FOR PLASTIC & METAL PARTS

Metalstar MAX Series

Ultimate Metal-tone Paints

For plastic and metal automotive parts

ISO 9001:2015 Certified (Intertek)
TAIEI INDUSTRIES Co.,Ltd. TECHNO PAINT CHEMICALS SECT.



Left Metalstar FP-M1105-S / Right Metalstar MAX JID 010-S



Metalstar MAX JID 010-S

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Ultimate Metal-tone Paints

Product Description

As the name implies, Metalstar MAX is the highest grade of the Metalstar line in terms of appearance and design, surpassing our ultra-bright metallic paint “Metalstar Series” in appearance, function and application workability. In appearance, it looks like a more continuous film: the grainy particles visible in conventional high-brightness paints are no longer seen, giving a finish equivalent to sputtering or vacuum deposition. In function, the new type of metal vapor-deposition film used in Metalstar MAX does not interfere with radio waves. In application, the range of dispensing-volume conditions has been widened, making the work easier than with the conventional Metalstar Series.

Sputter-like Finish
Continuous film, no visible grain

No Radio Interference
New metal deposition film

Easier Application
Wider spray-volume range

Plastics & Metals
One grade: JID 010-S

TAIEI INDUSTRIES Co., Ltd.

We are a paint manufacturer specializing in the development and production of metallic paints for OEM automotive exterior and interior parts.

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Product Lineup

Product name	Features
Metalstar MAX JID 010-S For both plastics and metals	Standard product for automotive interior and exterior plastic parts Standard product for automotive interior and exterior metal parts
Metalstar MAX Customer-specific grades	For automotive interior and exterior parts. We design and manufacture special-specification Metalstar coatings tailored to the customer’s equipment.

Substrate Compatibility

Plastics

Standard substrates are ABS and ABS/PC. Using a different base coat extends the range to PA, PA6, PA66, PPO and GTX (PPE+PA).

Metals

Compatible with ferrous and various non-ferrous metals (a primer specifically formulated for metal surfaces is required).

Key Differences from the Conventional Metalstar Series

The Metalstar Series is a line of ultra-high-brightness metallic coatings. By utilizing vacuum-metallized aluminum pigments and a coating design optimized for thinness and smoothness, these paints achieve an exceptionally high luster and a seamless, foil-like appearance. While the particle size of these vacuum-metallized pigments is similar to that of conventional metallic pigments, their thickness is significantly reduced, to approximately 1/10th. By leveraging our proprietary pigment orientation technology, we can achieve a finish that rivals actual vacuum deposition or sputtering.

Operational challenges with conventional metallized pigments

Despite their visual advantages, conventional vacuum-metallized pigments have historically faced two primary technical weaknesses. Application sensitivity: due to their extremely high aspect ratio, the pigments are physically prone to curling. This necessitates strict control over coating conditions; otherwise, the intended high-brightness finish cannot be fully realized. Chemical vulnerability: because of the inherent properties of aluminum, these pigments are sensitive to moisture. While we have ensured water resistance by applying unique surface treatments to the pigments, this process sometimes slightly diminished the original metallic brilliance of the aluminum.

The innovation of Metalstar MAX

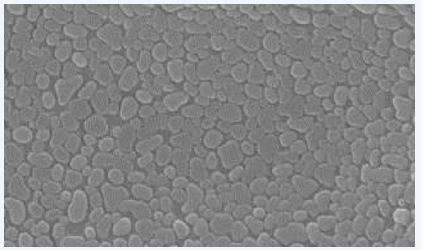
In the newly developed Metalstar MAX, we have adopted a different high-brightness metal instead of aluminum. This allows us to overcome the physical vulnerabilities of vacuum-metallized aluminum pigments in an untreated state, without the need for surface coating. While the pigment thickness is comparable to conventional metallized aluminum, the particle size is approximately 1/30th of the pigments used in our previous series. The packing density of these ultra-fine particles is exceptionally high, with minimal gaps between them, forming a “sea-island” structure. By achieving a state nearly identical to a continuous foil membrane, Metalstar MAX delivers even higher brightness and a more seamless, film-like appearance than the original Metalstar Series.

