

ICS 49.020
CCS V04



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

GB/T 44715-2024

**Impact safety requirements for civil light and small unmanned
aircraft**

民用轻小型无人机碰撞安全性要求

Issued on: September 29, 2024

Implemented on: January 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	1
5. Classification of collision damage levels	1
5.1 Blunt Injury Grading Criteria	1
5.2 Sharp Injury Rating Standards	2
6 Drone Collision Safety Requirements	2
6.1 UAV body structure collision safety	2
6.2 Safety of the person involved in the collision 2 7 UAV collision safety test requirements	3
7.1 Test Purpose	3
7.2 Test Outline	3
7.3 Test item	3
7.4 Test measurement and data processing	3
7.5 Result evaluation	3
3 Appendix A (Informative) UAV Collision Safety Test Method 5 A.1 Test conditions 5	
A.2 Mechanical properties test of UAV body materials 5 A.3 UAV airframe structure impact performance test 5 A.4 UAV collision injury test	6

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Aircraft Standardization Technical Committee (SAC/TC435). This document was drafted by: China Aircraft Strength Research Institute, Xi'an Jiaotong University, China Aviation Technology Research Institute, Shenzhen DJI Technology Co., Ltd., Shenzhen Dingfeng Unlimited Electronics Co., Ltd., University of Science and Technology Beijing, Shenzhen Meituan Low-altitude Logistics Technology Co., Ltd., Northwestern Polytechnical University University of Science and Technology, and the 54th Institute of China Electronics Technology Group Corporation. The main drafters of this

document are. Bai Chunyu, Wang Yafeng, Shu Zhenjie, Liu Xiaochuan, Zhang Yongjie, Hu Yingdong, Guo Yazhou, Wang Jizhen, Li Zhigang, Zhan Zhiguo, An Hao, Jia Jia, Zhou Jin, Tang Jian, Cao Le, He Xingyang, Ge Yujing, Fu Wenxing, Yang Hongwei, Miao Juan, Shu Wan, Wei Ling, Liu Junying, Zhang Jianjun, He Zhiqi, Zhang Jiting, Zhang Zejing, Fu Weichao, Wang Jiuyuan, and Shi Lei. Collision safety requirements for civilian light and small drones

1 Scope

GB/T 44715-2024 sets the impact safety requirements for civil light and small unmanned aircraft, that is what happens to a person when a drone hits them. It is the question that decides whether flight over people is permitted, and it cannot be answered by mass alone: the injury depends on the kinetic energy, on how that energy is delivered, whether by a rigid shell, a frangible structure or an exposed rotor, and on where the impact lands. The standard sets the requirements accordingly: the impact energy limits and the injury criteria they are derived from, the requirements on the airframe to absorb energy and to break up rather than transmit it, the protection of the rotors and the limits on exposed rotating parts, the requirements on the descent behaviour after a failure including parachute recovery where fitted, and then the test methods, the impact tests against the specified surrogates, the measurement of the injury parameters and the assessment against the criteria. It takes effect on 1 January 2025.

This document specifies the collision damage classification, collision safety requirements and collision safety test requirements for civil light and small UAVs. This document is applicable to the assessment of the collision safety of civil light and small UAVs with a maximum take-off weight of 0.25kg to 25kg.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 35018 Classification and classification of civil unmanned aerial vehicle systems

GB/T 38152 Terminology of Unmanned Aircraft Systems

GB 42590-2023 Safety requirements for civil unmanned aircraft systems

3 Terms and definitions

The terms and definitions defined in GB/T 35018 and GB/T 38152 and the following apply

to this document.

3.1 The safety issue of UAV collision with other targets due to safety measures failure or operation errors during operation is After a collision occurs, minimize the damage caused by drones to the human body.

3.2 Blunt injury bluntinjury Injury to the human body caused by impact of blunt objects.

Note. Blunt injuries from civilian light and small UAVs are mainly injuries caused by mechanical external forces during the collision with the human body.

3.3 Sharp injury sharpinjury Injury to human skin caused by cuts or punctures from sharp objects.

Note. Sharp injuries from civilian light and small UAVs are mainly caused by blades cutting or piercing human skin.

4 Abbreviations

The following abbreviations apply to this document. SIS. Sharp Injury Scale

5 Classification of collision damage levels

5.1 Blunt Injury Grading Criteria According to the severity of the injury, blunt injuries are divided into 5 levels according to the provisions of the Simple Injury Scale, see Table 1.