

MP-28_ Aesthetic visual inspection

Revision : 03

Effective Date : 2026-04-02

Summary

1. Introduction
2. Default Definitions
3. Defect Classes and Acceptance Criteria
4. Visual Inspection – Method and Best Practices

- **Purpose**

The purpose of this procedure is to define the methods and best practices for the aesthetic visual inspection of parts

- **Scope**

This procedure is applicable to the visual inspection of parts with a determined aesthetic surface finish (paint, texture, anodization, etc.).

- Table 1 - Definition of faults

#	DEFECT	DEFINITION
1	Scratch	Small mark present on the finish layer forming lines on the surface.
2	Chip	Fragment of the topcoat peeled off.
3	Inclusion	Dust, fiber or other impurity trapped in the finish layer. Small, often irregular, protrusions in the finish layer due to foreign particles (e.g., dust) appearing in various sizes, shapes, types, and distributions.
4	Improper application	Inadequate coverage of the finish layer on the specified surface. (Lack of finish, layer too thin, excess thickness causing functional issues, etc.)
5	Overspray / Finish (paint) on protected surface	Trace of paint, or other finish, on masked areas.
6	Blister	Moisture or solvent bubble trapped in the paint layer forming a blister.
7	Run, drip	Excess thickness in the form of drops or waves on vertical surfaces.
8	Orange peel and other surface defects	Surface defect of the finish layer resembling the texture of an orange peel. Other defects such as cracks, wrinkles, sanding marks, etc.
9	Pinhole	Small hole in the finish layer.
10	Corrosion	Trace of oxidation on the part.
11	Dent	Visible mark following an impact. (pre or post treatment and / or surface finish)
12	Burrs	Excess material / relief generated by the machining process or by the joints of a mold.
13	Non-compliant tracing, decal	Decal missing, askew, damaged, etc.
14	Color mismatch	Variation in color, wrong color, etc.

3. Classes and acceptance criteria for defects

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Security

Reference documents

• Table 2 - Defects and acceptance criteria

#	DEFECT	CLASS A	CLASS B	CLASS C
1	Scratch	Max 0.40 mm ² (Max 4 mm long)	Max 1.00 mm ² (Max 6 mm long)	Max 2.00 mm ² (Max 15 mm long)
2	Chip	Rejection	Max 0.80 mm ²	Max 2.00 mm ²
3	Inclusion	Max 0.40 mm ²	Max 0.80 mm ²	Max 5.00 mm ²
4	Improper application	Rejection	Rejection	Rejection
5	Overspray on protected surface	Rejection	Rejection	Rejection
6	Blister	Rejection	Rejection	Max 5.00 mm ²
7	Run, drip	Rejection	Rejection (1)	Accepted
8	Orange peel and other surface defects	Max 25 mm ² (5 mm x 5 mm)	Max 400 mm ² (20 mm x 20 mm)	Accepted
9	Pinhole	> 0.40 mm ² : rejection	> 1.00 mm ² : rejection	> 2.00 mm ² : rejection
		[0.15 - 0.40 mm ²] : Max 5 / 100 cm ²	[0.40 - 1.00 mm ²] : Max 5 / 100 cm ²	
		< 0.15 mm ² : accepted	< 0.40 mm ² : accepted	
10	Corrosion	Rejection	Rejection	Rejection
11	Dent	Rejection	Max 5.00 mm ²	Accepted
12	Burrs	Rejection	Rejection	Accepted if no functional impact
13	Non-compliant tracing, decal	Rejection	Rejection	N/A
14	Color mismatch	Rejection	Rejection	N/A

Note 1: Runs located in an area not visible after assembly on the periphery of the inspection area (e.g., along an edge) are acceptable if the resulting excess thickness does not affect the functionality of the part (assembly). A justification must be indicated in the inspection report.

Note 2: Excess thickness is acceptable if it does not affect the functionality of the part.

