



ASQ: ABRA Space Quality Assurance Standard

Standard Definition and Conformity Assessment Document



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ASQ

1. Introduction: Definition and Purpose of the ASQ Standard

ABRA Space has established the **ASQ (Abra Space Quality)** Quality Assurance Standard within its organization in order to raise safety and performance standards in the field of model rocketry to the highest level in the UK, Turkey, and worldwide.

This standard defines a set of rules and procedures covering the design, manufacturing, testing, and documentation processes of all solid-fuel rocket motors produced by ABRA Space. The fundamental purpose of ASQ is to ensure the safe and successful execution of model (amateur and professional) rocketry activities by providing end users with predictable, consistent products that offer maximum safety margins.

2. Fundamental Principles of the ASQ Standard

The ASQ standard is built on the following four fundamental and indispensable principles:

- **Safety:** Operational safety is the indispensable priority in all design and production processes. It is essential that products are designed with a safety factor above the anticipated operating conditions and that this is verified through testing.
- **Performance:** It is a fundamental principle that all declared performance metrics (total thrust, thrust curve, burn time, etc.) are verified and guaranteed by test data. Performance data is presented within specified tolerance ranges.
- **Consistency:** In series production, every manufactured product is intended to be fully compliant with the exact same design and performance criteria as the prototype that passed type testing. Deviations in production processes are minimized.
- **Traceability:** Full traceability is ensured on a production lot basis, guaranteeing the controllability and backward traceability of all processes from raw material to final product.

3. ASQ Conformity Assessment and Certification Process

- For a product to bear the ASQ mark, it must successfully complete the conformity assessment process outlined below.
- **3.1. Design and Analysis Phase:** The mechanical and chemical design of the engine is performed and verified using engineering tools such as finite element analysis (FEA) and computational fluid dynamics (CFD).
- **3.2. Prototype Production and Performance Validation Tests:** Prototypes compliant with the approved design are produced and subjected to static firing tests. These tests demonstrate that the specified performance metrics are consistent across a statistically significant number of tests.
- **3.3. Structural Integrity and Safety Margin Tests:** Prototype samples are subjected to destructive tests, such as hydrostatic pressure tests at levels exceeding the design pressure, to physically confirm structural integrity and safety margins.
- **3.4. Series Production Quality Assurance Procedures:** The series production process includes specified quality control points. Samples taken from each production batch are periodically tested to verify performance consistency.
- **3.5. Conformity Approval and Product Identification:** Production batches that successfully complete all of the above phases are granted conformity approval. Each product is identified with a serial number and the ASQ mark to ensure traceability.

4. Guarantees Provided to the User by the ASQ Standard

An ABRA Space product manufactured in accordance with the ASQ standard provides the user with the following assurances:

- **Predictable and Reproducible Performance:** It is guaranteed that the performance data specified in the product's technical documentation will be achieved with a high degree of accuracy under actual flight conditions.
- **Maximum Operational Safety:** It is guaranteed that the product will not exhibit any safety vulnerabilities arising from its design when used in accordance with the instructions.
- **Guaranteed Product Quality and Consistency:** It is stated that the product is covered by ABRA Space's warranty against material and manufacturing defects.
- **Contribution to National Model Rocketry Standards:** The use of products with high safety and quality standards contributes to raising the overall safety level and sustainability of the hobby.

5. Continuous Improvement and Responsibility Statement

ABRA Space accepts the ASQ standard as a dynamic structure and commits to continuously reviewing and improving it in line with technological developments, user feedback, and increasing industry standards.

This document is an official statement of ABRA Space's corporate commitment to quality and safety.

For detailed technical information and product specifications, please visit our official website.

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