Chemours-Mitsui Fluoroproducts Co., Ltd.

Product information

MJ-629 High-Corrosion-Resistance, High-Purity PFA Powder

for Semiconductor and CPI Market

<General information>

PFA coating using MJ-629 is suitable for the application in Semiconductor manufacturing process and CPI (Chemical Processing Industry), where high corrosion resistance (substrate protection) and high purity are required. It contributes to extending the service life of the customer's valuable equipment by offering superior corrosion resistance compared with conventional PFA coatings, as well as the excellent heat resistance characteristic of PFA coatings with a continuous operating temperature of up to 260°C. In addition, the use of MJ-310 as topcoat will further enhance the purity of the coating film.

MJ-629 is a high-build coating that enables thick film application in fewer coats, reducing processing costs.

<Key benefit>

In addition to the outstanding performance of PFA, the MJ-629 offers further advantages in the following points:

- Superior corrosion resistance.
- High purity, especially extremely low extractable metal ion.
- High-build capability enables thick-film application per coat and sufficient overall thickness for heavy-duty anticorrosive coating.

<Coating system>

Primer: (liquid type)

The standard primers such as 420G-706 (solvent-based) or PJ-AL902M (water-based) can be used.

Midcoat and topcoat (powder type)

MJ-629 can be used as both midcoat and topcoat to promote high-corrosion resistance performance. In addition, the use of MJ-310 as topcoat enhances surface smoothness and high purity.

<Drying and baking conditions>

Primer:

The primer shall be applied by spray coating to achieve a film thickness of 10-12μm and then baked in an oven. Drying conditions shall be 150°C (substrate temperature) for 10-15 minutes.

Midcoat (MJ-629) and Topcoat (MJ-310)

MJ-629 shall be applied by electrostatic powder coating and baked in an oven. The baking temperature of the first coat is 380°C (substrate temperature), while that of the second and the subsequent coats is recommended to be 360°C (substrate temperature). The baking time is 30 minutes.

The baking conditions of MJ-310 shall be 360°C (substrate temperature) for 30 minutes.

The coating thickness per coat and maximum coating thickness are shown in Table1.

Table 1. Typical physical properties

	MJ-629	MJ-310
Color	Light gray	Clear
Particle size d50 (μm)	28–40	15–25
Coating thickness per coat (μm/coat)	50–100	30–50
Coating thickness (μm)	1000	100
Surface roughness Ra (μm)	0.5–0.7	0.2–0.4

<Coating performance

MJ-629 provides superior corrosion resistance compared with conventional fluoropolymer coatings.

Table 2. Corrosion resistance of MJ-629 coating

		MJ-629 Coating		PFA Coating	FEP Coating	ETFE Coating
Coating system	Topcoat	MJ-629	MJ-310	PFA clear	FEP clear	ETFE clear
	Midcoat		MJ-629	Filled PFA	Filled FEP	Filled ETFE
	Primer	PJ-AL902M	PJ-AL902M	General primer	General primer	General primer
Color		Light Gray	Light Gray	Black	Black	Black
Time of blister appearance*1		> 504 hrs	> 504 hrs	192 hrs	120 hrs	120 hrs

∗1Corrosion test conditions with Atlas cell: Samples with coating thickness of 500µm were exposed to 5 wt% HCl aq. at 95 °C for 504hrs. The tests were conducted until the blisters were found.
Substrates were stainless steel, and were sandblasted (alumina #60, 5 kg/cm^2)

MJ-629/MJ-310 coating system exhibits extremely low extractable metal ion.

Table 3. Extractable metal ion of MJ-629/MJ-310 coating

Extractable metal ion (ppb) *2									
Li	Na	Mg	Al	K	Ca	Ti	Cr	Mn	Fe
<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.04	<0.04	<0.02	<0.04
Co	Ni	Zn	Cu	Sr	Ag	Mo	Ba	In	Pb
<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

∗2: Measurement condition: The sample was washed, eluted based on MCF's standard process, and was measured by ICP-MS/MS.

All properties and test results presented in this document should be considered typical values, may vary depending on the test specimen and test conditions, and should not be used for specification purposes.

<Handling and Storage>

- Powders shall be stored in sealed plastic bags under optimal storage conditions: 18-27 °C (65-80 °F). Maximum storage temperature shall be 40 °C (105 °F).
- Powders may form lumps during prolonged storage; sieving through a coarse screen shall restore the powder.
- Transport conditions shall be 5–40 °C (40–105 °F).
- For handling instructions, please refer to the Safety Data Sheet (SDS).
- For medical application, please consult Chemours's sales representative.

Chemours-Mitsui Fluoroproducts Co.,Ltd.
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