



# Material Standards & Specifications

## Specialty Products Company

<b>MSS</b>	<b>4.011</b>	<b>Quality Requirements – Aluminum Forgings</b>
<b>Approved by:</b>	<b>JAW</b>	
<b>Revision:</b>	<b>D</b>	
<b>Date:</b>	<b>1/15/18</b>	

### Scope:

This specification summarizes SPC's quality requirements for aluminum forgings and is intended to supplement, not replace or invalidate any published standards or specifications that may be referenced on a drawing. This specification provides general requirements to ensure quality and consistency of forgings produced for SPC. Only explicit notes or dimensions on a drawing shall override any requirements of this specification.

### Requirements:

1. **Maximum surface roughness of As-Forged surfaces after normal post-processing (Sand-blasting, shot-blasting, etc):**
  - a. 1.6 Ra (um) [63 Ra (uin)]
2. **Pits:**
  - a. NOT allowed (Aluminum forgings are highly aesthetic parts for SPC and require a high degree of manufacturing quality)
3. **Die Shift:**
  - a. Parts  $\leq$  2 kg mass: 0.5mm MAX
  - b. Parts > 2kg mass: 0.75mm MAX
4. **Tooling Marks from Trim and Coining dies:**
  - a. Allowed up to limit of 3D CAD tolerance on print
5. **Cold Shuts ( laps / folds):**
  - a. NOT allowed
6. **Cracks (internal or external):**
  - a. NOT allowed
7. **Scale:**
  - a. NOT allowed
8. **Grinding, hand-rework, manual-shaping:**
  - a. Grinding, rework, etc. is not permitted in order to conceal structural defects (*cracks, cold shuts, etc*) OR to conceal serious cosmetic defects that grossly deviate from 3D CAD data. (*no attempt shall be made to conceal any defect in forging. Contact SPC for clarification if necessary*)
  - b. This does not include manual cleanup of parts normal to forging process. (*trimming / cleanup of flash area, removal of minor dings and scratches resulting from normal handling and storage of forging, etc.*)
  - c. Any manual cleanup must be post-processed in a manner (*like sand-blasting*) that presents a uniform surface with no obvious signs of grinding, rework, etc.
9. **Under-fill / non-fill:**
  - a. Allowed up to limit of 3D CAD tolerance on print



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- b.
10. **Exceptions:**
- a. Requirements of surface roughness, tooling marks, grinding, and under-fill/non-fill may be waived on surfaces that are removed during machining process. Machined areas are defined on machined forging print.
  - b. The above exception does not apply to un-machined forgings or forgings that are purchased by SPC and later machined.
11. **Final acceptability of parts subject to First Article approval.**