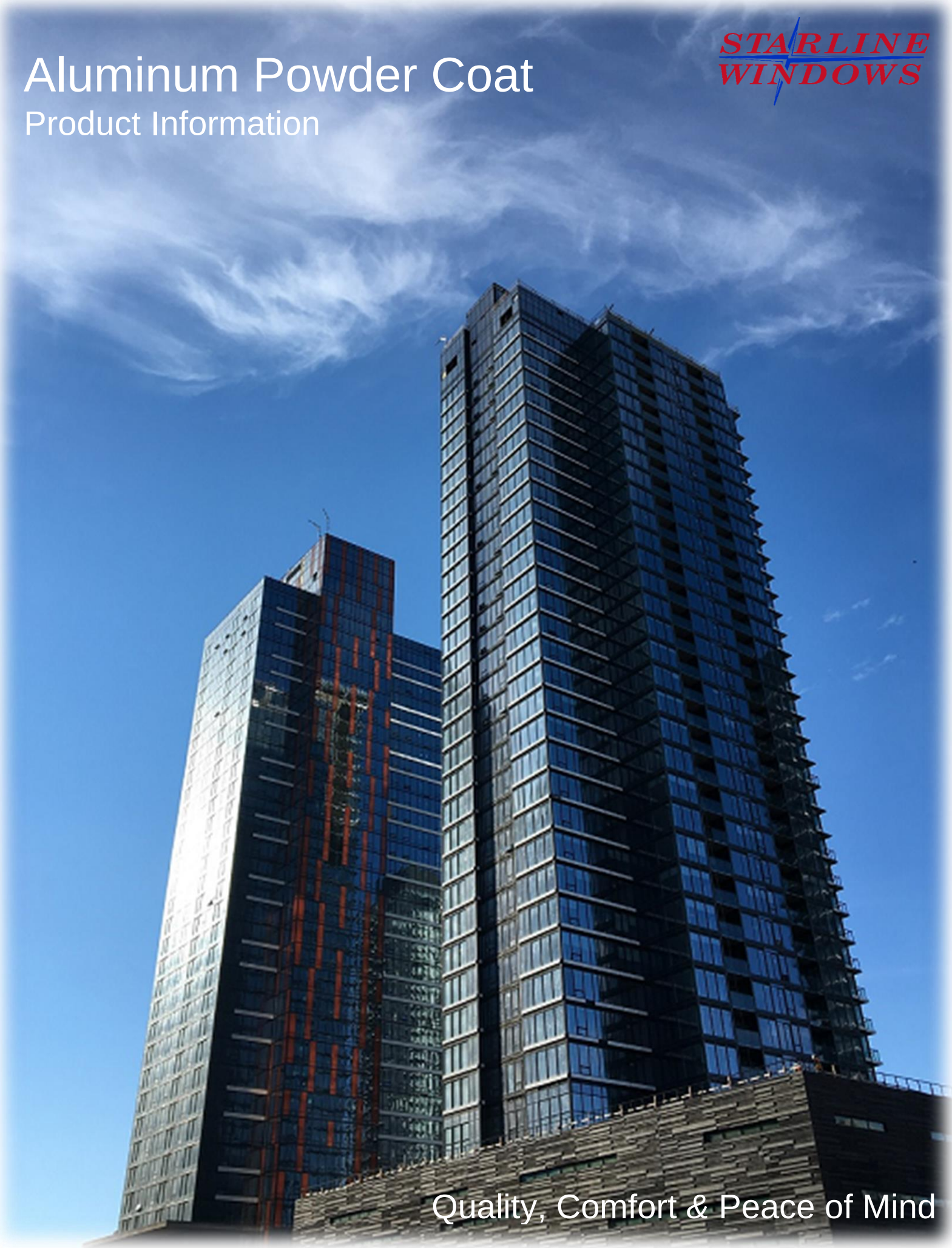
Aluminum Powder Coat

Product Information

STARLINE WINDOWS



Quality, Comfort & Peace of Mind

Foreword

This Design Guide provides specifications on the powder coating finishes available for our aluminum window frames.

