

ISO 21910-1:2020-01 (E)

Fine bubble technology - C haracterization of microbubbles - Part 1: Off-line evaluation of size index

Contents		Page
Foreword		v
Introduction		vi
1 Scope		1
2 Normative references		1
3 Terms and definitions		1
4 Requirements		2
4.1 Requirements on the sample		2
4.2 Requirements on the sample transfer and measurement system		2
5 Measuring instruments		3
6 Environment		3
7 Sample transfer and measurement system		3
7.1 General		3
7.2 System structure		3
7.3 Arrangement of components		3
7.3.1 Position of the inlet tube mouth		3
7.3.2 Position of the measuring instrument		3
7.4 Retention container		4
7.4.1 General		4
7.4.2 Configuration requirements for retention container		4
7.5 Loading tube		5
7.5.1 Loading tube inner diameter		5
7.5.2 Loading tube length		5
7.5.3 Curvature of the loading tube		5
7.5.4 Surface roughness		5
7.5.5 Loading tube materials		5
7.5.6 Suppression of loading tube sway		5
7.6 Loading pump		5
7.6.1 General		5
7.6.2 Flow rate (Flow velocity)		5
7.7 Retention time		6
7.8 Dispersion before/during sampling for microbubbles with shell		6
8 Procedure		7
9 Data acquisition		7
9.1 General		7
9.2 Measurement time		8
9.3 Number of measurements		8
9.4 Size category		8
9.5 Results		8
9.6 Calibration and traceability		8
9.7 Uncertainty evaluation		8
10 Correction		8
10.1 General		8
10.2 Reserved water used for blank preparation		8
11 Report		9

Annex A (informative) Example of microbubbles without shell measurement using dynamic image analysis 10

Annex B (informative) Effect of setting arrangement 14

Annex C (informative) Example of corrected data by subtraction of blank water 18

Annex D (informative) Example of method repeatability 19

Annex E (informative) Example of comparisons among 3 measurement techniques 20

Bibliography 22