

ISO/TR 21555:2019-08 (E)

Paints and varnishes - Overview of test methods on hardness and wear resistance of coatings

Contents	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Hardness tests	2
4.1 Indentation tests with resting indenter	2
4.1.1 Indentation test with Buchholz indenter	2
4.1.2 Indentation test with Knoop indenter	5
4.1.3 Indentation test with Pfund indenter	6
4.1.4 Indentation test with Vickers indenter	8
4.2 Indentation tests with oscillating indenter	10
4.2.1 Oscillation damping test with König pendulum	10
4.2.2 Oscillation damping test with Persoz pendulum	11
4.2.3 Oscillation damping test with rocker	13
5 Wear resistance tests	14
5.1 Single-scratch tests	14
5.1.1 Scratch test with pencils	14
5.1.2 Scratch test with ball stylus 1	17
5.1.3 Scratch test with ball stylus 2	20
5.1.4 Scratch test with conical stylus 3	22
5.1.5 Scratch test with conical stylus 4	25
5.1.6 Scratch test with conical stylus 5	28
5.1.7 Scratch test with conical stylus 6	31
5.1.8 Scratch test with disc-shaped stylus	33
5.1.9 Scratch test with U-shaped stylus	37
5.2 Multiple scratch tests	39
5.2.1 Multiple scratch test with locked abrasive wheel	39
5.2.2 Multiple scratch test with abrasive cylinder	40
5.2.3 Multiple scratch test with rotating abrasive wheels	42
5.2.4 Multiple scratch test with rotating brush	43
5.3 Dry abrasion tests	45
5.3.1 Abrasion test with locked abrasive wheel	45
5.3.2 Abrasion test with rotating abrasive wheels 1	47
5.3.3 Abrasion test with abrasive wheels 2	48
5.3.4 Abrasion test with rotating abrasive wheels 3	50
5.3.5 Abrasion test with rotating abrasive wheels 4	51
5.4 Wet abrasion tests	53
5.4.1 Scrub test with brush	53
5.4.2 Scrub test with non-woven web 1	55
5.4.3 Scrub test with non-woven web 2	57
5.5 Falling-sand tests	60
5.5.1 Falling-sand test with corundum granulate	60
5.5.2 Falling-sand test with quartz sand	62
Annex A (informative) Overview on test methods on hardness and wear resistance of coatings	64
Bibliography	69