

DIN EN 1071-12:2010-07 (E)

Advanced technical ceramics - Methods of test for ceramic coatings - Part 12: Reciprocating wear test

Contents		Page
Foreword		3
Introduction		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
4	Significance and use	7
5	Principle	7
6	Apparatus and materials	7
6.1	Apparatus construction	7
6.1.1	General	7
6.1.2	Friction measurement	9
6.2	Operating environment	9
7	Preparation of test pieces	9
7.1	Substrate material and preparation	9
7.2	Coating deposition	10
7.3	Post-coating preparation	10
7.4	Cleaning	11
8	Test procedure	11
8.1	Selection of test conditions	11
8.2	Preliminary set-up	11
8.3	Wear test	12
8.4	Evaluation of wear	13
8.4.1	Preliminary inspection	13
8.4.2	Measurement of wear scars	14
8.5	Calculation of wear results	16
9	Repeatability and limits	16
10	Test report	17
Annex A (informative) Issues related to dynamic measurements in reciprocating wear testing		18
A.1	Resonant frequencies	18
A.2	Frequency response	18
A.3	Phase angle errors	19
A.4	Further guidance	21
Annex B (informative) Methods for the determination of coating properties likely to be relevant to coating performance in a reciprocating wear test		22
B.1	Relevant properties	22
B.2	Phase composition and preferred orientation	22

B.3	Residual stress	22
B.4	Hardness	22
Annex C (informative)	Examples of common wear mechanisms	23
Annex D (informative)	Determination of volume loss from the pin using profilometry	24
Annex E (informative)	Determination of wear of coated plate by ball crater technique	25
Bibliography	28