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Surface Hardening Mechanism for Metal Particulates for Surface Treatment Applicationsace treatment applications

A low-temperature oxidation process hardens shot media to prevent sintering and surface contamination in shot peening, improving part service life using existing commercial equipment.

Shot peening is a common surface modification process employed in aerospace, automotive, and biomedical industries, by introducing a compressive residual stress the service life of a part can be improved significantly. A problem inherent to shot peening is surface contamination caused by the deposition of the media. Researchers at Purdue University have developed a process to harden the surface of shot media through controlled oxidation at low temperatures, preventing the media from sintering. This technology can be used with commercially available powders and existing equipment.

Advantages:

-Avoids surface contamination

-No sintering occurs

-Hardens particulate materials

Potential Applications:

-Shot Peening

TRL: 3

Intellectual Property:

Provisional-Patent, 2019-06-17, United States | Utility Patent, 2020-06-16, United States

Technology ID

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Category

Aerospace & Defense/Advanced Protective Materials & Wearable PPE

Materials Science & Nanotechnology/Materials Testing & Characterization Tools

Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Authors

David Bahr

David A Brice

Further information

Aaron Taggart

adtaggart@prf.org

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