This document is intended to provide information on our standard products. Non-standard designs and applications can be reviewed to determine the feasibility on a project-specific basis.

Please email any project specific enquiries to architectural@starlinewindows.com or technical@starlinewindows.com.

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Aluminum Finishes (Powder Coating)

Starline finishes the aluminum frame, aluminum panels and aluminum glazing bead (when used) via powder coating. The powder coating is a high-performance thermoset coating specifically designed for architectural systems.

This coating meets and exceeds with The American Architectural Manufacturers Association (AAMA) 2603 specification standard which covers pigmented organic coatings on aluminum extrusions.

There is an option to upgrade the powder to meet the AAMA 2604 or AAMA 2605 specification on the exterior which is noted in the **Options** section below.

Options

There is an option to upgrade the powder coating to meet a the following AAMA standards:

- A thermoset super durable coating which complies with the AAMA 2604 specification standards. The AAMA 2604 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 specification standard.
- A thermoset fluorocarbon coating which is a superior coating that complies with the AAMA 2605 specification standard. The AAMA 2605 standard demands advanced levels of weather resistance, gloss and colour retention, and corrosion resistance, among other increased standards when compared to the AAMA 2603 and AAMA 2604 specification standards.

Note: AAMA 2604 or AAMA 2605 specification standard on exterior of frames may be required in some building codes, bylaws, jurisdictions, etc**.**.

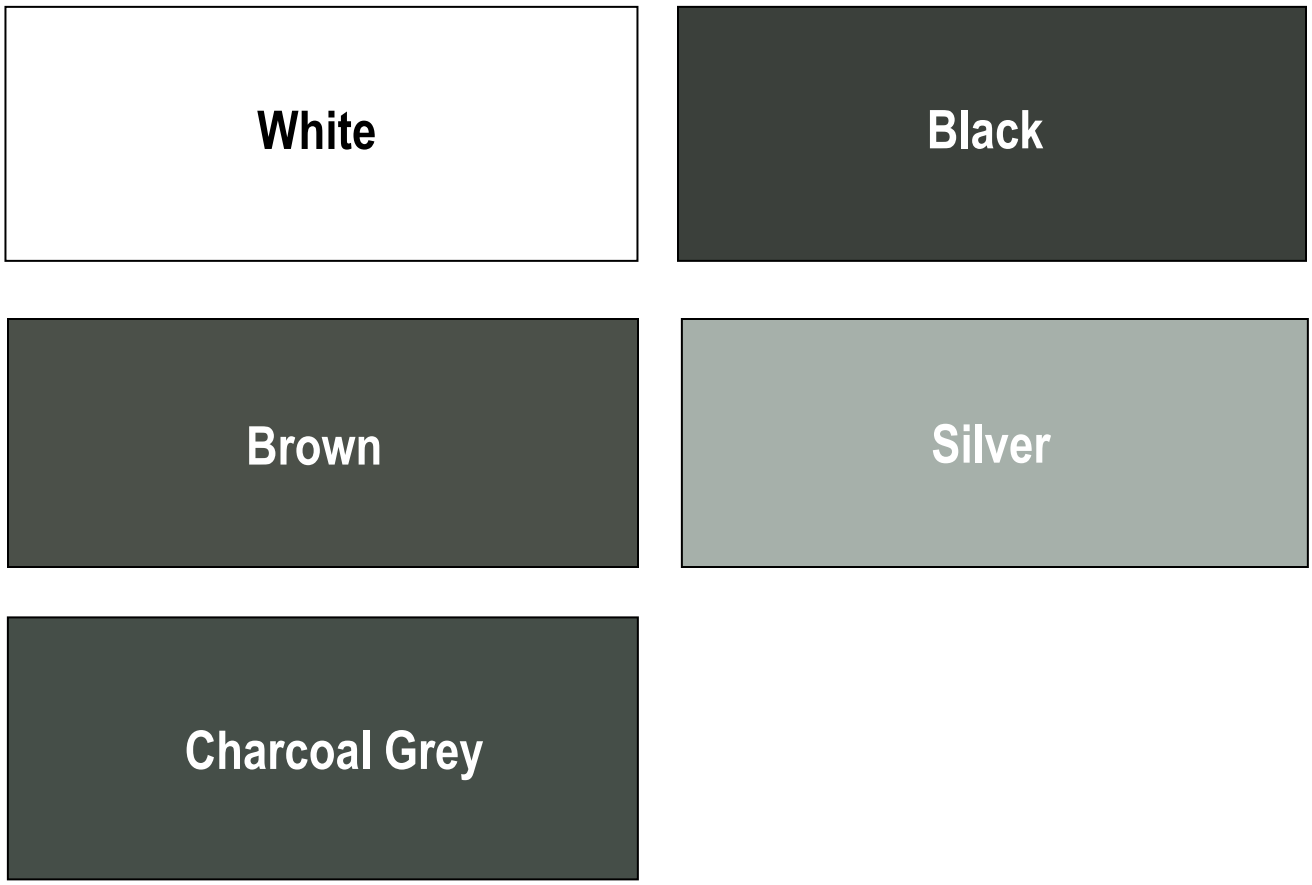
Custom colours may be available on a project-specific basis.

