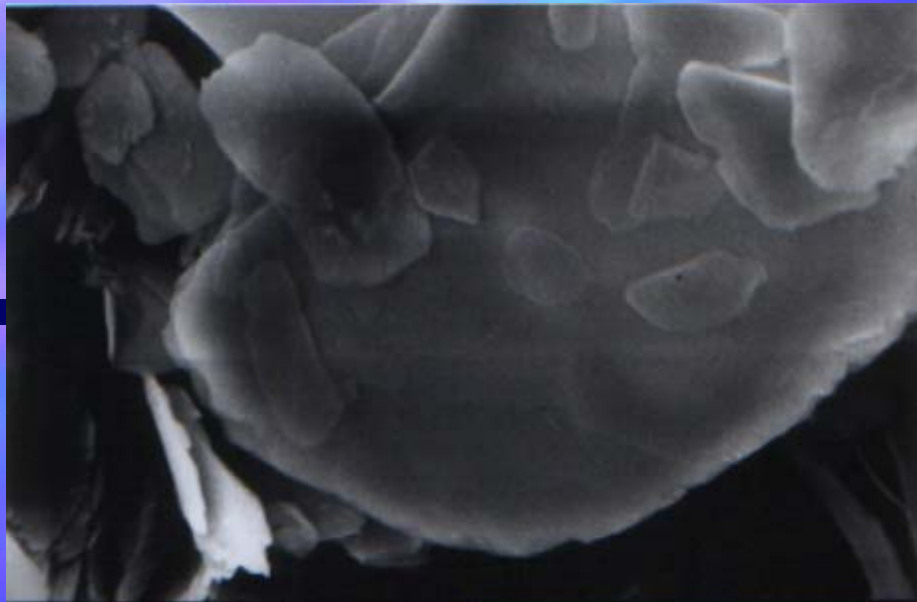
SA-310 x8.0k 0007 12kV 5μm



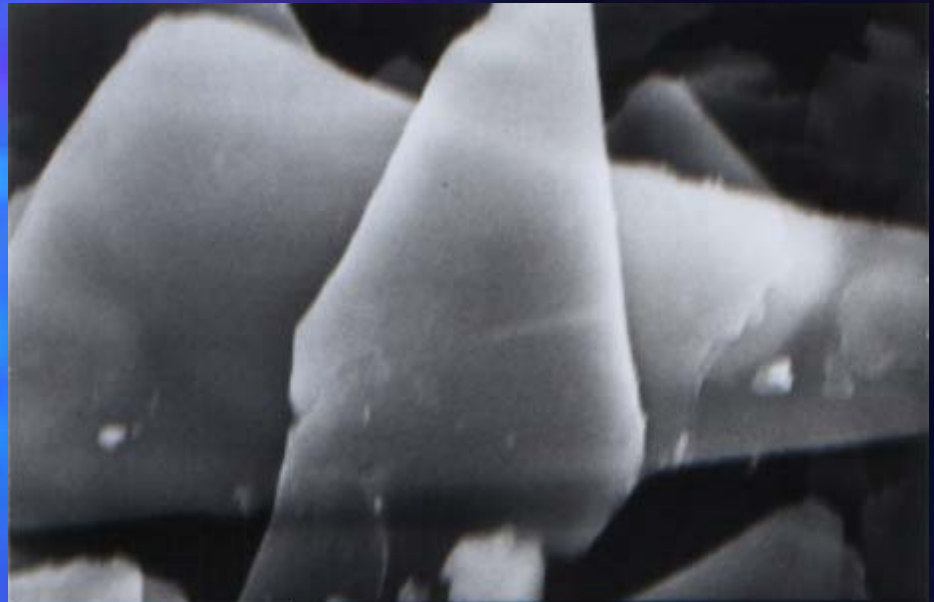
Y-2400 x8.0k 0011 12kV 5μm



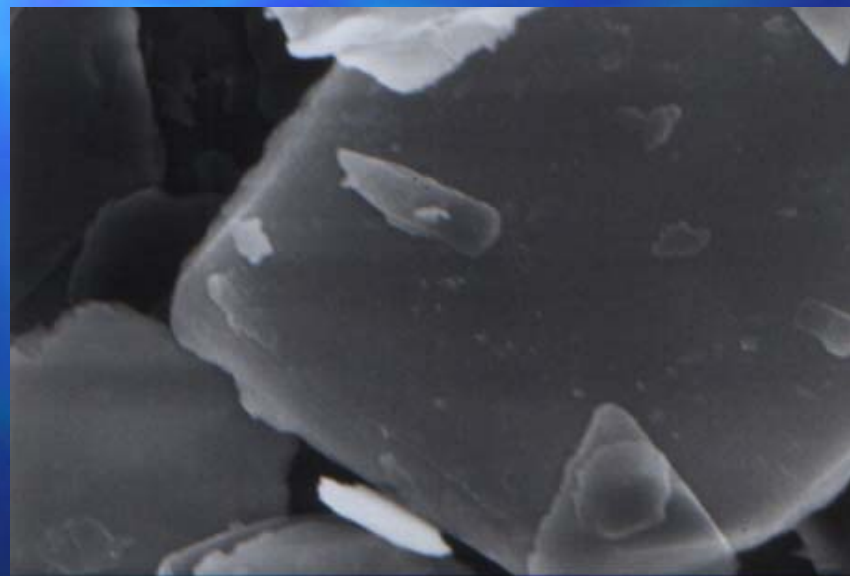
MICA M x8.0k 0003 12kV 5μm



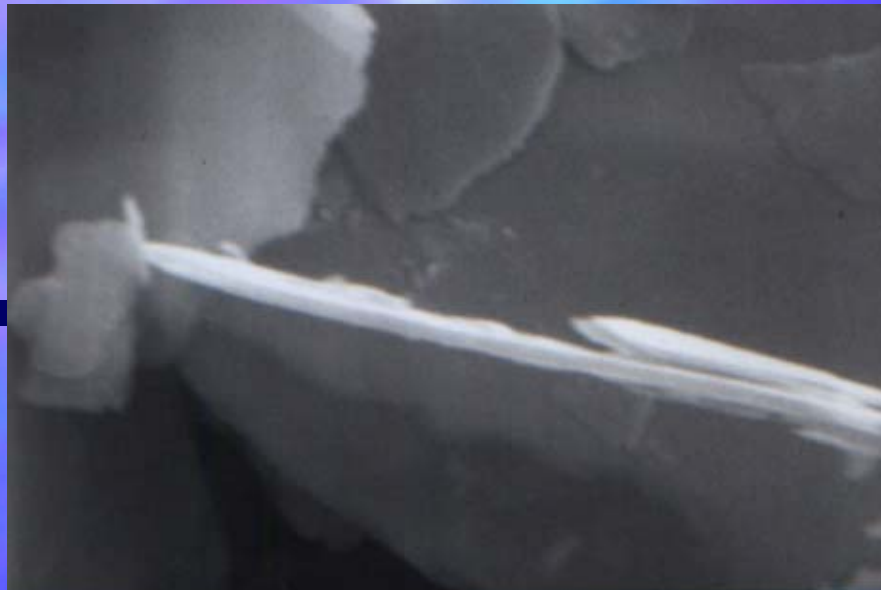
