AEROSPACE MATERIAL SPECIFICATION

AMS7031™	
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Batch Processing Requirements for the Reuse of Used Powder in Additive Manufacturing of Aerospace Parts

RATIONALE

Release of a new process specification where none before had been published.

1. SCOPE

1.1 Purpose

This specification prescribes process requirements for batch processing of used, metal powder originating from an existing additive manufacturing process workflow for reuse in subsequent additive manufacturing of aerospace parts in non-closed loop additive manufacturing machines. Such powders may be pre-alloyed or commercially pure. This specification is not limited to a specific additive manufacturing process workflow as the originating source of material to be reused. It is intended to define those procedures and requirements necessary to achieve required cleanliness and performance of metal powder feedstock to be reintroduced into the same additive manufacturing process from which such powder originated. This specification is intended to be used in conjunction with relevant AMS powder specifications and AMS process specifications for additive manufacturing.

Unless otherwise specified, powder prepared for reuse following this specification is intended to be conforming in physical and chemical attributes as defined by the originating virgin powder specification for the purposes of producing aerospace parts, providing equivalent characteristics and properties as specified by the corresponding AMS material specification.

1.2 Application

This specification should be applied to the solid-state processing of used, metal powder for reuse in the additive manufacturing of aerospace parts. Typical applications for used powder include but are not limited to powder bed fusion, directed energy deposition, or binder jetting additive manufacturing processes. Powders processed in accordance with this specification are typically but not limited to Fe, Ni, Co, Al, Cu, or Ti base alloys or commercially pure metal powder.

This document applies to two different use case scenarios. The first is limited to cases where producers of aerospace parts recover, recondition, blend, and desorb used powder from their own additive manufacturing process and return it as labeled and traced feedstock for reuse in subsequent production of aerospace parts. In this scenario the parts producer is also the powder processor preparing used powder for reuse. The second use case scenario is limited to situations where producers of aerospace parts recover powder from their own additive manufacturing process and supply it to a third-party processor who reconditions, blends, desorbs, and labels powder prior to returning it to the originating part producer. In this scenario the parts producer is not the powder processor preparing used powder for reuse but is still performing the initial step of powder recovery.

This document is not intended to be used in the scenario where a third party collects, reconditions, and makes available for sale processed reuse powder feedstock to a customer different than the one initially generating the used powder.

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