Dual frame colour is available.

Note: Items listed in this ***Options*** section are available at an additional cost.

Standard Powder Coat Colour Options

The following **standard colours** are available the AAMA 2603, AAMA 2604 and AAMA 2605 specification standards:



Note:

- Digital colour images shown are for reference only and do not show 100% true. Contact Starline Windows Ltd. for swatches or samples.

Custom colours are also available. Virtually any colour can be matched or very closely matched. The scope of work and overall custom colour quantity will be reviewed by Starline on a project specific basis to determine the feasibility of the custom colour request.

Note: Custom colours are available for an additional cost premium. An approximate 12-week lead time is required to procure custom colour requests.

AAMA 2603, AAMA 2604 & AAMA 2605 Standards Comparison

Environmental conditions will play a role in the longevity of the high-performance powder coat. UV rays, precipitation, humidity, proximity to the ocean, temperature extremes and other environmental conditions are all capable of breaking down exposed surfaces. To ensure the coatings on extruded aluminum retain integrity, the AAMA 2603, AAMA 2604 and AAMA 2605 specification standards were developed.

The following chart provides a comparison of some performance requirements which each AAMA standard must meet:

ATTRIBUTE	AAMA 2603	AAMA 2604	AAMA 2605
Required Outdoor Weathering Exposure Time	1 year - South Florida Weathering	5 year - South Florida Weathering	10 year - South Florida Weathering
Results After Weather Exposure Time	1 year - South Florida Weathering	5 year - South Florida Weathering	10 year - South Florida Weathering
Colour Retention	Slight Change	Fade ≤ 5 Delta E	Fade ≤ 5 Delta E
Gloss Retention	No Specification	Retention ≥ 30%	Retention ≥ 50%
Chalk Resistance	Chalk ≤ 8	Chalk ≤ 8	Chalk ≤ 8
Erosion Resistance	No Specification	Film loss ≤ 10%	Film loss ≤ 10%
Salt Spray Corrosion Resistance	1,500 hours ≤ 8 blisters, ≥ 7 scribe	3,000 hours ≤ 8 blisters, ≥ 7 scribe	Aggressive Cyclical Testing after 2,000 hours ≤ 8 blisters, ≥ 7 scribe
Humidity (At 100^{O}F & 100% humidity)	1,500 hours	3,000 hours	4,000 hours

Note: The above comparison does not provide all the test and performance requirements that powder coating is required to undergo to become compliant in the AAMA 2603, AAMA 2604 and AAMA 2605 specification standard. Starline's intent is to provide basic information to show a general comparison between the three specification standards for informative and educational purposes.

