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**