

ISO 24758-2:2025-10 (E)

Fine bubble technology - Evaluation method for determining the reactive oxygen species in ultrafine bubble dispersions - Part 2: APF (3'-(p-aminophenyl) fluorescein) assay

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Terms	1
3.2 Abbreviations and chemical formulas	2
4 Principle	2
4.1 Reaction principle of APF	2
4.2 APF principle for distinguishing different ROS	3
5 Reagents	5
5.1 Chemicals	5
5.2 Hydroxyl radical formation	5
5.3 Superoxide anion radical formation	5
5.4 Singlet oxygen formation	5
5.5 Hydrogen peroxide formation	5
6 Apparatus and materials	6
7 Requirements	6
7.1 Sample	6
7.2 Measuring instruments	6
7.3 Environment	6
8 Procedure	6
8.1 General	6
8.2 Standard curve	7
8.2.1 Fluorescence response of APF to $\cdot\text{OH}$	7
8.2.2 Fluorescence response of APF to dissolved ozone	8
8.2.3 Fluorescence response of APF to H_2O_2	9
8.2.4 Fluorescence response of APF to $\text{O}_2^{\cdot-}$	10
8.2.5 Fluorescence response of APF to $^1\text{O}_2$	11
8.3 ROS identification	12
8.3.1 Fluorescence response of APF in an unknown sample	12
8.3.2 Determine whether there are ROS types other than dissolved ozone in samples	12
8.3.3 Determination of the presence of H_2O_2 in the sample	13
8.3.4 Determination of the presence of $\text{O}_2^{\cdot-}$ in the sample	13
9 Report	14
9.1 Report of the testing results	14
9.2 Report of the testing conditions	14
Annex A (Informative) Example of test result for existence of H_2O_2 in water after combining oxygen UFB with plasma treatment	16
Annex B (Informative) Example of test result for existence of H_2O_2 in oxygen UFB water	19
Bibliography	20