

MIL-P-81985(AS)  
AMENDMENT 1  
5 November 1984

## MILITARY SPECIFICATION

### PEENING OF METALS

This amendment forms a part of Military Specification MIL-P-81985(AS), dated 18 October 1974, and is approved for use by the Naval Air Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

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3.2.3, Delete third sentence which begins with "When so specified,"

Add:

"3.2.5 Hardness of shot. Hardness of the shot shall be in accordance with MIL-S-851. Parts to be shot peened having a hardness above Rc 50 should be shot peened with shot having a hardness of Rc 52 to Rc 62."

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3.4.4, Add as new sentence:

"For aluminum only, use as large a shot size as possible, taking into consideration surface finish and smallest fillet radii because the larger the shot size on aluminum for any given intensity, the deeper will be the depth of compression."

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3.4.5, Delete last sentence and substitute:

"Nozzle angles 45 degrees or lower do not produce effective compressive residual stresses and should be avoided."

3.5.1, Delete second sentence and substitute the following:

"Manufacturing operations, such as straightening, machining and heat treating, grinding, or etching, which relieve stresses developed by peening or which develop detrimental residual stresses shall not be permitted after peening."

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3.5.3, Delete first sentence and substitute:

"It shall be permissible to improve the surface finish after peening by polishing, lapping, honing or vapor blasting provided such operations do not generate temperatures in excess of the applicable limitations (see 3.5.1) and do not remove material layers in excess of 10 percent of the induced compressive layer."

3.6.4, Delete subparagraph (a) and substitute the following:

"(a) Air pressure or wheel speed, nozzle size and type, nozzle placement and direction, wheel angle and direction of hot spot."

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4.2.2, Delete table VI and substitute:

| Specimen                               | Type A         | Type C         | Type N         |
|--|----------------|----------------|----------------|
| Dimensional-length, inch               | 3.000 ± 0.015  | 3.000 ± 0.015  | 3.000 ± .015   |
| width, inch                            | 0.745 to 0.750 | 0.745 to 0.750 | 0.745 to 0.750 |
| thickness, inch                        | 0.051 ± 0.001  | 0.094 ± 0.001  | 0.031 ± 0.001  |
| Arc height as measured on gauge (inch) | 0.000 ± 0.0015 | 0.000 ± 0.0015 | 0.000 ± 0.0015 |
| Rockwell hardness                      | C44 to C50     | C44 to C50     | A72.5 to A76   |

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4.2.5, subparagraph (e), line 3, after "direction," add the following:  
"wheel angle and angle of hot spot,".

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4.3.2, line 4, Delete "square inch" and substitute "inch square"

4.4.3, line 2, Delete "at a magnification of 5X to 10X" and substitute "(see 4.4.3.1)"

line 5, Delete first "of"

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Add:

"4.4.3.1 Visual coverage. Complete visual coverage is defined as uniform denting or obliterating of the original surface of the part or work piece as determined by either of the following methods:

4.4.3.1.1 Visual examination using a ten power magnifying glass.

4.4.3.1.2 Peenscan process described as follows:

Prepare a control specimen of the same material as the actual work piece. Coat this control specimen with tracer liquid (Dyescan #220 and/or #226 or equal) by dipping, spraying or painting and allow the tracer liquid to dry. Check coating under a black light to insure complete coverage of the coated area to be shot peened has been accomplished. Shot peen the control specimen under proper shot peening conditions for the required intensity and coverage as prescribed. Re-examine under the black light in order to determine if the tracer liquid has been completely removed. Full coverage is indicated by complete removal of the tracer liquid.

Areas which do not produce full coverage will show a white color under the black light whereas full coverage will give off a dark color.

Coverage of actual production pieces can be established by using the same procedure used for control specimens. This can be done by utilizing the tracer liquid for each part or on a statistical sampling basis."

4.4.4, line 4, Delete "exposure time etc, per unit area". After first sentence, add new sentence: "Since shape of a part or article to be shot peened will differ from Almen test strip, exposure time will depend on time required to achieve full coverage on part. See paragraph 3.4.2 and 4.4.3."

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Add:

"6.16 Dyescan. Dyescan liquid can be obtained from Metal Improvement Company, Inc., 472 Barell Avenue, Carlstadt, NJ 07072."

Preparing activity:  
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