

IDENTIFICATION MARK

J/2026/AF-96

COMPETENT AUTHORITY  
OF  
JAPAN

CERTIFICATE FOR APPROVAL OF  
PACKAGE DESIGN  
FOR THE TRANSPORT OF  
RADIOACTIVE MATERIALS

ISSUED BY

NUCLEAR REGULATION AUTHORITY  
1-9-9, ROPPOINGI MINATO-KU  
TOKYO, JAPAN

CERTIFICATE FOR APPROVAL OF PACKAGE DESIGN  
FOR THE TRANSPORT OF RADIOACTIVE MATERIALS

This is to certify, in response to the application by Mitsubishi Nuclear Fuel Co., LTD., that the package design described herein complies with the design requirements for a package containing Fresh Fuel Assembly for BWR, specified in the 2012 Edition of the Regulations for the Safe Transport of Radioactive Material (International Atomic Energy Agency, Safety Standards Series No.SSR-6) and the Japanese rules based on the Act on Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. This certificate does not relieve the consignor from compliance with any requirement of the government of any country through or into which the package will be transported.

COMPETENT AUTHORITY

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Feb. 7, 2022  
Date

K. Hasegawa  
Hasegawa Kiyomitsu

Director, Division of Licensing for  
Nuclear Fuel Facilities

Secretariat of Nuclear Regulation Authority  
Competent Authority of JAPAN  
for Package Design Approval

1. The Competent Authority Identification Mark : J/2026/AF-96
2. Name of Package : MX-6
3. Type of Package : Type A Package containing Fissile Material
4. Specification of Package
  - (1) Materials of Packaging
    - (i) Body : Stainless steel, Copper, Alloy steel, Resin
    - (ii) Lid parts : Titanium alloy, Alloy steel, Resin
    - (iii) Basket : Aluminum alloy, Borated stainless steel
    - (iv) Shock absorbing cover : Wood, Stainless steel, Alloy steel
  - (2) Total Weight of Packaging : 15.35 tons or less
  - (3) Outer Dimensions of Packaging
    - (i) Outer diameter : Approximately 2.1 m
    - (ii) Length : Approximately 6.0 m  
(including top and rear shock absorbing covers)
  - (4) Total Weight of Package : 19.5 tons or less
  - (5) Illustration of Package : See the attached Figure
5. Specification of Radioactive Contents : See the attached Table-1
6. Description of Containment System

The containment system of the package consists of the body and the lid. EPDM O-rings, referred to as the lid gaskets and the quick connection cover gaskets, shall be installed on the contact surface of the lid against the body and on the contact surface of the quick connection cover against the lid.
7. For Package containing Fissile Materials,
  - (1) Restrictions on Package
    - (i) Restriction Number "N" : No restriction
    - (ii) Array of Package : No restriction
    - (iii) Criticality Safety Index (CSI) : 0
  - (2) Description of Confinement System

The confinement system of the package consists of the fuel rods, the fuel assemblies, the basket and the inner shell of the body.
  - (3) Assumptions of Leakage of Water into Package

In the criticality safety analysis for the package, water is assumed to leak into the void spaces of the packages.

(4) Special Features in Criticality Assessment

Not applicable

8. For Type B(M) Packages, a statement regarding prescriptions of Type B(U) Package that do not apply to this Package

Not applicable

9. Assumed Ambient Conditions

(i) Ambient Temperature Range :  $-40^{\circ}\text{C}\sim 38^{\circ}\text{C}$

(ii) Insolation Data : Table 12 of IAEA Regulation

10. Handling, Inspection and Maintenance

Packages must be handled, inspected and maintained in the manner described in the safety analysis report for the package.

