

Steel Doctor Blade Deposited by HIPIMS-CrN for Protection Purpose

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Abstract

Doctor blade has long been used for printing, tape casting process, thin sheet formation, etc, where corrosion and wear environments are encountered. Relatively few study work is revealed for improving the performance of the blade edge to resist wear and corrosion attack. In addition to the wet processes having been considered for protection purposes, this study focuses on CrN coating by using high power impulse magnetron sputtering (HIPIMS), which provide dense and strong film adhesion. It is anticipated that with this layer, it would be possible to provide improved corrosion and wear resistance for steel doctor blade. Substrate fixturing technique is developed. The microstructure of the obtained HIPIMS-CrN is examined. Results of field test are compared with the laboratory test for the blading performances.

Keywords: chromium nitride; doctor blade; high power impulse magnetron sputtering; wear resistance; corrosion resistance