

ISO/TS 5973:2024-07 (E)

Laser diffraction measurements - Good practice

| Contents | | Page |
|--------------------|---|-------------|
| Foreword | | v |
| Introduction | | vi |
| 1 | Scope | 1 |
| 2 | Normative references | 1 |
| 3 | Terms and definitions | 1 |
| 4 | Symbols | 4 |
| 5 | Laser diffraction experiment and measurement | 4 |
| 6 | Information recommended collecting prior to analysis | 5 |
| 6.1 | Sample information | 5 |
| 6.2 | Desired outcome of analysis | 6 |
| 6.3 | Other sample considerations | 7 |
| 6.4 | Best sampling practice prior to laser diffraction measurements | 8 |
| 6.4.1 | General | 8 |
| 6.4.2 | Sampling of powders | 8 |
| 6.4.3 | Sampling of emulsions and suspensions | 9 |
| 6.4.4 | Sampling of sprays, gas bubbles and aerosols | 9 |
| 6.4.5 | Improving sampling in the instrument | 10 |
| 7 | Samples not appropriate for analysis by laser diffraction | 10 |
| 8 | Additional guidance on optical properties of samples | 11 |
| 8.1 | Coloured samples | 11 |
| 8.2 | Porous samples | 11 |
| 8.3 | Mixtures | 11 |
| 8.4 | Mie, Fraunhofer and incorrect use of refractive index | 11 |
| 9 | Repeatability, intermediate precision and reproducibility | 12 |
| 9.1 | General | 12 |
| 9.2 | Key measurands | 12 |
| 9.3 | Instrument repeatability | 12 |
| 9.4 | Method repeatability (under repeatability conditions) | 13 |
| 9.5 | Intermediate precision and reproducibility (under intermediate precision/ reproducibility conditions) | 14 |
| 9.6 | Summary table of experiments detailed in 9.3 through 9.5 | 15 |
| 9.7 | When is tighter or wider control needed? | 15 |
| 9.8 | What are the most appropriate control parameters? | 15 |
| 10 | Interpretation of light scattering and assessment of data quality | 15 |
| 10.1 | Background stability and alignment quality | 15 |
| 10.2 | Multiple scattering | 16 |
| 10.3 | Non-smooth scattering patterns | 16 |
| 11 | Interpretation of trends in measurement data | 16 |
| 11.1 | General | 16 |
| 11.2 | Dispersion (wet measurements) | 16 |

| | | |
|--|---|----|
| 11.3 | Dissolution (wet measurements) | 17 |
| 11.4 | Agglomeration (wet measurements) | 17 |
| 11.5 | Size decreasing on successive measurements (dry measurements) | 17 |
| 11.6 | Random variation (wet measurements) | 17 |
| 11.7 | Other causes of poor repeatability (wet and dry measurements) | 17 |
| 12 | Orthogonal techniques for laser diffraction | 18 |
| 12.1 | Image analysis | 18 |
| 12.2 | Dynamic light scattering | 18 |
| ISO/TS 5973:2024(en) 13 Validation, installation qualification, operational qualification and performance qualification | | 19 |
| Annex A (informative) Characterization data approach to laser diffraction measurements | | 20 |
| Bibliography | | 23 |