

# DIN ISO 9211-4:2023-07 (E)

## Optics and photonics - Optical coatings - Part 4: Specific test methods: abrasion, adhesion and resistance to water (ISO 9211-4:2022)

---

### Contents

	Page
National foreword.....	3
National Annex NA (informative) Bibliography.....	5
Foresword.....	6
1 Scope .....	7
2 Normative references.....	7
3 Terms and definitions.....	7
4 Preparation prior to testing.....	7
5 Abrasion tests: cheesecloth/eraser test (conditioning method 01).....	8
5.1 General.....	8
5.2 Test conditions.....	8
5.2.1 General.....	8
5.2.2 Moderate abrasion test.....	8
5.2.3 Severe abrasion test.....	8
5.3 Degree of severity: abrasion – cheesecloth/eraser test (conditioning method 01).....	8
5.4 Recovery.....	9
5.5 Evaluation.....	9
6 Adhesion test: tape test (conditioning method 02).....	9
6.1 General.....	9
6.2 Test conditions.....	9
6.3 Degree of severity: adhesion – tape test (conditioning method 02).....	10
6.4 Recovery.....	10
6.5 Evaluation.....	10
7 Adhesion test: crosshatch test (conditioning method 03).....	10
7.1 General.....	10
7.2 Test conditions.....	10
7.3 Degree of severity.....	10
7.4 Conditioning.....	11
7.5 Recovery.....	11
7.6 Evaluation.....	11
8 Resistance to water: exposure to water (conditioning method 04).....	11
8.1 General.....	11
8.2 Test conditions.....	11
8.3 Degree of severity: resistance to water – exposure to water (conditioning method 04).....	12
8.4 Recovery.....	12
8.5 Evaluation.....	12
9 Adhesion test: pull-off test (conditioning method 05).....	13
9.1 General.....	13
9.2 Test conditions.....	13
9.3 Degree of severity: adhesion – pull-of test (conditioning method 05).....	14
9.4 Evaluation.....	14
10 Environmental test code .....	14

<b>Annex A</b> (normative) Materials for abrasion testing of optical coatings.....	<b>15</b>
<b>Annex B</b> (informative) Cheesecloth pad, pad cover and fixture preparation for moderate abrasion testing of optical coatings .....	<b>18</b>
<b>Annex C</b> (normative) Visual examination of optical coatings.....	<b>20</b>
<b>Bibliography</b> .....	<b>21</b>