Considerations When Selecting Colours

During the process of selecting colours for a project there are many points to consider. The following are a few considerations, but not limited to:

Is there more than one exterior colour being selected? If yes, consider how colours "fade" differently. Please note: A white colour will have a less "noticeable to the human eye" Δ colour change than a dark colour that experiences the same Δ colour change.

Which elevation is the particular colour selection going to be used on? Please note: Certain elevations on a building will experience more sun exposure and weathering than other building elevations.

Are there items that will cause partial shading (i.e. sunshades) to the powder coated aluminum extrusion? Please note: Colour coated surfaces (including powder coated) that are not equally exposed to weather elements and the sun may experience non-uniform colour retention (fading) and chalking.

Colour Retention

Colour retention is a coatings ability to maintain its original colour while being exposed to weathering elements and sunlight, over a given period of time. The variation between a coatings original and current colour will become more pronounced over time. The construction industry typically refers to colour retention as “fade” or “fading”.

The degree of fade can be lessened by taking the following considerations, but not limited to:

- Selecting a coating designed for the environment in which the product will be installed.
- Taking steps to protect the coating.
- Ensuring routine maintenance is performed on the coating and use the appropriate cleaning methods.

These steps along with others will assist with the longevity of the colour.

Note: Gloss also affects how the eye perceives colour. There can be the exact same colour side by side, however the colour has two different gloss finishes and the eye will perceive them as two different colours. This means gloss fade can also affect how the eye perceives colour. If more detailed information is required, please contact technical@starlinewindows.com and Starline will request additional information from their powder coat supplier(s).

Under AAMA 2603, AAMA 2604 & AAMA 2605 specification standards, colour retention is measured in Delta-E (Δ). Δ is a unit of measure that represents the visual “distance” between two colours. AAMA 2603 requires that a powder coating only show a “slight” fade after one year. AAMA 2604 & AAMA 2605 requires that a powder coating must not fade more than or equal to 5 Δ over 5 years for AAMA 2604 & 10 years for AAMA 2605 specification standards.

Generally, the smallest Δ that the human eye can see is around a Δ of one (1). Even though the Δ may be the same or similar, colour changes are more noticeable or pronounced depending on the shade. For example, it is much easier to see a Δ of two (2) in a dark colour than it is in a white.

How quickly a colour fades is also influenced by the composition of the powder’s pigmentation. Inorganic pigments fade more slowly than organic pigments. Traditionally more vibrant, brighter and clean colours, such as blue, green, reds, yellows use organic pigments in order to achieve the desired shade. Earth tone colours are more stable in terms of UV degradation.

Note: The preceding information is a very simplified explanation of colour retention and Delta E colour change. Understanding how a colour can change over time is very complicated and there are many attributes to consider; such as colour retention, gloss retention, chalk resistance, chromatic versus achromatic colours and much more. If more detailed information is required, please contact technical@starlinewindows.com . Starline will request additional information from their powder coat supplier(s).

Frame Cleaning

The best method of cleaning is by regular washing of the coating using a solution of warm water and a non-abrasive, pH neutral detergent solution. Surfaces should be thoroughly rinsed after cleaning to remove all residues. All surfaces should be cleaned using a soft cloth or sponge or a soft natural bristle brush.

All windows and doors with sealants used to caulk corners and tee bars should be checked annually to ensure integrity of the sealant and its bond to the window frame.

Note: It is expected that any fading and/or chalking and/or change in gloss retention, either uniform or non-uniform that a colour will experience in the field will fall within acceptable range as specified in the AAMA 2603, AAMA 2604 and AAMA 2605 specification standards. It is very important to ensure that the proper AAMA standard specification is specified for the environment in which the product will be installed.