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STANDARD

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**Glove box for handling of
radioactive substance**

ICS 13.280; 27.120.30

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently, **JIS Z 4808 : 1975** is replaced with **JIS Z 4808 : 2002**.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Glove box for handling of radioactive substance

Introduction This Japanese Industrial Standard has been prepared based on **ISO 10648-2** *Containment enclosures—Part 2 : Classification according to leak tightness and associated checking methods* issued in 1994 with modifying some part of the technical contents.

Portions sidelined or underlined with dots are the matters which the original International Standard is modified. A list of modification is given in Annex with explanations.

1 Scope This Standard specifies the glove box used for confining the radioactive substance for the protection of operators and working environment in a business place wherein the radioactive substances are treated.

Remarks : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 10648-2 : 1994 *Containment enclosures—Part 2 : Classification according to leak tightness and associated checking methods* (MOD)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent edition of the standards (including amendments) indicated below shall be applied.

JIS Z 4001 *Glossary of terms used in nuclear energy*

JIS Z 4812 *HEPA filters for radioactive aerosols*

JIS Z 4820 *Test method for leakage of glove boxes*

3 Definitions For the main terms used in this Standard, the definitions in **JIS Z 4001** and the following apply.

- a) **glove box for handling of radioactive substance** A box-type apparatus to which a window, a glove and others are fitted so that radioactive substance can be treated in an isolated state to prevent radioactive contamination and radiation exposure.
- b) **radioactive substance** Radioactive isotope and nuclear fuel material and those contaminated therewith.
- c) **leak rate** It express the airtightness of a glove box quantitatively, which means the rate wherein air in the glove box leaks per time.

- d) **negative pressure** A pressure state wherein a pressure in the glove box is lower than the ambient pressure.
- e) **exhaust capacity** Capacity for exhausting the inside of a glove box.

4 Type and class The types and classes of glove boxes are shown in Table 1 and Table 2.

Table 1 Type of glove box

Type	Form	Remarks
Type 1	Exhaust system packaged type	An exhaust system is affixed to the glove box main body
Type 2	Exhaust system separated type	Those except type 1

Table 2 Class of glove box

Class	Leak rate	Remarks
Class 1	≤ 0.25 vol %/h	A glove box treating a great amount of radioactive substance
Class 2	≤ 1.0 vol %/h	A glove box treating a medium amount of radioactive substance
Class 3	≤ 10 vol %/h	A glove box treating a small amount of radioactive substance

5 Performance A glove box shall have the following performances.

5.1 Air leakage When tested by 8.3, the leakage rate given in Table 2 shall be satisfied according to the class.

5.2 Exhaust capacity When tested by 8.4, the exhaust capacity of a glove box shall satisfy the following requirements.

- a) A gas volume necessary for keeping ≥ 0.5 m/s of passing wind velocity at an opening part when one glove port is opened.
- b) A gas volume necessary for keeping a specific temperature or lower by cooling down the heat generated from the equipment and the like inside the glove box.
- c) A gas volume necessary for keeping a specific concentration or lower by diluting hazardous gas and particles generated inside the glove box.

5.3 Electrical insulating resistance The insulation of electric parts used for a glove box, when tested in accordance with 8.5 shall be ≥ 5 M Ω .

6 Material Materials used for respective parts of a glove box shall have corrosion resistance and the parts contacting radioactive substance shall be materials of good decontaminability. Materials for principal components shall be as follows.

6.1 Main body Stainless steel shall be used for the main body. When corrosion resistance is required, synthetic resin or synthetic resin coated stainless steel may be used.