

Cold Spray Aluminum? Alumina Cermet Coatings: Effect of Alumina Morphology

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© 2019, ASM International. The feedstock powder morphology has an important effect on the deposition behavior of cold spray coatings, and this effect is even more significant while spraying cermet coating by the mixture powders. The effect of alumina powder morphology on the deposition efficiency and coatings mechanical properties is investigated in the cold spray deposition of aluminum?alumina cermets. The deposition of aluminum mixed with spherical and angular alumina is studied and compared for six different feedstock powder compositions for each particle morphology. The addition of angular alumina particles in the feedstock powder induces an increase in deposition efficiency followed by a decrease as the alumina content increases beyond a specific value. This effect is not observed when spherical alumina is used. The creation of asperities during deposition was explored for the two alumina powder morphologies, and it was determined that spherical alumina does not produce intricate