

# THE EFFECTS OF BLAST MEDIA ON PRODUCTION AND COATING PERFORMANCE

NSRP SPC & PPPF Joint Panel Meeting  
July 2024



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# Background

- There has been a long-standing debate on whether one abrasive blast media provides additional benefits over other.
- Manufacturers of various blast media differentiate their products by claiming benefits in areas such as cleanliness, production rate, coating performance, and many others.
- The team will work with NSRP and Navy technical advisors test the use of many abrasive blast materials used at shipyards, on Navy bases, and in industry to generate data and compare abrasive media benefits.

# Anticipated Benefits

- This testing will generate data comparing the production rate of common abrasive media.
- It will also test the long-term performance of coatings over substrates blasted with each of the tested media.
- This data will be used to help reduce costs by providing shipyards insight and guidance the abrasive media selection that results in the most efficient work and longest coating life.

# Scope of Work

- This project will evaluate the production rate of common blast media and resulting coating performance.
- Goals/Objectives
  - Determine commonly used blast media and blast parameters of shipyards.
  - Generate production rate data for tested blast media
  - Test coating performance of samples blasted with the test blast media.
  - Provide recommendations for shipyard and navy consideration.

# Previous Work

- Navy Painting Center of Excellence Abrasive Testing, 2024
  - 6 abrasive blast media were used to clean rusted and coated samples at two blast conditions.
  - Testing was performed to analyze resulting production rate, flash rust, abrasive embedment, and produced hazardous dust.
  - Testing found little difference in production rate and resulting flash rust. Certain blast media resulted in significantly higher embedment and higher resulting hazardous dust creation.
  - Testing found that higher blast pressure (100+ psi) resulted in higher production rates than lower (90 psi) for all media.

# Tasks

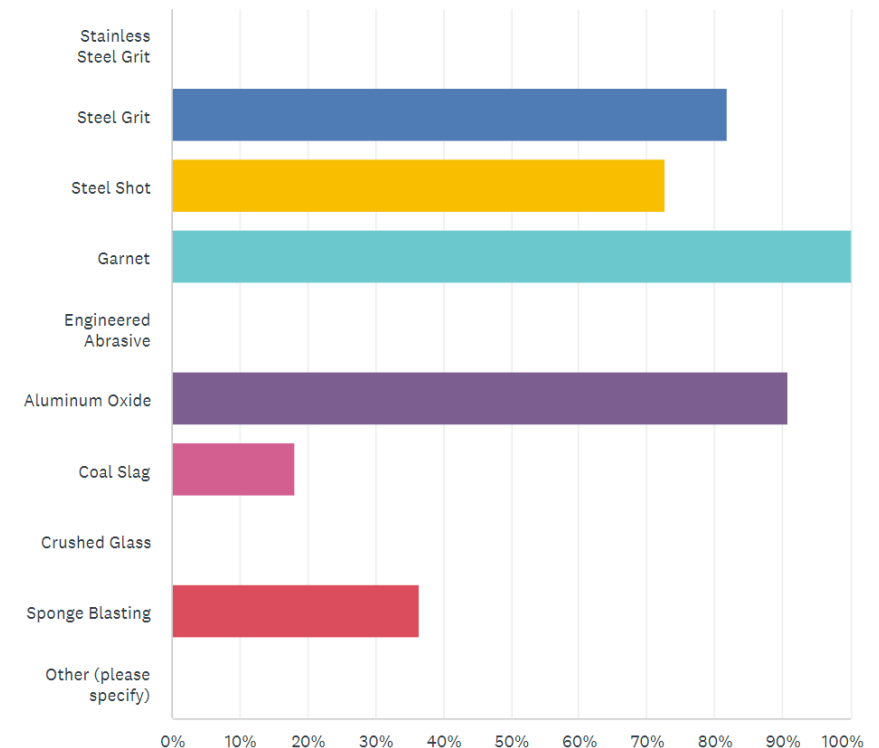
- Task 1 – Identify Different Abrasives, Applications, Requirements, and Constraints
  - Poll and interface with shipyards to gain a consensus on abrasive materials currently being used, areas of applications, different requirements associated with abrasives, and identify any constraints when using a certain abrasive over another.
- Task 2 – Finalize Test Plan and begin Laboratory Testing
  - Define testing parameters based on information received from shipyards.
  - Measure abrasive production rates for removing navy coatings, mill scale, and rust.
  - Apply coatings over blasted surfaces and test long term performance differences via cathodic disbondment, cyclic corrosion, and outdoor corrosion testing.
- Task 3 – Shipyard Demonstration
  - Demonstrate the three to four best performing abrasives at a NSRP shipyard on a large test platform to collect production, material usage, and other metrics in a shipyard environment.
- Task 4 – Final Report

# Task 1 (Completed) – Identify Different Abrasives, Applications, Requirements, and Constraints

- Poll sent out to shipyard representatives to gauge abrasive use and blasting practices.
- 11 responses received by 7/18/2024
- Highlights:
  - 30-60 grit size range is typical
  - 60% of responses blast at pressures between 90 and 105 psi
  - #8 and #10 Venturi blast nozzles are most used

What are your most commonly used abrasives? (Select all that apply)

Answered: 11 Skipped: 0



## Task 2 (In Progress) – Finalize Test Plan and begin Laboratory Testing

- Testing to be performed is in review with project team
  - Production rate for removal of navy coatings, mill scale, and rust
  - Resulting surface profile and surface cleanliness
    - Profilometer, profile tape, and point profile measurements
  - Post blast coating application with Navy coatings will be tested for performance
    - Cathodic disbondment, cyclic accelerated corrosion, outdoor exposure
- Materials and blasting parameters still to be finalized based on poll responses
  - Media types and grit sizes, blast pressures, nozzle sizes, etc. are to be determined
- Blast media and test samples will be ordered shortly



## Task 3 (Future Work) – Shipyard Demonstration

- After lab testing, 3 or 4 of the best performing materials will be selected for a shipyard demonstration
- Shipyard test platform is to be determined
- Shipyard demonstration timeline not yet decided

# Path Forward

- Finalize test blast media
- Order blast media and test samples
- Prepare test samples and perform production rate testing
- Perform long-term coating performance testing
- Analyze and present test data
- Finalize report for distribution

# Questions?

