



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

GB/T 41030.1-2021

**Solar energy - Collector components and materials - Part 1:
Evacuated tubes - Durability and performance**

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Table of Contents

foreword

Introduction

1 Scope

2 Normative references

3 Terms and Definitions

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 of Standardization Documents" drafted:

This document is part 1 of GB/T 41030 "Parts and Materials of Solar Thermal Collectors": GB/T 41030 has released the following

part:

--- Part 1: Durability and performance of vacuum collector tubes:

This document is equivalent to ISO 22975-1:2016 "Solar collector components and materials - Part 1: Durability of vacuum collector tubes"

and performance":

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

The ISO 22975 series of standards are collectively referred to as "Solar Collector Components and Materials": In order to achieve the unification of national standards and international standards,

Based on ISO 22975-1:2016, it is transformed into my country's national standard, as the standard of GB/T 41030 "Solar Collector Components and Materials":

part 1:

According to the different components and materials, GB/T 41030 "Solar Collector Components and Materials" is currently divided into the following parts:

--- Part 1: Durability and performance of vacuum collector tubes;

- Part 2: Durability and performance of solar heat pipes;
- Part 3: Surface durability of heat sinks;
- Part 4: Durability and performance of glass materials;
- Part 5: Durability and performance of thermal insulation materials;

Solar collector components and materials

Part 1: Durability and performance of vacuum collector tubes

1 Scope

This document specifies the terms and definitions, classification and test items and tests of vacuum solar collector materials, durability and thermal properties:

method:

This document applies to all types of vacuum solar collectors:

Note: Vacuum solar collector tubes include all-glass vacuum solar collector tubes, glass-metal sealed vacuum solar collector tubes and vacuum solar collector tubes with similar structures:

2 Normative references

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

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document:

ISO 9488 Solar Energy Terminology (Solarenergy-Vocabulary)

ISO 9845-1 Solar terrestrial solar spectral irradiance under different receiving conditions - Part 1: Normal direction of air mass 1.5

Insolation and hemispherical insolation irradiance
(Solarenergy-Referencesolarspectralirradianceatthegroundat

diferentreceivingconditions-Part

1:Directnormalandhemisphericalsolarirradianceforairmass1,5)

Note: GB/T 17683:1-1999 Standard for solar spectral irradiance of solar energy under different receiving conditions on the ground - Part 1: Method for air quality 1.5

Toward direct insolation and hemispherical insolation (eqvISO 9845-1:1992)

3 Terms and Definitions

Terms and definitions defined in ISO 9488 and the following apply to this document:

3:1

All-glass evacuated solar collector double-glass evacuated tube

The components of the vacuum tube type solar heat collector, the inner tube and the cover tube are made of glass:

3:2

Glass-metal sealed vacuum solar collector tube glass-metal sealed evacuated tube

The components of the vacuum tube type solar collector, in which the metal heat sink is closely connected with the metal flow channel, and the glass-metal sealing process is

The art is sealed in a cover glass tube:

3:3

stone

Solid inclusions in the glass body of a vacuum solar collector:

3:4

knot knot

Transparent inclusions in the glass body of a vacuum solar collector:

3:5

scratch scratch

Wear or scratches on the surface of the glass tube of the vacuum solar collector: