

Metamerism (PP)

		Masstone				Tint (TiO ₂ :pigment=9:1)			
		L*	a*	b*	dE*	L*	a*	b*	dE*
551A	D65*→C*	1.52	-4.95	1.84	5.50	0.72	-2.78	0.92	3.02
552A	D65*→C*	1.29	-3.05	1.63	3.69	0.63	-1.88	0.81	2.14
553A	D65*→C*	0.98	-1.5	1.34	2.24	0.4	-0.71	0.53	0.97
554A	D65*→C*	0.81	-0.69	1.2	1.60	0.3	-0.23	0.37	0.53
555A	D65*→C*	1.46	-5.08	1.7	5.55	0.66	-2.67	0.68	2.83
Yel119	D65*→C*	1.29	-4.17	1.47	4.61	0.53	-2.08	0.42	2.19
Br33	D65*→C*	0.92	-1.44	1.39	2.20	0.35	-0.72	0.43	0.91

D65* : Illuminant D65, 10 degree observer
C* : Illuminant C, 2 degree observer

Test Piece Preparation

Formula	Masstone
Pigments	0.5
TiO ₂	-----
Polypropylene	100

The weighed pigments were added to 400 grams (14.1 oz) of PP pellets in a polyethylene bag.
The polyethylene bag were shaken by a shaker for 5 minutes before injection molding at 210°C (410°F)

Physical Properties

Particle	Unit	P.Brown48					P.Yel119	P.Br33		P.Yel42	P.R101
		555A	551A	552A	553A	554A	Comp.-1	Comp.-1	Comp.-2	Yellow Iron Oxide	Red Iron Oxide
Basic Composition		(Fe,Al) ₂ TiO ₅					ZnFe ₂ O ₄	Zn(Fe,Cr) ₂ O ₄		FeOOH	Fe ₂ O ₃
Particle Size	D50 μm	0.9	0.7	0.6	0.6	0.6	2.4	0.8	0.4	-	-
	D90 μm	3.3	2.3	1.9	2.1	2.6	31.7	2.8	1.0	-	-
Water Content	%	< 0.5					< 0.5		-	0.8	
Oil Absorption	cc/100g	15	15	17	15	15	21	11	17	62	25
Bulk	cc/g	3.0	2.6	2.6	2.3	2.0	2.7	2.8	1.2	4.2	1.6
Specific Surface Area	m ² /g	5.7	2.7	3.1	2.4	2.6	4.4	6.1	2.8	12.0	13.3
pH		8.3	8.2	9.1	7.9	8.5	6.7	8.9	8.5	4.1	4.9
TSR	%	46.5	36.8	32.8	29.1	26.2	41.8	44.5	23.4	23.6	30.1
Magnetic Susceptibility	emu/g	0.3	0.4	0.5	0.5	0.5	2.7	0.9	1.8	0.4	0.6
Heat Resistance (PP)	ΔE	1.2	1.7	1.1	0.9	1.0	2.4	2.6	0.8	26.2	2.2
Dispersibility		Good	Good	Good	Good	Good	Poor	Poor	Poor	Poor	Poor
Chemical Resistance	ΔE(acid)	1.1	1.3	2.1	0.8	1.7	2.9	0.4	1.1	1.2	0.9
	ΔE(alkali)	1.4	2.1	2.2	1.2	2.4	1.7	0.8	1.7	0.8	1.1

Magnetic Susceptibility
TSR(Total Solar Reflectance)
Heat Resistance
Dispersibility
Chemical Resistance

Measured by Vibrating Sample Magnetometer
JIS K5602
Color difference of the test pieces after mold injecting at 210°C and 280°C
Measured by twin screw extruder.
acid: Color difference checked by acrylic lacquer after soaking pigment in 5% HCl for 3 days.
alkali: 20% NaOH

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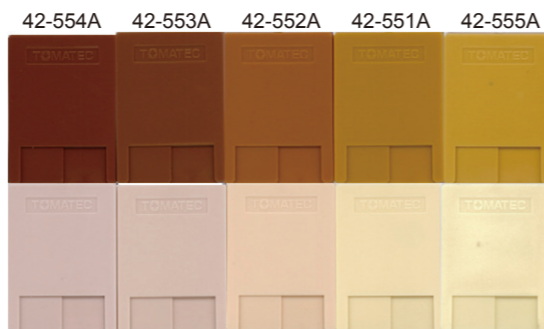
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New Pigment Brown 48 Aluminum Iron Titanate



