

ICS 65.060.01

CCS B 90



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

GB/T 41678.1-2022

**Agricultural machinery and tractors - Safety of higher voltage
electrical and electronic components and systems - Part 1:
General requirements**

Issued on: October 12, 2022

Implemented on: October 12, 2022

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

foreword

Introduction

1 Scope

2 Normative references

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.

This document is Part 1 of GB/T 41678 "Safety of High Voltage Electrical and Electronic Components and Systems for Agricultural Machinery and Tractors".

GB/T 41678 has issued the following parts.

--- Part 1. General requirements.

This document is equivalent to ISO 16230-1:2015 "Safety of high-voltage electrical and electronic components and systems for agricultural machinery and tractors".

Part 1. General Requirements".

The following minimal editorial changes have been made to this document.

a) Corrected the errors in the original text of ISO 16230-1:2015. ISO 3600 was added in Chapter 2, and ISO 3600 was regulated in Chapter 11

Normative reference; Added ISO 7010, ISO 7010 is normatively mentioned in Chapter 10; Added IEC 60695-11-10,

IEC 60695-11-10 is normatively mentioned in 7.8; SAEJ2192 is added, and SAEJ2192 is normatively mentioned in 7.9.1

Mention; IEC 60529 is added, and IEC 60529 is normatively mentioned in 5.2.2.

b) Corrected the error in the original text of ISO 16230-1:2015. because the text is quoted as IEC 60204-1:2009, the chapter 2 listed

IEC 60204-1:2005 AMD1:2008 is changed to IEC 60204-1:2009; 4.2 refers to IEC 60204:2009 and changed to

IEC 60204-1:2009; 9.1.2 is changed to IEC 60204-1:2009 when citing IEC 60204-1.

c) In the references, IEC 60529 was deleted, IEC 60304 was added, and ISO 4254-1 was changed to ISO 4254.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Electrification is a technology that increases power density and improves mechanical flexibility and adaptability. It improves efficiency, enhances power transmission

Items improve fuel economy to meet user interests.

While agricultural machinery electrical systems have traditionally been powered by 12V DC, electrification can be typically only used in industrial/construction applications and other transportation

High voltages in the sector are introduced into the agricultural machinery and mobile equipment sector. In this new environment, voltage increases require special safety considerations.

The purpose of this document is to provide guidance for the safety of electrical systems on agricultural machinery and tractors (voltage range 50VAC~1000VAC and 75VDC~1500VDC).

In addition, this document defines the electrical equipment requirements applicable to agricultural tractors and machinery.

Example scopes include but are not limited to the following.

- Protection against electric shock;
- Conventional wiring;
- warning signs - safety signs;
- Precautions in the instruction manual.

This document supports electrical equipment standards such as IEC 60204-1 and ISO 6469. Other parts of this document are expected to deal with external machines interface (power distribution and communication).

This document is a Type C standard as defined in ISO 12100.

When the requirements of Category C standards are different from those of Category A or B standards, the machines designed and manufactured according to the requirements of Category C standards shall be

Standard requirements take precedence over other standard requirements.

GB/T 41678 aims to establish the safety of high-voltage electrical and electronic components and systems related to agricultural machinery and tractors.

grouped.

--- Part 1. General requirements. The purpose is to establish tractors and self-propelled riding machines, mounted agricultural

General requirements for the safety of high-voltage electrical and electronic components and systems associated with implements and trailed agricultural implements.

--- Other parts. still under study.

High voltage electrical and electronic components for agricultural machinery and tractors and

System security - Part 1. General requirements

1 Scope

This document specifies the airborne voltage range of 50VAC~1000VAC and 75VDC~1500VDC for machine operators and bystanders

General requirements for the protection and safety of spectators. This document applies to tractors and self-propelled riding machines, suspension

agricultural machinery and traction agricultural machinery. This document applies to electrical equipment and electrical equipment components on such machines, and includes

General requirements related to the protection and safety of bystanders and first responders.

Appendix A of this document lists agricultural machinery during normal use and service, intended use and misuse foreseeable by the manufacturer.

important hazards, hazardous situations and events that arise from time to time.

This document does not apply to.

--- Specific design elements of the external interface (such as the interface between the tractor and the implement);

--- External power supply equipment (such as line power supply equipment, equipment without on-board power generation);

--- Special forestry machinery;

--- Stationary generator.

This document does not apply to machines manufactured before the date of its publication.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

ISO 3600 Content and format of operating manuals for agricultural and forestry tractors, machinery, lawn and garden power machines (Tractors,

Content and format)

Note. GB/T 9480-2001 Rules for compiling instructions for use of agricultural and forestry tractors and machinery, lawn and garden power machinery (ISO 3600.1996, eqv)

ISO 3864-1 Graphical symbols Safety colors and safety signs Part 1.Design principles for safety signs and safety signs

safety markings)

Note. GB/T 2893.1-2013 Graphical Symbols Safety Colors and Safety Signs Part 1.Design Principles for Safety Signs and Safety Signs (ISO 3864-

1.2011, MOD)

Note. GB/T 18384.3-2015 Safety Requirements for Electric Vehicles Part 3.Personal Electric Shock Protection (ISO 6469-3.2011, MOD)

Note. GB/T 31523.1-2015 Safety Information Identification System Part 1.Signs (ISO 7010.2011, MOD)

IEC 60204-1.2009 Safety of Machinery Electrical Equipment Part 1.General Technical Conditions (Safetyofmachinery-

Note. GB/T 5226.1-2019 Electrical Safety of Machinery Machinery and Electrical Equipment Part 1.General Technical Conditions (IEC 60204-1.2016, IDT)