

1. PURPOSE

The purpose of this standard is to describe substrate surface appearance requirements for components that will be painted. These requirements, with regard to appearance attributes and surface blemishes, are outlined according to appearance zones. The purpose of these appearance requirements is to ensure that the finish of components will meet or exceed customer expectations.

2. SCOPE

This procedure applies to Roush Manufacturing and component suppliers and focuses only on the visual/tactile characteristics of the components. This standard applies to unpainted substrate surface appearance, unless otherwise specified. Substrate categories include, but are not limited to: Injection Molded Thermoplastics, SMC, RIM, and Blow Molded Thermoplastics.

3. APPEARANCE

The components are divided into different appearance zones to set the appearance quality requirements of each zone separately. (see Table 1)

3.10 AUDIT PROCESS

3.11 Visual inspection, UNLESS OTHERWISE SPECIFIED, shall be performed at an approximate distance of 600mm (approximate arm's length) from the observer, normal to the part surface +/- 90 degrees.

3.12 Training

Training programs should be implemented to educate operators, inspectors, and managers in the techniques and acceptability standards of this specification.

3.13 Light Intensity

In the inspection area, the light intensity shall be 80 to 125 maintained foot-candles.

3.14 Inspection Area

The Inspection Area shall comply with SAE J361.

3.20 DEVIATIONS

Deviations from this standard, if required, must be detailed on the appropriate part drawing. It is the responsibility of the Product/Release Engineer to ensure that any and all deviations are updated.

3.30 REFERENCES

ASTM E284, Standard Terminology of Appearance.

ASTM E1499 - Standard Guide to the Selection, Evaluation, and Training of Observers.

SAE J361 - Procedure for Visual Evaluation of Interior and Exterior Automotive Trim.

3.40 RELEASE AND REVISIONS

3.41 Release. First approved and published June 2004.

3.13 Revisions. None.

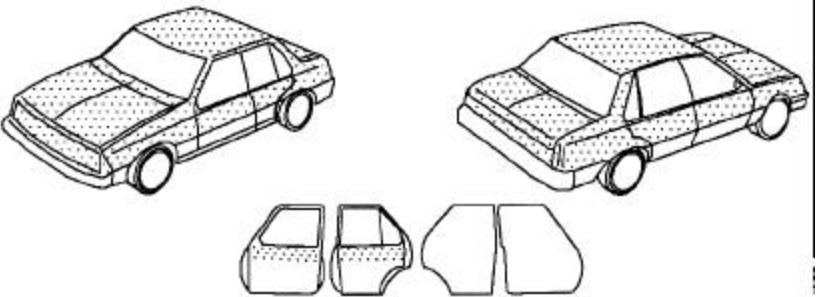
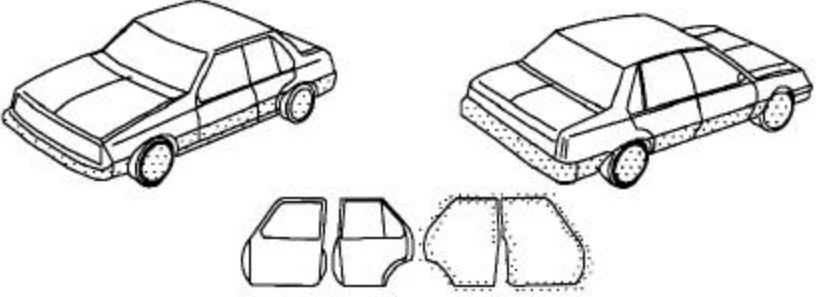

TABLE 1: GENERAL APPEARANCE ZONES/SURFACE CLASS		
ZONE/ CLASS	DESCRIPTION	EXAMPLE
A	Very High Visibility Exterior; Horizontal: Hood, Roof, Deck Lid, Quarter Panels, Fenders, Front & Rear Fascia's Vertical: All surfaces above a horizontal line from the Front to Rear Bumper's Interior: Door inner belt/waist line "A" & "B" pillars	
B	High Visibility Door openings and inner panels, with the exception of door hinge areas and lower side of door inner panel. All surfaces below a horizontal line from the Front to Rear Bumper's horizontal	
C	Moderate Visibility. Underside of parts, recessed areas, area of part visible when doors, trunk lid, or hood is open	
D	Low Visibility Any area of a painted surface that is permanently covered by another part. Back side of any part	