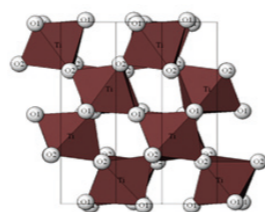
Product Information

C.I. Generic Name	Pigment Brown 48
C.I. Number	775435
CAS Number	1310-39-0 12789-64-9
Basic Formula	(Fe, Al) ₂ TiO ₅

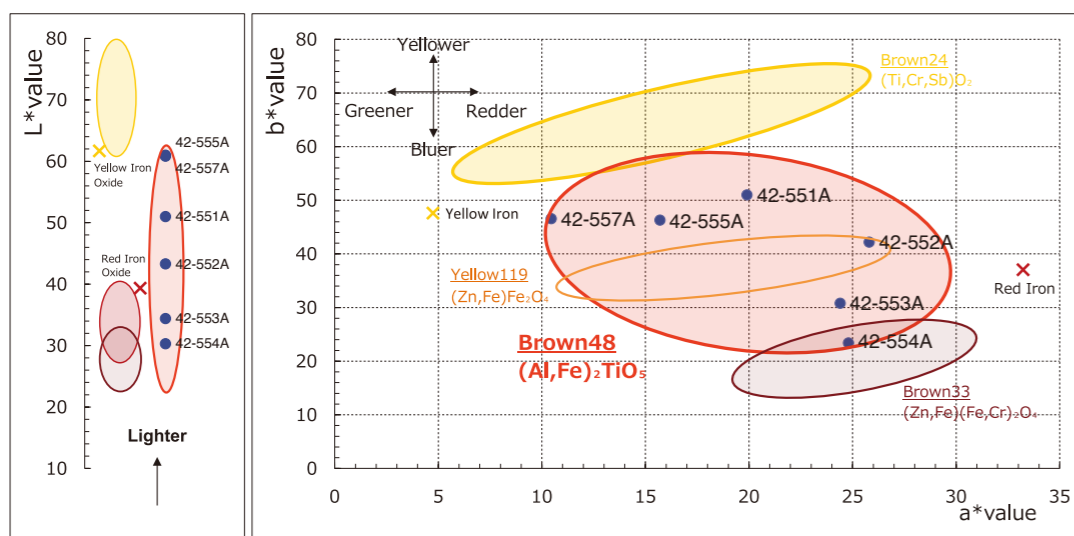


Advantages

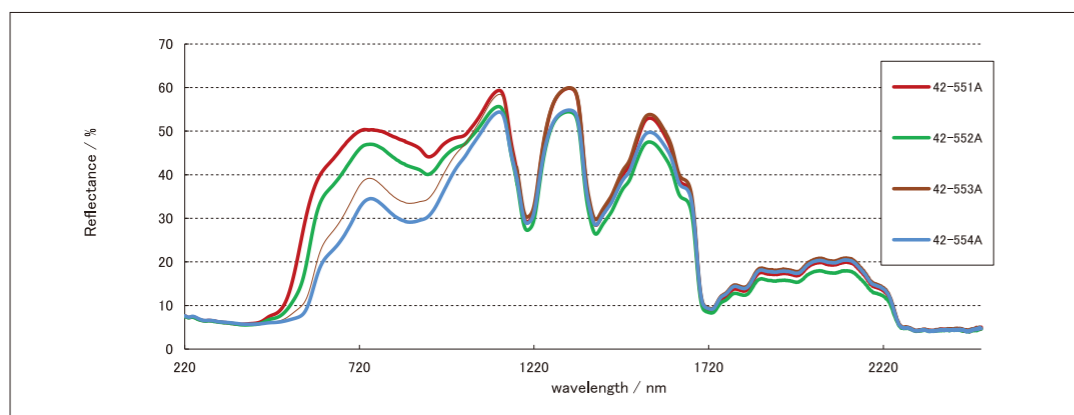
- ◆ Stable crystal structure ⇒ Pseudo-brookite - Aluminum Iron Titanate
- ◆ High Dispersibility ◆ Low Magnetism
- ◆ High Durability (heat, weather, chemicals)
- ◆ Friendly to human and environment
⇒ Cr, Sb, Ni, Cu, Zn, Ba, Bi or V – not contained
- ◆ FDA Compliant