NCF-322 x5.0k 0025 12kV 10µm



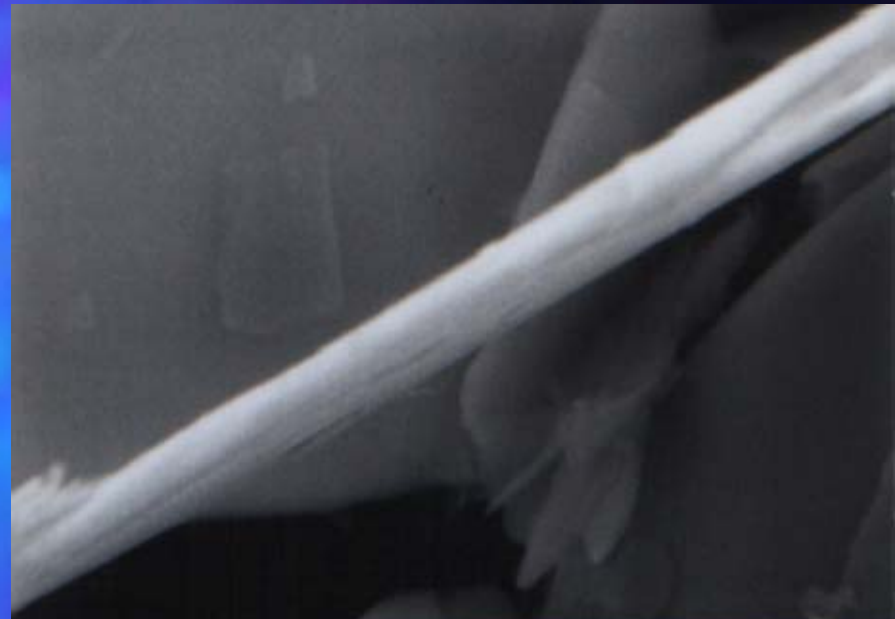
NCC-322 x5.0k 0023 12kV 10µm



Y-3000 x4.0k 0028 12kV 10µm



NCF-322 x10k 0026 12kV 5µm



NCC-322 x10k 0024 12kV 5µm



Y-3000 x10k 0029 12kV 5µm