

# ISO 22412:2025-09 (E)

## Particle size analysis - Dynamic light scattering (DLS)

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	Symbols and units .....	3
5	Principle .....	4
6	Apparatus .....	5
7	Test sample preparation .....	7
7.1	General .....	7
7.2	Concentration limits .....	7
7.3	Checks for concentration suitability .....	8
8	Measurement procedure .....	8
9	Evaluation of results .....	10
9.1	General .....	10
9.2	Correlation analysis .....	11
9.2.1	Cumulants method .....	11
9.2.2	Distribution calculation algorithms .....	11
9.3	Frequency analysis .....	12
9.4	Multi angle dynamic light scattering (MADLS) .....	12
9.4.1	Measurement of an angular-independent particle size distribution .....	12
9.4.2	General angular and concentration dependence .....	14
9.4.3	Measurement of particles with optical anisotropy .....	14
9.5	Imaging dynamic light scattering (DLS) .....	14
9.5.1	Image-based dynamic light scattering (IDLS) .....	14
9.5.2	Ultrafast image-based dynamic light scattering (UIDLS) .....	15
10	System qualification and quality control .....	15
10.1	System qualification .....	15
10.2	Quality control of measurement results .....	16
10.3	Method precision and measurement uncertainty .....	16
11	Test report .....	17
Annex A (informative)	Theoretical background .....	19
Annex B (informative)	Online measurements .....	33
Annex C (informative)	Recommendations for sample preparation .....	35
Annex D (informative)	Guidance on measurement planning, data interpretation and quality control .....	41
Annex E (informative)	Guidance on potential measurement artefacts and on ways to minimize their influence .....	58
Bibliography .....		61