

Explanation and Comparison Table of Changes - Guidelines for Nuclear Transfers and the Annex of the Guidelines for Nuclear Transfers (INFCIRC/254/Part 2)

Revision 12	July 2023 Update	Reason for Amendment
<p><u>2.A.2. Platinised catalysts</u></p> <p>2.A.2. Platinised catalysts specially designed or prepared for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production of heavy water.</p>	<p><u>2.A.2. Platinised catalysts</u></p> <p>2.A.2. Wet-proofed Platinised catalysts specially designed or prepared for promoting the hydrogen isotope exchange reaction between hydrogen and water for the recovery of tritium from heavy water or for the production or upgrading of heavy water.</p> <p><i><u>Technical Note: In heavy water moderated reactors, upgraders maintain the heavy water concentration in the reactor core. Wet-proofed platinised catalysts can also be used to upgrade heavy water.</u></i></p>	<p>This amendment captures tritium removal from both water and heavy water (upgraders) and clarifies that the controlled platinised catalysts are wet-proofed. These changes reduce the scope of the control and only captures platinised catalysts used in hydrogen isotope exchange reactions for the recovery of tritium and for the production or upgrading of heavy water.</p>
<p><u>2.A.3. Composite Structures in the Form of Tubes</u></p> <p>2.A.3. Composite structures in the form of tubes having both of the following characteristics:</p> <p>a. An inside diameter of between 75 and 400 mm; <u>and</u></p> <p>b. Made with any of the “fibrous or filamentary materials” specified in Item 2.C.7.a. or carbon prepreg materials specified in Item 2.C.7.c.</p>	<p><u>2.A.3. Composite Structures in the Form of Tubes</u></p> <p>2.A.3. Composite structures in the form of thin-walled tubes having both all of the following characteristics:</p> <p>a. An inside diameter of between 75 and 400 650 mm; and</p> <p>b. A thickness of 12 mm or less; and</p> <p>b. c. Made with any of the “fibrous or filamentary materials” specified in Item</p>	<p>This amendment increases the range of diameters of composite structures in the form of tubes to be consistent with changes made during the Dedicated Meeting of Technical Experts (DMTE) (2010-2013) and during the 2022 Plenary.</p> <p>As a result of a complete revision of both NSG lists in 2010-2013, completed by the DMTE, the maximum</p>

	<p>2.C.7.a. or carbon prepreg materials specified in Item 2.C.7.c.</p>	<p>diameter of gas centrifuges was changed from 400 mm to 650 mm in Sections 5.1, 5.1.1 of Annex B of the Part 1 Guidelines.</p> <p>This amendment ensures the coverage of composite structures in the form of tubes that can be used for gas centrifuge rotors are harmonized with the control parameters of the centrifuges. In addition, a new thickness parameter of 12 mm has also been added to only control thin-walled tubes.</p>
<p><i>4.B.2 Hydrogen-cryogenic distillation columns</i></p> <p>4.B.2. Hydrogen-cryogenic distillation columns having all of the following characteristics:</p> <ul style="list-style-type: none"> a. Designed for operation at internal temperatures of 35 K (-238 °C) or less; b. Designed for operation at internal pressures of 0.5 to 5 MPa; c. Constructed of either: <ul style="list-style-type: none"> 1. Stainless steel of the Society of Automotive Engineers International (SAE) 300 series 	<p><i>4.B.2 Hydrogen-cryogenic distillation columns</i></p> <p>4.B.2. Hydrogen-cryogenic distillation columns having all of the following characteristics:</p> <ul style="list-style-type: none"> a. Designed for operation at internal temperatures of <u>in the range of 15 K (-258°C) to</u> 35 K (-238 °C) or less; b. Designed for operation at internal pressures <u>in the range of 0.5 to 5 0.1 MPa to 1</u> MPa; c. Constructed of either: <ul style="list-style-type: none"> 1. <u>Austenitic S</u>stainless steel of the Society of Automotive Engineers International (SAE) 300 series with 	<p>This amendment was made to account for new heavy water production techniques and to update some control parameters. Specifically, the new text amends the outlet temperatures and the internal pressure range along with clarifying the materials of construction.</p> <p>Additionally, a new technical note 2 was added to provide examples of equivalent materials of construction that are both cryogenic and hydrogen compatible within</p>

<p>with low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; <u>or</u></p> <p>2. Equivalent materials which are both cryogenic and hydrogen (H₂)-compatible; <u>and</u></p> <p>d. With internal diameters of 30 cm or greater and ‘effective lengths’ of 4 m or greater.</p> <p><i><u>Technical Note:</u> The term ‘effective length’ means the active height of packing material in a packed-type column, or the active height of internal contactor plates in a plate-type column.</i></p>	<p>low sulphur content and with an austenitic ASTM (or equivalent standard) grain size number of 5 or greater; <u>or</u></p> <p>2. Equivalent materials which are both cryogenic and hydrogen (H₂)-compatible <u>between 15 K (-258°C) and 35 K (-238°C); and</u></p> <p>d. With internal diameters of 30 cm or greater and ‘effective lengths’ of 4 m or greater.</p> <p><i><u>Technical Note 1:</u> The term ‘effective length’ means the active height of packing material in a packed-type column, or the active height of internal contactor plates in a plate-type column.</i></p> <p><i><u>Technical Note 2:</u> <u>Equivalent materials could include, but are not limited to the following materials:</u></i></p> <p><i><u>a. aluminium,</u></i> <i><u>b. aluminium alloys,</u></i> <i><u>c. copper alloys,</u></i> <i><u>d. nickel alloys, and</u></i> <i><u>e. titanium alloys.</u></i></p>	<p>the updated temperature range.</p>
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