[Tech	nical Data】	₩ YAMAGUCHI MICA CO., LTD.					
Title	Effect of UV-Shielding Mica UP Series in Formulation System ②						
	Loose Powder, W/O Cream Foundation –						
Category	Cosmetics	Ву	H. Asano	Date	July.18.2025		

(Summary) Following the previous report, the SPF and PFA values of formulations (loose powder and W/O cream foundation) containing the new mica brand "UV-shielding mica UP series" were measured using an SPF analyzer. As a result, each value obtained suggested the UV shielding effect of the UP series as well as the results of the powder foundation.

(Key Words) Mica, UV Shielding, SPF Analyzer

(Introduction)

In a previous report, the UV protection function of the UP series of powder foundations was evaluated using an SPF analyzer. In this report, we investigated loose powder and W/O cream foundations to see if other formulations also had the same enhanced UV protection effect.

(Implemented Activities)

 Preparations of loose powder and W/O cream foundation Loose powder formulation

No.	Component	amount (weight%)	
INO.	Component	Formula	Comparison
1	UP-20WA3 (UP-20 Treated with Amodimethicone)	23.02	
2	Y-2300		23.02
3	ADMOLITE IM-25Red (Mica coated with Iron	0.30	0.30
3	dioxide(CI77491))	0.30	0.50
4	PSG-05WA5 (Spherical Silica Treated with Amodimethicone)	13.42	13.42
5	Y-1800		9.41
6	UP-10WA3 (UP-10 Treated with Amodimethicone)	9.41	
7	Fine Titanium Dioxide Treated with Dimethicone, Stearic	10.01	10.01
_ ′	Acid and Aluminum Hydroxide	10.01	10.01
8	Fine Zinc oxide Treated with Dimethicone	5.01	5.01
9	Sericite Treaed with Titanium Dioxde	10.01	10.01
10	Methylparaben	0.30	0.30
11	BG	0.10	0.10
12	Ethylhexyl Methoxycinnamate	3.40	3.40
13	Diethylamino Hydroxybenzoyl Hexyl Benzoate	1.00	1.00
14	GFA-50 (Large Gloss Mica)	24.02	24.02
	Total	100.00	100.00

