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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 29083-2012

**Safety requirements for flammable materials, explosive devices,
toxic substances and radioactive sources in spacecraft**

航天器易燃、易爆、有毒物品及放射源的安全性要求

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Quarantine;
Standardization Administration of the PRC**

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Aerospace Science and Technology Corporation. This standard by the National Aerospace Technology and Application of Standardization Technical Committee (SAC/TC425) centralized. This standard drafting unit. China Academy of Space Technology manned space overall unit. The main drafters of this standard. Yu Jin, Longjiang, Shi Yong, Yang Hong, high-level, Li Wei, Bai Mingsheng, Rongcheng, Liu Min, Zhang Wei, Guo Juan, Yao Feng, Ran Wang, Tommy.

This standard belongs to China Aerospace national standards. China Aerospace national standards applicable to national standards in the field of aerospace and revision Management, covering the management of space, space technology, space applications and services of the three fields, is to guide spacecraft and launch vehicle project management, engineering research System, space launch services, in-orbit satellite applications based activities. On the spacecraft, according to the task required, the inevitable use of flammable, explosive, toxic and radioactive materials and other products, which will be on Air Spacecraft pose a security risk, the astronauts pose a security threat. To avoid security risks occur, our spacecraft flammable, explosive, Radioactive and toxic substances proposed design and usage requirements, and has been successfully tested and applied in the Beidou satellite and manned spacecraft. The standard Aerospace industry will be flammable, explosive, toxic and radioactive materials play the role of effective control and guidance. Spacecraft flammable, explosive, toxic materials and radioactive sources Security Requirements

1 Scope

China's national safety requirements for the flammable materials, explosive devices, toxic substances and radioactive sources carried on spacecraft. It specifies the requirements governing their selection, use, control and verification. A spacecraft carries these things because the mission requires them and there is no alternative. Pyrotechnic devices release the launch restraints, separate the stages, cut the cables and deploy the arrays - there is no

other mechanism that is as light, as reliable and as certain to act. Propellants are toxic by nature: hydrazine and nitrogen tetroxide are chosen because they ignite on contact and store for years, and both properties come from chemistry that is lethal to handle. Radioactive sources appear in instruments and in some power supplies. Batteries store a great deal of energy in a small volume, which is what makes them a fire risk. So the safety question is never whether to carry them but how to carry them so that a failure of one does not become a failure of the vehicle - and, on a crewed spacecraft, so that a failure does not kill anyone. The introduction states the position directly: these products are used because the mission demands them, they pose a safety risk to the spacecraft and a threat to the astronauts, and the requirements exist to prevent that risk from being realised. The standard therefore covers the selection and approval of such items, the quantity limits, the containment and isolation, the inhibits that must exist between a hazardous function and its initiation, the handling and ground safety, the verification and the documentation - the last being what a launch site safety review actually examines. Issued on 31 December 2012 and in force since 1 July 2013.

This standard specifies the spacecraft hazard identification, propellant storage and delivery systems, pyrotechnic devices, pressure vessels, gas and liquid pipe Roads, electrical equipment, batteries, radioactive sources, propellants ground operations and other aspects of material selection, design and safety requirements. This standard applies to the spacecraft on the ground and flight test of the entire process.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member, undated references, the latest edition (including any amendments) applies to this document.

GB 3836.1 explosive atmospheres - Part 1. General requirements for equipment

GB 14374 Pollution emission standards for space propellant

GB 19517 National Electrical Safety Equipment Technical Specifications Radiological protection standards GB Z114 sealed radioactive sources and sealed container gamma

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Capsule sealedmodule Prevent gas leakage or gas leakage is less than a certain limit cabin.

3.2 Flammable flammablematerial Ignition point near or below room temperature materials.

3.3 Explosive materials explosivedevice Flammable and explosive combustion-based pyrotechnic devices, pressure vessels, batteries and other items.

3.4 Toxic gases toxicgas Propellants and materials released to people, to bring gas to potentially harmful biological or other environment.

4 General requirements

4.1 Spacecraft design should be a focus of security. For the use of flammable, explosive, toxic and radioactive materials and equipment systems, should Development and implementation of strict security controls and protective measures.

4.2 Use of flammable, explosive, toxic and radioactive materials spacecraft equipment and systems installation, testing, testing, handling, transportation and maintenance It should develop specific procedures and equipped with the appropriate safety equipment and take effective security measures.