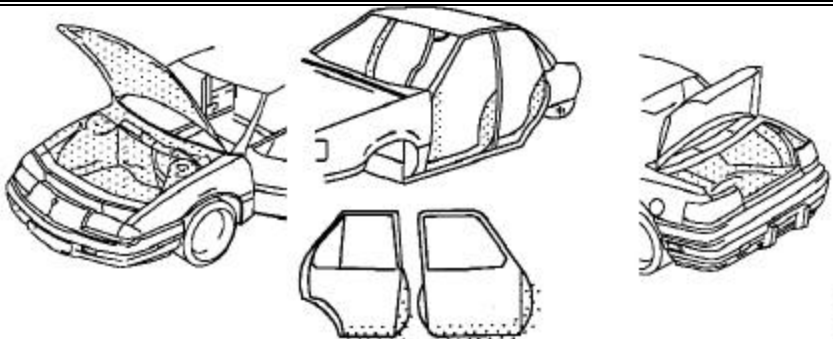
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Table A

Item Number	Appearance Attribute	Description	Measurement	Condition	Maximum Acceptable Size/Count per Part Per Zone, Separated by 100 mm			
					Zone A	Zone B	Zone C	Zone D
1	Sink/ Bulls-eye	Surface depressions			None	None	None	Acceptable
2	Jetting	Streaking at gate area			None	None	Acceptable	Acceptable
3	Splay Marks	Silver Streaking, Splash Marks			None	None	Acceptable	Acceptable
4	Boiling /pinholes /popping	Small bubbles in surface which may have small holes at top			None	None	Up to 3 \leq 2mm Dia	Acceptable
5	Blisters	Small bubbles in surface			None	None	None	None
6	Chips	Removal of surface finish in small irregular pieces			None	None	1 per surface \leq 1mm dia, no closer than 200mm	Acceptable
7	Flash	Excess plastic			None	None	None	None
8	Cracked part	Cracks/ split / punctures in substrate			None	None	None	None
9	Cracking/crazing	Hairline breaks in part surface. May extend in a network over the surface			None	None	None	Acceptable
10	Craters	Small round depressions which may expose underlying substrate			None	Max 2 per surface < 2mm dia	Max 5 per surface < 2mm dia	Acceptable
11	Dings/bumps/dents	Depressions or protrusions in substrate	Boundary Sample		None	None	1 defect per part < 10mm dia	Acceptable
12	Burn Marks	Black marks or scorch marks		Gritty feel and lack of gloss, discoloration	None	None	None	Acceptable
13	Weld/ knit lines	Hairline break in surface	Boundary Sample	Seen or felt with finger-nail	None	None	Acceptable	Acceptable
14	Delamination	Surface separates, strata or fish scale type appearance where the layers may be separated.			None	None	None	None
15	Flow lines	Visible mark that indicate the direction of material flow	Boundary Sample	Seen or felt with finger-nail	None	None	Acceptable	Acceptable
16	Short finish	Rough or wavy appearance			None	None	Acceptable	Acceptable
17	Sand Scratches	Hairline scratches caused by improper sanding techniques		Scratches	None	None	Acceptable	Acceptable

SUBSTRATE APPEARANCE STANDARD

AS-101-1

Item Number	Appearance Attribute	Description	Measurement	Condition	Maximum Acceptable Size/Count per Part Per Zone, Separated by 100 mm			
					Zone A	Zone B	Zone C	Zone D
18	Scratches	Scratches caused by improper handling, etc.		Seen or felt with finger-nail	None	None	None	None
19	Contamination	Foreign coatings, oils, dirt on surface			None	None	None	None