W/O Cream Foundation

	No.	Component		amount (weight%)	
2 Iron dioxide(CI77492) Treated with TriethoxycaprylyIsilane	IVO.			Comparison	
3 Iron dioxide(CI77499) Treated with TriethoxycaprylyIsilane 0.03 0.03 4 Methyl Trimethicone 1.16 1.16 5 Titanium Dioxide Treated with TriethoxycaprylyIsilane and Aluminum Hydroxide 5.24 5.24 6 PHOTOLITE PK-SSC31 (Titanium Dioxide and Iron Oxide Treated with Hydrogen Dimethicone (photochromic pigment)) 5.24 5.24 7 Fine Titanium Dioxide Treated with Dimethicone, Stearic Acid and Aluminum Hydroxi 5.24 5.24 8 Triethylhexanoin 4.66 4.66 9 Isononyl Isononan 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 <td>1</td> <td>Iron dioxide(CI77491) Treated with Triethoxycaprylylsilane</td> <td>0.23</td> <td>0.23</td>	1	Iron dioxide(CI77491) Treated with Triethoxycaprylylsilane	0.23	0.23	
4 Methyl Trimethicone 1.16 1.16 5 Titanium Dioxide Treated with TriethoxycaprylyIsilane and Aluminum Hydroxide 5.24 5.24 6 PHOTOLITE PK-SSC31 (Titanium Dioxide and Iron Oxide Treated with Hydrogen Dimethicone (photochromic pigment)) 5.24 5.24 7 Fine Titanium Dioxide Treated with Dimethicone, Stearic Acid and Aluminum Hydroxi 5.24 5.24 8 Triethylhexanoin 4.66 4.66 4.66 9 Isononyl Isononan 5.24 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 10.25 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 0.34 14 BG 4.56 4.56 4.56 15 Xanthan Gum 0.38 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 0.06 17 Water 23.64 23.64 23.64 24 Robol 2.33 2.33 2.33 25 Explicated With Methoxycinnamate 5.82	2	Iron dioxide(CI77492) Treated with Triethoxycaprylylsilane	1.14	1.14	
5 Titanium Dioxide Treated with TriethoxycaprylyIsilane and Aluminum Hydroxide 5.24 5.24 6 PHOTOLITE PK-SSC31 (Titanium Dioxide and Iron Oxide Treated with Hydrogen Dimethicone (photochromic pigment)) 5.24 5.24 7 Fine Titanium Dioxide Treated with Dimethicone, Stearic Acid and Aluminum Hydroxi 5.24 5.24 8 Triethylhexanoin 4.66 4.66 9 Isononyl Isononan 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 0.34 14 BG 4.56 4.56 4.56 15 Xanthan Gum 0.38 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 0.06 17 Water 23.64 23.64 23.64 2 Alcohol 2.33 2.33 2.33 2 Di	3	Iron dioxide(CI77499) Treated with Triethoxycaprylylsilane	0.03	0.03	
6 PHOTOLITE PK-SSC31 (Titanium Dioxide and Iron Oxide Treated with Hydrogen Dimethicone (photochromic pigment)) 5.24 5.24 7 Fine Titanium Dioxide Treated with Dimethicone, Stearic Acid and Aluminum Hydroxi 5.24 5.24 8 Triethylhexanoin 4.66 4.66 9 Isononyl Isononan 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 0.34 14 BG 4.56 4.56 4.56 15 Xanthan Gum 0.38 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 0.06 17 Water 23.64 23.64 23.64 18 Alcohol 2.33 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 5.82 20 Diethylamino Hydroxybenzoy	4	Methyl Trimethicone	1.16	1.16	
Dimethicone (photochromic pigment) 5.24 5.24	5	Titanium Dioxide Treated with Triethoxycaprylylsilane and Aluminum Hydroxide	5.24	5.24	
8 Triethylhexanoin 4.66 4.66 9 Isononyl Isononan 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 3.49 3.49 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 2.33 2.33 23 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Tri	6		5.24	5.24	
9 Isononyl Isononan 5.24 5.24 10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	7	Fine Titanium Dioxide Treated with Dimethicone, Stearic Acid and Aluminum Hydroxi	5.24	5.24	
10 UP-10WA3 (UP-10 Treated with Amodimethicone) 10.25 11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 3.49 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 13 Methylparaben 0.34 14 BG 4.56 15 Xanthan Gum 0.38 16 Magnesium Sulfate 0.06 17 Water 23.64 18 Alcohol 2.33 19 Ethylhexyl Methoxycinnamate 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 22 Methyl Trimethicone 4.07 23 Dimethicone 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 5.82 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82	8	Triethylhexanoin	4.66	4.66	
11 Y-1800WA3 (Y-1800 Treated with Amodimethicone) 10.25 12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	9	Isononyl Isononan	5.24	5.24	
12 PSG-05WA5H (Spherical Silica Treated with Amodimethicone) 3.49 3.49 13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 5.82 5.82 PeG-10 Dimethicone, Dimethicone, Tocopherol 5.82 5.82	10	UP-10WA3 (UP-10 Treated with Amodimethicone)	10.25		
13 Methylparaben 0.34 0.34 14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 5.82 5.82 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	11	Y-1800WA3 (Y-1800 Treated with Amodimethicone)		10.25	
14 BG 4.56 4.56 15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	12	PSG-05WA5H (Spherical Silica Treated with Amodimethicone)	3.49	3.49	
15 Xanthan Gum 0.38 0.38 16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	13	Methylparaben	0.34	0.34	
16 Magnesium Sulfate 0.06 0.06 17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	14	BG	4.56	4.56	
17 Water 23.64 23.64 18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	15	Xanthan Gum	0.38	0.38	
18 Alcohol 2.33 2.33 19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	16	Magnesium Sulfate	0.06	0.06	
19 Ethylhexyl Methoxycinnamate 5.82 5.82 20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	17	Water	23.64	23.64	
20 Diethylamino Hydroxybenzoyl Hexyl Benzoate 1.16 1.16 21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	18	Alcohol	2.33	2.33	
21 Diphenylsiloxy Phenyl Trimethicone 4.66 4.66 22 Methyl Trimethicone 4.07 4.07 23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	19	Ethylhexyl Methoxycinnamate	5.82	5.82	
22 Methyl Trimethicone 4.07 23 Dimethicone 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82	20	Diethylamino Hydroxybenzoyl Hexyl Benzoate	1.16	1.16	
23 Dimethicone 2.33 2.33 24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	21	Diphenylsiloxy Phenyl Trimethicone	4.66	4.66	
24 Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone 1.16 1.16 25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	22	Methyl Trimethicone	4.07	4.07	
25 Trimethylsiloxysilicate, Dimethicone 1.75 1.75 26 PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	23	Dimethicone	2.33	2.33	
PEG-10 Dimethicone, Dimethicone, Distteardimoonium Hectorite, Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82	24	Lauryl PEG-9 Polydimethylsiloxyethyl Dimethicone	1.16	1.16	
Polydimethylsiloxyethyl Dimethicone, Tocopherol 5.82 5.82 5.82	25	Trimethylsiloxysilicate、 Dimethicone	1.75	1.75	
Total 100.00 100.00	26		5.82	5.82	
		Total	100.00	100.00	

2. Preparation of Samples for Measurements of SPF and PFA

Loose Powder:

0.015g of Vaseline was applied evenly to a PMMA plate with a fingertip for 90 to 120 seconds, and then 0.023g of loose powder was applied in the same manner. Then, at least 15 minutes after application, the SPF and PFA were measured using the Labsphere UV-2000S SPF analyzer with at least 4 measurement samples at 5 locations on each plate.

W/O Cream Foundation:

0.023 g of cream foundation was placed on a PMMA plate and spread evenly with a fingertip over a period of 90 to 120 seconds.

(Results)

The loose powder had a lower SPF value than the expected value due to its low adhesion to the PMMA plate, but both formulations containing UP series showed superior UV blocking ability.

	Loose	Powder	W/O Cream Foundation		
	Formula	Comparison	Formula	Comparison	
SPF	15	12	61	53	
PFA	6.80	5.88	11.07	9.74	

(Conclusion)

For loose powder and W/O cream foundation, the SPF and PFA values were found to be enhanced by using the UP series.