
Space systems — Gas contamination — Measurement methods for field tests

*Systèmes spatiaux — Contamination des gaz — Méthodes de mesure
pour essais hors laboratoire*



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Foreword

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ISO 15860 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

Introduction

This International Standard establishes the impurities contamination measurement methods for real compressed gas (air, nitrogen, helium, and argon) used in systems and facilities of space launch and technical complexes.

This International Standard provides recommendations for correct selection and use of compressed gas contamination measurement methods and means.

Compressed gas impurities have a mechanical, physical, chemical, and electrolytic effect on pneumatic devices that reduces their life and reliability. Oil impurities in contact with oxidizer increase equipment explosion and fire hazards and have a negative biological effect when inhaled. Compressed gas impurity contamination is one of the normalized parameters subjected to careful monitoring to ensure reliable operation of space system equipment as specified.

This International Standard can be used for modernization and maintenance of launch site equipment and technical complexes when other methods are difficult to apply. The equipment mentioned in this International Standard is portable, compact and inexpensive.

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Space systems — Gas contamination — Measurement methods for field tests

1 Scope

This International Standard covers gases (air, nitrogen, helium, and argon) compressed up to 40 MPa used in systems and units of space vehicle launch and technical complexes.

This International Standard determines compressed gas impurities (mechanical impurities, water vapour, oil, and foreign gases) content measurement methods. This International Standard can be used by countries and firms participating in the development, redesign, modernization, and maintenance of space vehicle launch sites and technical complexes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15859-3:2004, *Space systems — Fluid characteristics, sampling and test methods — Part 3: Nitrogen*

ISO 15859-4:2004, *Space systems — Fluid characteristics, sampling and test methods — Part 4: Helium*

ISO 15859-9:2004, *Space systems — Fluid characteristics, sampling and test methods — Part 9: Argon*

ISO 15859-13:2004, *Space systems — Fluid characteristics, sampling and test methods — Part 13: Breathing air*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

mechanical impurity

solid dispersal phase with a wide spectrum of aerosol particle size

3.1.2

oil impurity

oil contained in gas in the form of vapours and aerosols

3.1.3

particle concentration

number of separate aerosol particles of specified size in a unit of gas volume

3.1.4

particle size

particle maximum linear size measured by an optical microscope or particle equivalent size received with the help of automatic instruments