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1. Purpose: This standard describes the painted surface requirements for finished Buses. These requirements, with regard to appearance attributes and surface blemishes, are outlined according to appearance zones. The purpose of these appearance standards is to ensure the finish of the buses meet industry standard customer requirements.

2. Scope and Reference: This standard applies to buses produced by Proterra and represent the expectations of the finished product – the bus. This applies to the final appearance as seen by the customers.

3. Color Confirmation: The vendor shall be responsible for confirming paint colors by providing paint spray outs using paint formulation, spraying equipment, and methods that will be used on the bus. Vendor is required to obtain written/ electronic approval from the customer’s representative prior to ordering and applying paint and providing this approval to Proterra Representative. A duplicate set of approved paint spray outs shall be sent to: Proterra, Attn: Supplier Quality Engineering, 1 Whitlee Court, Greenville, SC 29607

4. Appearance Zones: The paint standards are different based on the visibility of the attributes to a bus riding customer. There are three zones as described in Table 1 (High Visibility, Medium Visibility and Low Visibility)

Zone	Description	Example
A	High Visibility	<p>Area of the bus that is at Eye Level Four feet above the street to 8 feet above the street level (6 feet from Ground plus and minus 2 feet).</p> <p style="text-align: center;">Zone A – Very Highly Visible</p> 
B	Medium Visibility	<p>Below 4 feet in the vertical surfaces of the bus, between 8 and 10 feet from the street level, and underbody radius and first 3 inches of the underbody surface.</p>

		<p>Zone B – Visible</p> 
C	Low Visibility	<p>Inside doors and openings. Any surface above 10 Feet.</p> <p>Zone C – Low Visibility</p> 

5. Inspection Process: The Paint Inspection process is to be performed in the following manner

Inspector Proximity: The inspectors will perform the inspection at a distance of 600mm from the bus (approximately one arm’s length) normal to the part surface (90 Degrees from the bus)

Light Intensity: The inspection area shall have a light intensity of 80 to 125 Foot Candles

Color Acuity: Any person appraising the bus for color must be tested for the absence of Color blindness and demonstrate color acuity per ASTM – E 1499.

Light For Color Match: The lighting for color must meet SAE J 361

Objections and Deviations:

If the attributes of the paint (complexity of design, coverage over unusual features, etc.) cannot be achieved by the paint source, the Proterra Customer Program Management team must be contacted to articulate the concern and document an appropriate deviation.

If the customer inspectors have a standard that is stricter than the Inspection attributes listed in Table 2, the customer is entitled to their higher standard and will be charged fairly for the remedies needed to attain the higher standard preferred by the inspector.

6. Appearance Standards

Maximum Acceptable Size or Count / Zone
Separated by Zone

No.	Attribute	Description	Measure Process	Conditions	Zone A	Zone B	Zone C
1	Bare Spots	Voids in the Paint	Visual Inspection		None	None	Under 2 mm in size no closer than 100 mm apart
2	Bleeding	Lower substrate color diffuses to surface	Visual Inspection		None	None	Acceptable
3	Boiling or Pinholes	Small bubbles in the paint			None	None	Max 3 under 2 mm no closer than 300 mm
4	Chips	Removed coating	Visual Inspection		None	Max 1 mm in size no closer than 300 mm	Max 5 under 2 mm no closer than 300 mm
5	Crazing	Hairline breaks in paint film	Visual Inspection		None	None	Acceptable
6	Dirt	Foreign object in the paint	Visual Inspection	Same Color	Max 15 per bus under 1 mm separated by 200 mm	Max 15 per bus under 1 mm separated by 100 mm	Acceptable
7	Dry Spray	Textured or Seedy appearance	Visual Inspection		None	None	Same color is acceptable
8 A	Gloss	Shininess of Surface	Gloss Meter	Base Coat Clear Coat	70	60	Not Applicable
8 B	Gloss	Shininess of Surface	Gloss Meter	Enamel	60	50	Not Applicable
9	Off Color	Color Variation	Visual		None	None	Acceptable
10	Orange Peel	Rough or Wavy Appearance	Visual Comparison to A.C.T. Standards		Minimum 5	Minimum 6	Acceptable
11	Overspray	Paint deposited from a different target area	Visual Inspection		None	None	None

No.	Attribute	Description	Measure Process	Conditions	Zone A	Zone B	Zone C
12	Paint Drops	Small drops on a surface	Visual Inspection		None	None	Acceptable
13 A	Ragged Mask Lines	Unsightly appearance of 2 tones of color	Visual Inspection	Main Body	None	None	None
13 B	Ragged Mask Lines	Unsightly Appearance of 2 tones of color	Visual Inspection	Attached Parts (eg, reflectors and lights)	None	None, Touch-up of area allowed.	None, Touch-up of area allowed.
14	Rub Through	Thinning of a coated area due to buffing actions	Visual Inspection		None	None	Acceptable
15A	Sags, Runs and Drips	Localized flow of coatings	Visual Inspection	Sag	None	None	Acceptable
15 B	Sags, Runs and Drips	Localized flow of coatings	Visual Inspection	Run	None	None	Acceptable
16 A	Scratches	Lines in paint due to handling	Visual Inspection	Felt with Fingernail – Same color	None	None	Acceptable
16 B	Scratches	Lines in paint due to handling	Visual Inspection	Seen or Felt with Fingernail – Different color	None	None	Under 25 MM in length separated by 600 mm
17	Swirl Marks	Fine Circular marks caused by improper polishing	Visual Inspection		None	None	Acceptable
18	Thin Coating	Film thickness allowing color read through of base color	Visual Inspection		None	None	Acceptable
19	Wet Mark	Damage to coating due to something that came in contact with Wet Coating	Visual Inspection		None	None	Acceptable

7. Performance Standard (Initial Supplier Verification)

Before a Paint contract is awarded to a new Paint Supplier. The Supplier is required to validate their paint process with the following items. After successful verification of the requirements the paint supplier will be added to the list of approved paint suppliers.

1. Process flow diagram for the paint preparation, paint application, and final verification of finished product.
2. Submission of painted sample blanks of the composite body processed with the above process for adhesion and appearance verification. (Proterra to Provide Blanks)

Preferred Paint Supplier:

Axalta Coating Systems – Imron Series paints

If another paint vendor, or a new paint type is to be used please consult with Supplier Quality and ensure that the new paint system is qualified using the outlined process above.

7. Revision History

Date	Rev.	Approver	Description
4/29/2021	4/29/2022	Shawn White	Initial Release
2/15/2022	2/15/2022	Shawn White	Annual Review and update. Standards for drips and scratches updated.
3/30/2022	3/30/2022	Shawn White	Updated Paint Supplier Qualifications added preferred Paint Vendor Axalta