

Type V Media Compliance Assessment – Media Compliance Test Results

Background:

Many Air Force maintenance operations for various weapons systems use plastic media blasting (PMB) for coatings removal on aircraft and off-aircraft parts. The media most commonly used for these operations is a pure acrylic media referred to as Type V (MIL-P-85892A). Any media approved for this application must be in compliance with MIL-P-85891A. The Air Force Office of Special Investigation (OSI) received reports from several Air Force operations alleging media supplied by a certain commercial vendor may not be in compliance with MIL-P-85891A.

The nature of these complaints focuses on the breakdown/consumption rate associated with the particular brand (lot/batch) of Type V media supplied by the vendor in question. This media property will obviously effect productivity, and more significantly disposal of a toxic substance (spent media with paint chips) since a greater breakdown rate results in more spent media for a given application.

Project Sponsor/Customer: Air Force Office of Special Investigation (OSI)
Period of Performance: 1998 -1999

Objective:

As a result of the complaints, the CTIO was asked to assess specific Type V plastic blast media samples, per requirements cited by the OSI.

Status:

MIL-P-85891A cites a number of inspection procedures and acceptance criteria that apply to any plastic media approved for use by the Department of Defense (DoD). It was determined that a simple assessment using certain tests from MIL-P-85891A would be sufficient to confirm or refute compliance of the media product in question.

The tests selected to be performed in accordance with (IAW) MIL-P-85891A were section 4.5.10, Particle Size Distribution, and section 4.5.11.3, Product Consumption. In addition, observations per sections 1.2.3 and 3.5.2.

Specifically, the tests/analysis cited by MIL-P-85891A used for this assessment were:

- Infrared Spectroscopy Analysis
- Chlorine Content
- Ash Content
- Iron Content
- Specific Density
- Extract Content
- Conductivity/pH of the Media
- Water Absorption
- Product Consumption Rate (including particle size distribution)

CTIO technicians determined reliable data would require a minimum of four samples of the media in question.

Any given bulk sample was drawn from a full drum of virgin media, with each drum obtained from different Air Force or other DoD operations using this media. Each drum of media received was obtained by the several DoD operations as a Type V plastic media acrylic, 20/30 mesh. Each drum of media was significantly different in color, anti-static properties, as well as cleanliness. Samples were received and evaluated from:

- Grissom ARB
- Cherry Point NAD
- Columbus AFB

Assessment data used to determine compliance consisted of three data points, and mean value for each test conducted per individual bulk sample. These measures were meant to mitigate possible material variances, and provide a better statistical confidence in the test data.

Each of the three samples evaluated in this assessment failed to be in compliance with criteria cited by MIL-P-85891A. The samples from Grissom ARB and Cherry Point NAD measured mean (based on three samples) consumption's of 48.2% and 46.9% respectively, where 24% consumption after four blast cycles is within compliance as defined by MIL-P-85891A. In addition the severe static clinging of media properties exhibited by the Cherry Point sample could be considered indicative of non-compliance with the requirements for anti-static behavior cited by MIL-P-85891A.

The sample from Columbus AFB met the consumption compliance criterion with a mean consumption of 16.5% after four blast cycles. The non-compliant aspect of the Columbus AFB sample is seen with the sieve analysis which resulted in a median retention percentage on the 20 mesh sieve of 30.5%. MIL-P-85891A cites that for a sample with a 20/30 mesh distribution, 15% retention of these larger particles is the maximum limit.

Final Report: Titled: "Type V Media Compliance Assessment, Media Consumption Test Results"

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