Note 3: Criterion applicable only if a color palette or comparison samples have been defined.

Note 4: Green areas on drawings must meet two conditions to be accepted:

- 1) Inspection under Class C.
- 2) If there is a defect, it must be completely hidden by the functional gauge or the corresponding equivalent ERP PN, if the latter is mentioned in the inspection sheet.

4.1 Lighting

The optimal illuminance for visual inspection is between 800 and 1400 lux.
It is recommended to use a light source with a temperature between 4000 K and 5000 K, with a color rendering index (CRI) greater than 80.
A black background is recommended for inspecting light-colored parts. A white background is recommended for inspecting dark colored parts.

4.2 Inspection times & distances

Table 3 - Inspection parameters

Surface type	Class A	Class B	Class C
Inspection distance	450 mm	450 mm	600 mm
Visual angle	45°	45°	45°
Inspection time per part	10 sec	5 sec	5 sec

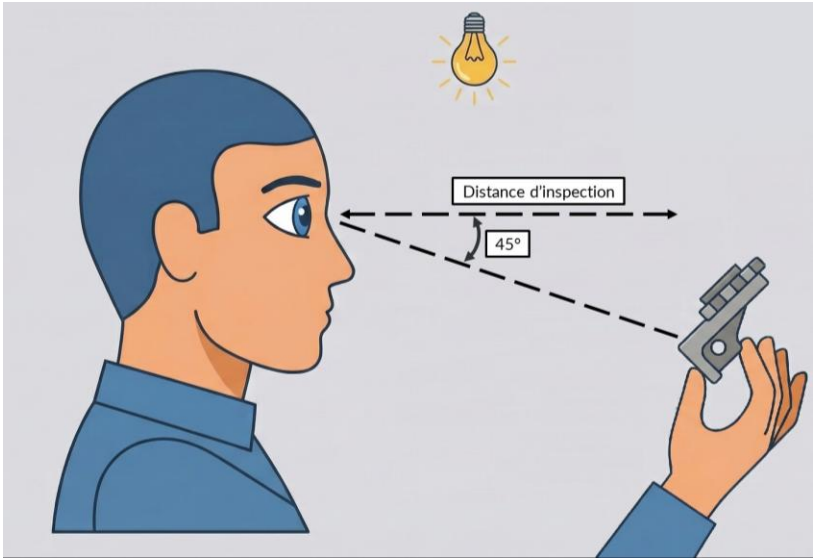


Figure 1 - Inspection distance and angle

Note: Curved parts require handling to continuously adjust the inspection angle to the surface.

- 4.3 Cleaning
 - Before starting the visual inspection, thoroughly clean the part with a soft, dry, lint-free cloth to remove dust and grease.
 - Isopropyl alcohol can be used to clean some traces. Check for any contraindications related to the surface finish in case of doubt.
- 4.4 Defect Estimation and Acceptability
 - Defects are estimated based on their size or area based on the criteria defined by the defect assessment grid (Tappi Chart, see example below).

The acceptability of a defect is defined by the class to use. The class is specified in the inspection instructions. If no class is specified, apply Class B.