11. Issue Date and Expiry Date

(i) Issue Date : March 20, 2019

(ii) Expiry Date : March 19, 2024

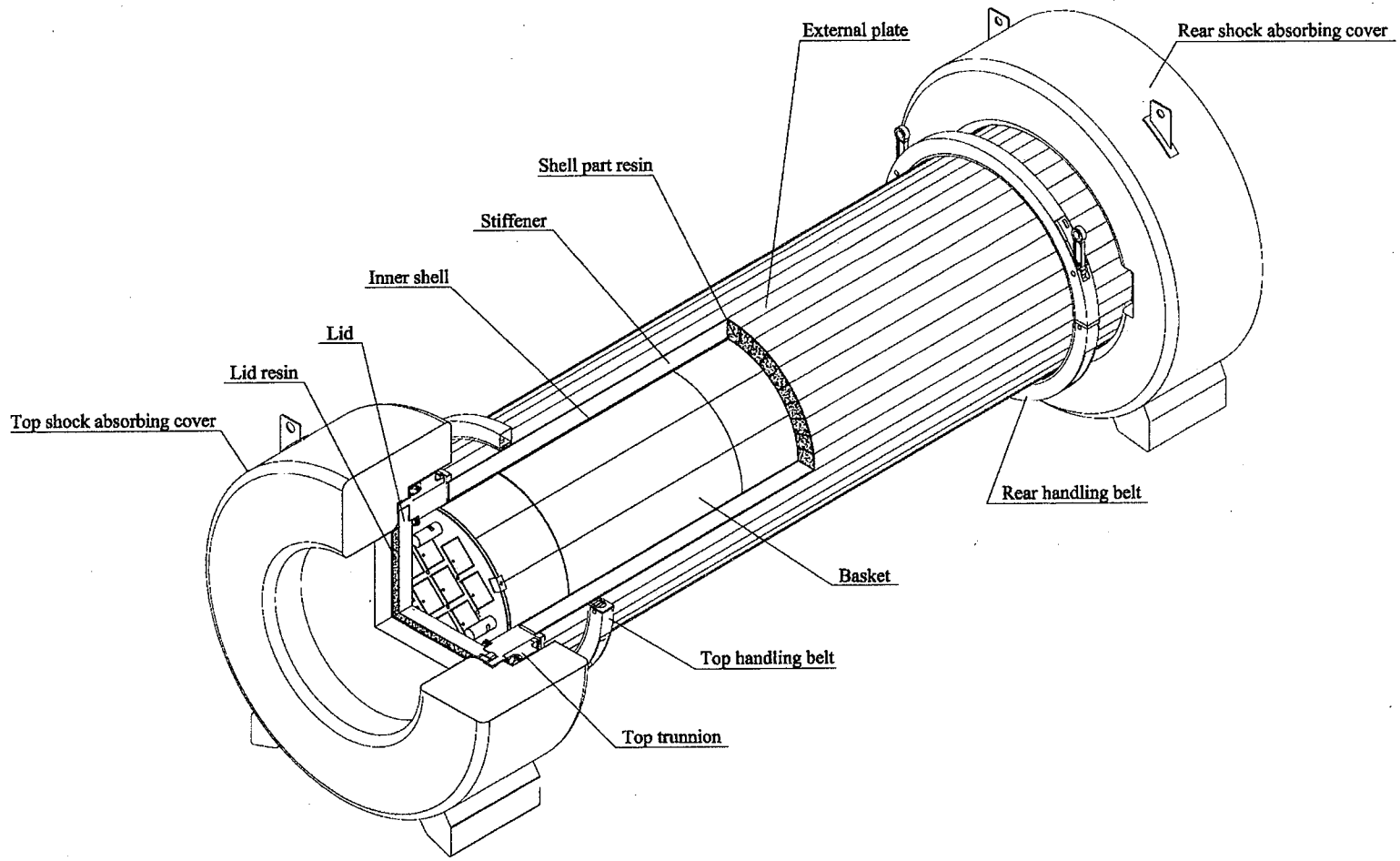


Figure MX-6 Packaging

Table-1 Specifications of Radioactive Content

Items		Type of Fuel Assembly	9 x 9	
Description		Fresh Fuel Assembly for BWR <sup>1)</sup>		
Physical State		Solid (UO <sub>2</sub> Pellet or Gadolinia - UO <sub>2</sub> Pellet)		
Per Packaging	Number of Assemblies		10 or less	
	Weight of Content (kg)		4150 or less	
	Activity	Total Activity (GBq)		3.10 × 10 <sup>2</sup> or less (Total Major Nuclides: 2.59 × 10 <sup>2</sup> or less)
		Major Nuclides <sup>2)</sup> (GBq)	<sup>232</sup> U	1.43 × 10 <sup>-1</sup>
			<sup>234</sup> U	2.29 × 10 <sup>2</sup>
			<sup>235</sup> U	7.21 × 10 <sup>0</sup>
			<sup>236</sup> U	1.08 × 10 <sup>0</sup>
<sup>238</sup> U			2.13 × 10 <sup>1</sup>	
<sup>99</sup> Tc	1.13 × 10 <sup>-2</sup>			
Heat Generation Rate		N/A (Fresh Fuel Assembly)		
Enrichment (wt%)		5.0 or less		
Per Fuel Assembly	Weight	Fuel Assembly (kg) (Including Channel Box)	310 or less	
		Uranium Oxide (kg)	210 or less	
		Uranium (kg)	180 or less	
	Burn up Rate		N/A (Fresh Fuel Assembly)	
	Cooling Time		N/A (Fresh Fuel Assembly)	
Impurity Specification of Enriched Uranium		<sup>232</sup> U	≤ 0.0001 μg/gU	
		<sup>234</sup> U	≤ 1.10 × 10 <sup>4</sup> μg/g <sup>235</sup> U	
		<sup>236</sup> U	≤ 250 μg/gU	
		<sup>99</sup> Tc	≤ 0.01 μg/gU	
		In case of <sup>236</sup> U < 125 μg/gU, <sup>232</sup> U and <sup>99</sup> Tc are not applicable.		

Note 1) Fresh fuel assemblies stored in spent fuel pool

Note 2) For enrichment of 5.0 wt%