
**PVD multi-layer hard coatings —
Composition, structure and properties**

*Revêtements durs multicouches déposés par PVD — Composition,
structure et propriétés*

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Foreword

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Introduction

Multi-layer hard coatings by physical vapor deposition (PVD), which possess high coating-substrate adhesion, high hardness and good wear resistance, are widely applied on tools and machine parts to improve their service life. Based on the chemical compositions, the mainstream PVD multi-layer hard coatings in the market involve transition metal nitrides and carbides, such as Ti/TiN, TiN/CrN, CrN/AlCrN, TiC/TiCN and CrAlN/AlCrTiSiN. To date, there has been no standard to qualify the composition, structure and properties of these multi-layer hard coatings, which has limited their further development.

This document defines the measurement and evaluation of the composition, microstructure, surface quality, thickness, hardness and tribological properties (such as friction and wear performance) of multi-layer hard coatings. The methods are for the purpose of coating development. Where standards for quality assurance in production exist, they are referred to in this document.

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