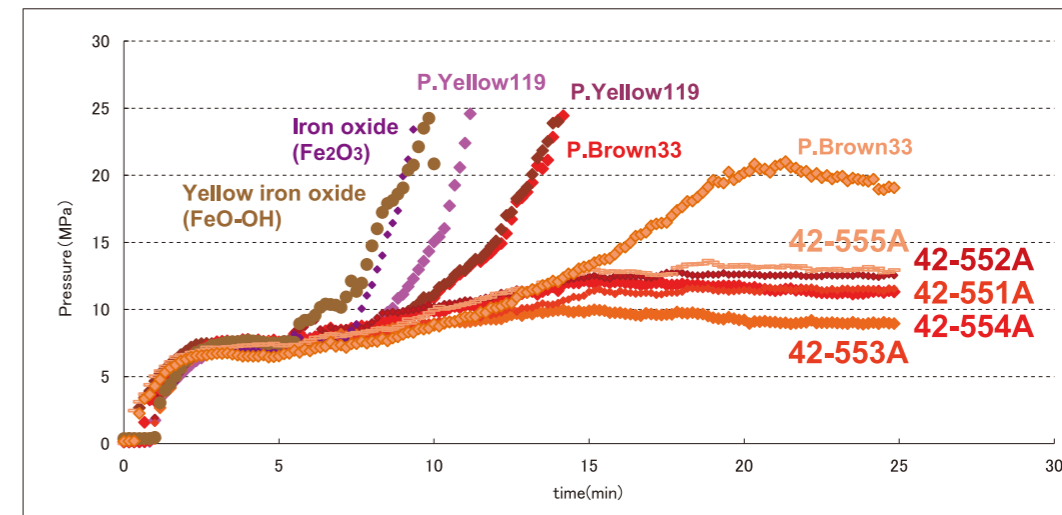
Color Space -Masstone-



Spectral Curves



Dispersibility



test condition

• Apparatus	Twin screw extruder	• Temperature	260 C (500 F)
• Screw diameter	15 mm	• Screw rpm	200
• Screw length	30 L/D	• Resin	MFI 1.3 LDPE pellet
• Screen	Sintered filter	• Throughput rate Resin	0.5 kg / hrs
• Screen diameter	0.79 inches	Pigment	0.3 kg / hrs
• Nominal retention microns	20	• Procedure	purge 5 minutes, run 10 minutes, then purge various minutes

Heat Stability

Sample Name		Masstone				Tint			
		ΔL*	Δa*	Δb*	ΔE*	ΔL*	Δa*	Δb*	ΔE*
551A / P.Brown48	210°C	-	-	-	-	-	-	-	-
	280°C	0.39	0.40	0.38	0.67	-0.72	-0.15	-0.39	0.83
	280°C, 5min	0.84	0.76	1.32	1.74	-0.80	-0.27	-0.72	1.11
552A / P.Brown48	210°C	-	-	-	-	-	-	-	-
	280°C	0.14	0.18	0.00	0.22	-0.60	-0.03	-0.17	0.62
	280°C, 5min	0.59	0.59	0.70	1.09	-0.56	-0.16	-0.31	0.66
553A / P.Brown48	210°C	-	-	-	-	-	-	-	-
	280°C	0.16	0.11	-0.13	0.23	-0.50	-0.09	-0.21	0.55
	280°C, 5min	0.34	0.65	0.58	0.93	-0.42	-0.28	-0.33	0.60
554A / P.Brown48	210°C	-	-	-	-	-	-	-	-
	280°C	-0.13	-0.43	-0.42	0.61	-0.49	0.01	-0.10	0.50
	280°C, 5min	-0.34	-0.69	-0.56	0.95	-0.46	-0.19	-0.22	0.54
Yellow iron oxide (FeO-OH)	210°C	-	-	-	-	-	-	-	-
	280°C	-7.14	6.97	-3.39	10.54	-2.58	2.67	-0.04	3.71
	280°C, 5min	-16.33	18.01	-9.65	26.16	-9.32	12.33	-1.33	15.52
Red iron oxide (Fe ₂ O ₃)	210°C	-	-	-	-	-	-	-	-
	280°C	-2.36	-1.55	-1.91	3.41	-1.54	-0.18	-1.94	2.48
	280°C, 5min	-1.70	-0.44	-1.27	2.17	-1.77	-0.73	-2.40	3.07

Illuminant D65, 10 degree observer

Test Piece Preparation

Formula	Masstone	1:4 TiO ₂ Tint
Pigments	0.5	0.1
TiO ₂	----	0.4
Polypropylene	100	100

The weighed pigments were added to 400 grams (14.1 oz) of PP pellets in a polyethylene bag. The polyethylene bag were shaken by a shaker for 5 minutes before injection molding at 210°C(410°F) or 280°C(536°F) for heat stability evaluation.