



AEROSPACE RECOMMENDED PRACTICE

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 Lexington Ave., New York, N. Y. 10017

ARP 823A

Supersedes ARP 823

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MINIMIZING STRESS CORROSION CRACKING IN WROUGHT HEAT TREATABLE ALUMINUM ALLOY PRODUCTS

1. PURPOSE:

- 1.1 The purpose of this recommended practice is to provide the aerospace industry with recommendations concerning minimizing of stress corrosion cracking in wrought high strength aluminum alloy products.
- 1.2 The detailed recommendations are based on practical engineering experience and reflect those design practices and fabricating procedures which have been found to be most effective in minimizing stress corrosion cracking in wrought high strength aluminum alloy products.

2. GENERAL: Stress corrosion cracking failures of wrought, high strength aluminum alloy parts have been attributed to the following combination of factors:

- a) presence of a sustained surface tensile stress developed as a result of assembly stresses and/or residual stresses due to heat treatment or forming, acting in a direction perpendicular to the plane of predominant grain flow,
- b) presence of a corrosive environment, which need not be severe (atmospheric water vapor may be sufficient), and
- c) existence, in the product, of a metallurgical condition which makes the product susceptible to stress corrosion.

2.1 The following alloys (bare or clad) in the tempers listed, and in stress-relieved temper modifications thereof, where applicable, are of particular concern:

2011-T3	2024-T4
2011-T4	2024-T42
2014-T3	2025-T6
2014-T4	2219-T31
2014-T42	2219-T37
2014-T6	2618-T61
2017-T4	7001-T6
2018-T61	7075-T6
2024-T3	7079-T6
2024-T36	7079-T611
	7178-T6

3. RECOMMENDATIONS:

3.1 Die Forgings:

- 3.1.1 Grain Flow: Die design should be such as to preclude excessive grain run-out at the parting line and to avoid sharply re-entrant grain flow at any point in the forging.