

ICS 25.220.01
CCS H 61

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**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 714-2020

**Technical Specification for Process of Organic Polymer
Spraying on Aluminium Alloy Extruded Profiles for Architecture
(English Translation)**

Issued on: December 9, 2020

Implemented on: April 1, 2021

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

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1 Scope

This Standard specifies the equipment requirements, quality requirements for raw materials, production process requirements, process parameter monitoring, product quality control, and quality control records regarding the organic polymer spraying production on aluminium alloy extruded profiles for architecture.

This Standard is applicable to the process of organic polymer spraying on aluminium alloy extruded profiles for architecture.

2 Normative References

The following documents are indispensable for the application of this document. In terms of references with a specified date, only the version with that specific date is applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 1732 Determination of impact resistance of coating films

GB/T 4957 Non-conductive coatings on non-magnetic basis metals - Measurement of coating thickness - Eddy current

GB/T 5237.1 Aluminium alloy extruded profiles for architecture - Part 1.Mill finish profiles

GB/T 5237.4 Wrought aluminium alloys extruded profiles for architecture - Part 4.Powder coating profiles

GB/T 5237.5 Wrought aluminium alloy extruded profiles for architecture - Part 5.Paint coating profiles

GB/T 6742 Paints and varnishes - Bend test (cylindrical mandrel)

GB/T 8005.3 Aluminium of aluminium alloys - Terms and definitions - Part 3.Surface treatment terms

GB/T 9275 Paint and varnishes - Buchholz indentation test

GB/T 9286 Paints and varnishes - Cross cut test for films

GB/T 9753 Paints and varnishes - Cupping test

GB/T 9754 Paints and varnishes - Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°

GB/T 11186.2 Methods for measuring the colour of paint films - Part 2.Colour measurement

GB/T 26323 Paints and varnishes - Determination of resistance to filiform corrosion on aluminium and aluminium alloys

HG/T 3793 Hot-melt fluorocarbon resin (PVDF) coatings

YS/T 680 Powder for coating aluminium alloy extruded profiles for architecture

YS/T 769.3 Safety production specification for aluminum and aluminum alloy tubes, rods and profiles - Part 3.Electrostatic spraying

YS/T 1186 Falling sand tester for testing the wear resistance of anodized films and organic polymer films on aluminum surfaces

YS/T 1189 Chromium-free chemical pre-coatings on aluminium and aluminium alloys

3 Terms and Definitions

The terms and definitions defined in GB/T 8005.3 and the following ones are applicable to this document.

3.1 Etching Degree

Mass loss per unit area of the sample before and after the etching process.

4 Typical Process Flow Charts

Figure 1 shows the typical production process flow chart for powder-coated products or single- coat painted products; Figure 2 shows the typical production process flow chart for two-coat, three-coat, or four-coat painted products.

Figure 1 -- Typical Production Process Flow Chart for Powder-Coated Products or

Single-Coat Painted Products

Figure 2 -- Typical Production Process Flow Chart for Two-Coat, Three-Coat, or Four-Coat Painted Products

5.1.1 General requirements

5.1.1.1

Powder coating production lines should be equipped with volatile organic compound (VOC) treatment devices; paint coating production lines shall be equipped with volatile organic compound (VOC) treatment devices.

5.1.1.2

Pretreatment production lines utilizing an alkaline degreasing process shall be equipped with ventilation devices.

5.1.1.3

When wastewater is treated at the manufacturing facility, the facility shall be equipped with appropriate wastewater treatment equipment (such as units for acid-base neutralization, flocculation, sedimentation, and pressure filtration).

5.1.2 Pretreatment equipment

5.1.2.1

The production line shall be equipped with the production equipment for spray or immersion pretreatment, as well as necessary pretreatment tanks (such as degreasing, water rinse, and chemical pretreatment tanks) and drying ovens.

5.1.2.2

The lining material of chemical pretreatment tanks shall be resistant to corrosion by the tank solution and shall not contaminate the tank solution. The layout of chemical pretreatment tanks shall be designed to prevent contamination of the tank solution.

5.1.2.3

Chemical pretreatment tanks shall ensure tank solution uniformity; horizontal production lines should be equipped with agitation devices, and vertical production lines should be equipped with malfunction alarm devices.

5.1.2.4

The dimensions of the pretreatment production equipment shall meet the requirements regarding the cross-sectional dimensions and lengths of the profiles.

5.1.2.5

The temperature difference between the top and bottom of the drying oven should be less than 10°C, and an over-temperature alarm system shall be installed.

5.1.3.1 Powder coating booth

5.1.3.1.1

The interior wall surfaces of the powder coating booth shall be flat, smooth, and free of dead zones; corners and edges should be designed with rounded contours to facilitate cleaning and color changes.

5.1.3.1.2

Conductive facilities within the powder coating booth and a 5-meter radius around it shall be grounded to prevent the accumulation of electrostatic charges.

5.1.3.1.3

The powder coating booth shall comply with the environmental requirements specified by the powder coating supplier.

5.1.3.1.4

The opening dimensions of the powder coating booth shall match the airflow rate of the recovery system to prevent powder leakage.

5.1.3.1.5

The powder coating booth shall be equipped with properly designed exhaust equipment.

5.1.3.1.6

Compressed air entering the powder coating booth shall be treated using a refrigerated dryer and an oil-water separator to prevent adverse effects on coating quality.

5.1.3.1.7

Materials used to construct the powder coating booth typically include metal sheets, plastic sheets, plastic films, or PE curtains; silicate-based materials shall not be used.

5.1.3.2 Electrostatic spray gun

5.1.3.2.1

The electrostatic spray gun is the core component of powder coating equipment; its selection shall take into account factors such as stability, powder transfer efficiency, safety, and charging characteristics.

5.1.3.2.2

Electrostatic spray guns may include high-voltage electrostatic spray guns or triboelectric