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

GB/T 19608.2-2022

**Classification of special environmental condition - Part 2: Dry
heat-desert**

特殊环境条件分级 第2部分：干热沙漠

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Foreword

This document was issued on 11 July 2022 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 February 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

1 Scope

GB/T 19608.2-2022 grades the dry heat desert environment into severity levels, so that a product to be stored, transported, handled or used there can be specified against defined conditions instead of against the general label desert. After an overview of how the conditions combine, it takes them family by family: climatic conditions, the special climatic conditions that separate a desert from an ordinary hot dry climate, chemically active substances, mechanically active substances, mechanical conditions, biological conditions, and wind sand landform. An informative annex describes other desert environments for

comparison. The classification exists because desert damage is not one stress but several acting together. Airborne sand and dust abrade surfaces and pack into bearings, filters and connectors; the daily temperature swing works seals, joints and solder far harder than the peak temperature alone; solar radiation degrades polymers, elastomers and coatings; and salt-bearing ground attacks whatever rests on it. Equipment qualified only against a high temperature figure comes back from desert service with worn seals, blocked cooling paths and jammed mechanisms, none of which the temperature rating predicted. Naming a level for each family lets a purchaser write one line into a specification and lets a laboratory build a matching qualification programme. Equipment designers, purchasers drafting environmental clauses and test laboratories use it, with the terminology of GB/T 20625.

This document specifies the environmental parameters and severity classification of the product under the dry heat desert environment.

This document applies to products stored, transported, handled and used in dry heat desert conditions. The items and levels used can be selected according to the environmental impact and degree of the product.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 4798.10, Environmental conditions existing in the application of electric and electronic products - Guidance

GB/T 20625, Special environmental condition - Terminology

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 20625 apply.

4 Overview of environmental conditions

The dry heat desert environmental conditions are composed of climatic environmental conditions (K), special climatic environmental conditions (Z), biological environmental conditions (B), chemically active substances (C), mechanically active substances (S), mechanical environmental conditions (M), wind sand landform (D) are described by

levels respectively.

This grading allows for possible combinations of various environmental conditions.

These environmental conditions have an impact on products stored, transported and used anywhere. It can truly reflect the environmental conditions caused by the outdoor climate during the process. For some environmental parameters, it is difficult to quantify its severity level.

According to GB/T 4798.10, the environmental condition level is characterized by the following identifications:

- The first digit identifies the application condition (1 means storage; 2 means transportation and loading-unloading; 3 means fixed use in places with climate protection; 4 means fixed use in places without climate protection);
- Letters: Climatic environmental conditions (K), special climatic environmental conditions (Z), biological environmental conditions (B), chemically active substances (C), mechanically active substances (S), mechanical environmental conditions (M), wind sand landform (D);
- Another digit identifies the severity. Generally, the larger the value, the more severe the condition. A level can be further divided into H (high) and L (low). For example, temperatures may be very low, but high ambient conditions will not occur.

Example: Level 2K3, in which: 2 means transportation and loading-unloading; K means climatic environmental conditions; 3 means severity level.

5 Severity level for various environmental conditions

5.1 Climatic environmental conditions (K)

Choose the right level. Attention shall be paid to whether the climatic environmental conditions of places with climate protection are affected by the outdoor environment (places without climate protection), especially temperature and solar radiation.

The severity level of climatic environmental conditions is shown in Table 1. See Annex A for other desert environmental conditions.

1K20: Suitable for indoor storage in dry heat desert environmental conditions, without

temperature and humidity control.

1K21: Suitable for outdoor sheltered storage in dry heat desert conditions.

1K22: Suitable for outdoor storage without shelter in dry heat desert conditions.

2K20: Suitable for climate-protected transport and loading-unloading in dry heat desert environmental conditions, without temperature and humidity control in unventilated boxes.

2K21: Suitable for transport and loading-unloading without weather protection in dry

2C3: Suitable for transportation and loading-unloading in areas close to industrial chemical pollution sources.

3C1: Suitable for indoor stationary use in rural and urban areas with low industrial activity and moderate traffic. Heating in dense urban areas in winter can lead to increased pollution.

3C2: Suitable for indoor stationary use with general pollution levels, where industrial production activities are distributed throughout the area, or in cities with heavy traffic.

3C3: Suitable for indoor stationary use near industrial sources of chemical emissions.

3C4: Suitable for indoor fixed use in industrial production plants, where high concentrations of chemical pollutants may occur.

4C1: Suitable for outdoor fixed use in rural and urban areas with a small amount of industrial pollution and low traffic.

4C2: Suitable for outdoor fixed use in cities with industrial pollution and heavy traffic.

4C3: Suitable for outdoor fixed use close to chemical pollution sources.

4C4: Suitable for outdoor fixed use in industrial processing plants. Chemical pollutant emissions are in high concentrations.

NOTE: The chemically active substances in the dry heat desert environment mainly exist in the

corrosive gases discharged from industrial facilities such as oil and gas fields and the heating

systems of surrounding towns and villages. Under certain humidity conditions (for example, at and