Metalstar MAX Paint Layer Structure

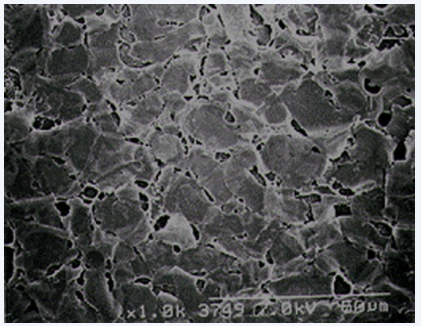


◀ Metalstar MAX coating film layer within 1.0 µm

Surface Comparison



Metalstar MAX



Ordinary PVD aluminum pigment

① Standard Coating Specification — Metalstar MAX JID 010-S (3C3B) for Plastics

Substrates: ABS, PC/ABS (PA, PA6, PA66, PPO and GTX (PPE+PA) are also possible with a different base coat)

Item	1 Base coat	2 Middle coat	3 Top coat
Paint	**Ecoplus TFX81-IM2** Gloss Black	**Metalstar MAX** JID 010-S	**Ecoplus TFX81** Clear
Hardener	Ecohard SHG-80 hardener	—	Ecohard L-80 hardener
Thinner	FPT-MLD#7 (standard drying) FPT-MLD#7-SS (slow drying)	No adjustment	FPT-MLD#7 (standard drying) FPT-MLD#7-SS (slow drying)
Mixing ratio (by weight) Paint / Hardener / Thinner	80/10/50–60	No adjustment	80/10/50–60
Pot life	6 hours	—	8 hours
Recommended viscosity (Anest Iwata NK-2 cup)	11±1 sec	7±1 sec	11±1 sec
Spray gun (recommended nozzle)	Conventional air spray gun Nozzle diameter 1.0–1.5 mm	LVLP air spray gun Nozzle diameter within 1.3 mm Recommended: Mesac G05-23 / S-14-23	Conventional air spray gun Nozzle diameter 1.0–1.5 mm
Atomizing air pressure	0.2–0.3 MPa	0.15–0.25 MPa	0.2–0.3 MPa
Spray volume	1.25–1.5 turns	0.125–0.25 turns	1.25–1.5 turns
Number of coats (laps)	About 4–6	About 6–10	About 4–6
Standard film thickness	20–25 µm	Less than 1.0 µm	20–25 µm
Setting time	About 5–10 min	About 5–10 min	About 5–10 min
Drying condition	80°C × 30 min (KEEP)	80°C × 30 min (KEEP)	80°C × 30 min (KEEP)

Remarks

- Shake each paint can well before use.
- Always filter the paint when filling the paint cup or paint supply tank.

② Standard Coating Specification — Metalstar MAX JID 010-S (3C3B) for Metals

Substrates: ferrous and various non-ferrous metals (a metal-specific base coat is used)

Item	1 Base coat	2 Middle coat	3 Top coat
Paint	**Acryoh #4000** High Gloss Black	**Metalstar MAX** JID 010-S	**Acryoh #3800** Clear
Thinner	SGL-40 (standard drying) ST-41 (for electrostatic coating)	No adjustment	SGL-40 (standard drying) ST-41 (for electrostatic coating)
Mixing ratio (by weight) Paint / Thinner	100/50–70	No adjustment	100/30–40
Recommended viscosity (Anest Iwata NK-2 cup)	14–17 sec	7±1 sec	12–14 sec
Spray gun (recommended nozzle)	Conventional air spray gun Nozzle diameter 1.0–1.5 mm	LVLP air spray gun Nozzle diameter within 1.3 mm Recommended: Mesac G05-23 / S-14-23	Conventional air spray gun Nozzle diameter 1.0–1.5 mm
Atomizing air pressure	0.2–0.3 MPa	0.15–0.25 MPa	0.2–0.3 MPa
Spray volume	1.25–1.5 turns	0.125–0.25 turns	1.25–1.5 turns
Number of coats (laps)	About 4–6	About 6–10	About 4–6
Standard film thickness	20 ± 3 µm	Less than 1.0 µm	20–25 µm
Setting time	About 5–10 min	About 5–10 min	About 5–10 min
Drying condition	150°C × 20 min (KEEP)	150°C × 20 min (KEEP)	150°C × 20 min (KEEP)

Remarks

- Shake each paint can well before use.
- Always filter the paint when filling the paint cup or paint supply tank.

Paint Film Performance — For Plastics (3C3B)

Test system: ABS panel → Ecoplus TFX81-IM2 Gloss Black → Metalstar MAX JID 010-S → Ecoplus TFX81 Clear

Test item	Test method	Result
Film hardness	Mitsubishi Hi-Uni pencil	**F**
Initial adhesion	1.0 mm cross-cut, adhesive tape peel	**100/100**
Impact resistance	DuPont impact tester, 2.9 N (300 gf), 20 cm or more	**PASS**
Tack resistance	Gauze, 70°C × 2 h, 500 gf, ⌀40 mm	**PASS**
Adhesion after humidity exposure	50°C, 98% RH, 240 h, then adhesion test	**100/100**
Water discoloration resistance	5 ml distilled water dropped inside a ring sealed to the test surface; 55°C × 4 h	**ΔE* ≤ 0.8**
Alkali resistance	5 ml NaOH (0.1 N) dropped inside a ring sealed to the test surface; 55°C × 4 h	**ΔE* ≤ 1.5**
Acid resistance	5 ml H_2SO_4 (0.1 N) dropped inside a ring sealed to the test surface; 23°C × 24 h	**ΔE* ≤ 1.5**
Volatile oil resistance	Immersed in No. 1 volatile oil at room temperature (20°C) for 3 h	**PASS**
Dry rubbing fastness	Gakushin-type rubbing tester, 5 layers of gauze, 500 g load × 200 cycles	**PASS** No substrate exposure
Alcohol-based hair liquid resistance	Hair liquid (1 g/100 cm²), 80°C × 168 h, then abrasion test (2 kg × 200 cycles)	**PASS** No substrate exposure
Beef tallow resistance	Beef tallow (2 g/100 cm²), 80°C × 168 h, then abrasion test (2 kg × 200 cycles)	**PASS** No substrate exposure
Sunscreen resistance	Sunscreen cream (0.5 g/100 cm²), 55°C × 4 h, then abrasion test (2 kg × 200 cycles)	**PASS** No substrate exposure
Light resistance	FOM (fade meter), 400 h	**Gloss retention ≥ 95%** **ΔE* ≤ 3.0**
Accelerated weathering	SWOM (sunshine weather meter), 1000 h	**Gloss retention ≥ 90%** **ΔE* ≤ 3.0**

Paint Film Performance — For Metals (3C3B)

Test system: chemical conversion treatment → Acryoh #4000 High Gloss Black → Metalstar MAX JID 010-S → Acryoh #3800 Clear

Test item	Test method	Result
Film hardness	Mitsubishi Hi-Uni pencil	**H–2H**
Initial adhesion	1.0 mm cross-cut, adhesive tape peel	**100/100**
Impact resistance	DuPont impact tester, 2.9 N (300 gf), 20 cm or more	**PASS**
Alcohol resistance	Traverse tester, absorbent cotton, 80% ethanol 0.5 ml, 1 kgf/cm² × 30 cycles or more	**PASS**
Adhesion after humidity exposure	50°C, 98% RH, 240 h, then adhesion test	**100/100**
Water discoloration resistance	5 ml distilled water dropped inside a ring sealed to the test surface; 55°C × 4 h	**ΔE* ≤ 0.8**
Alkali resistance	5 ml NaOH (0.1 N) dropped inside a ring sealed to the test surface; 55°C × 4 h	**ΔE* ≤ 1.5**
Acid resistance	5 ml H_2SO_4 (0.1 N) dropped inside a ring sealed to the test surface; 23°C × 24 h	**ΔE* ≤ 1.5**
Volatile oil resistance	Immersed in No. 1 volatile oil at room temperature (20°C) for 3 h	**PASS**
Dry rubbing fastness	Gakushin-type rubbing tester, 5 layers of gauze, 500 g load × 200 cycles	**PASS** No substrate exposure
Accelerated weathering	SWOM (sunshine weather meter), 1000 h	**Gloss retention ≥ 90%** **ΔE* ≤ 3.0**
Salt spray test	5% saline sprayed for 480 h at 35 ± 2°C onto a specimen tilted at 20° ± 5° (specimen cross-cut beforehand)	**PASS** Rust width ≤ 2.0 mm
CASS test	5% saline with acetic acid and copper chloride, adjusted to pH 3.0, sprayed for 240 h at 50 ± 5°C onto a specimen tilted at 20° ± 5° (cross-cut beforehand)	**PASS** Rust width ≤ 3.0 mm
Filiform rust resistance (TAC test)	(24 h salt spray → humidity test 40°C, 85% RH, 120 h → 24 h at room temperature) × 8 cycles (specimen cross-cut beforehand)	**PASS** Rust width ≤ 3.0 mm