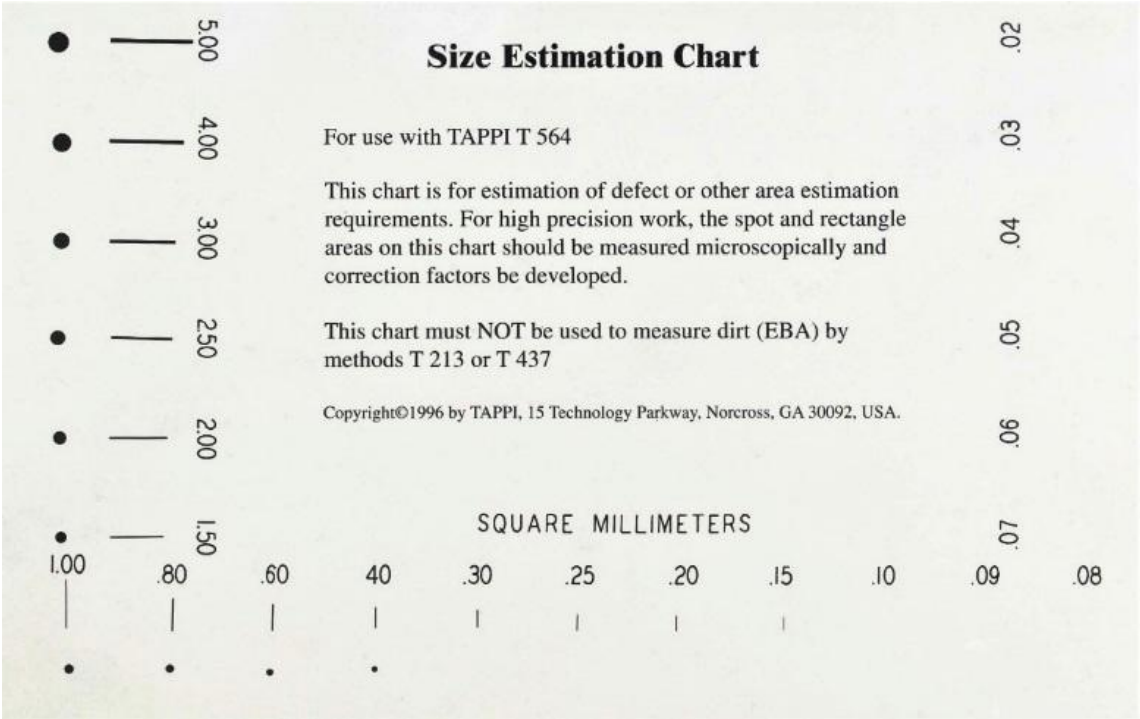


Figure 2 – Tappi chart

Source : <http://www.rethinktrees.org/publications-standards/standards-methods/charts-datasets/>

- 4.5 Class B / Class C: Parts with non-aesthetic functional areas (not visible after final assembly)

- General Tolerances:**

- The presence of overspray (paint mist) due to masking or partially covered areas is accepted, provided there is no functional impact and these defects are not visible at final assembly.

- Touch-ups :**

- 1) Touch-ups are allowed in areas not visible after assembly, particularly those affected by contact points from hooks during the painting process.
 - 2) In case of missing paint on a non-visible area, a touch-up can be performed, provided the area remains non-visible at final assembly.

Approval

	NAME	SIGNATURE	DATE
PRODUCTION ENGINEERING			
ENGINEERING			
QUALITY CONTROL			
QUALITY ASSURANCE			

Revision log

REV	#ECO	DESCRIPTION	AUTHOR
01	N/A	Initial release	Jean-Yves Pairet
02	ECO_2025-038	TRANSFER THE WORD MP INTO THE NEW TEMPLATE. ADD APPENDIX 1 AND THE NOTE ABOUT CLEANING JACO ERRORS TO SECTION 4.3, WHICH REFERS TO APPENDIX 1.	NICOLAS BENOIT
3	ECO_2025-076	SLIDE 4: REMOVED DEFECT #11 "SURFACE DEFORMATION, BREAKAGE" + ADDED "EXCESS THICKNESS" IN DEFINITION #4 + REFINED DEFINITIONS. SLIDE 5: REMOVED DEFECT #11 "SURFACE DEFORMATION, BREAKAGE" + ADDED NOTES 2 AND 4. SLIDE 6: REPLACED FIGURE 1. SLIDE 7: REMOVED BULLET #3 REGARDING JACO SHELLS + REMOVED THE TWO BULLETS REGARDING THE MENTION WITH/WITHOUT AESTHETIC FUNCTIONS. SLIDE 8: REMOVED APPENDIX 1 AND ADDED POINT 4.5.	JULIEN LANIEL-RODGERS