

BIS– 2022–0025

RIN 0694– AI94

Subject: Comments to BIS Rules October 7th, 2022

Date: 23 January, 2023

Alternative Control Text to Replace ECCN 3B090.a.7

Deposition Equipment

3B090 Semiconductor manufacturing equipment, not controlled by 3B001, as follows (see List of Items Controlled) and “specially designed” “parts,” “components,” and “accessories” therefor.

- a. Equipment for Atomic Layer Deposition (ALD) of work function metals
 1. Having all of the following:
 - i. More than one metal source of which one is designed for an Aluminum precursor; and
 - ii. Precursor vessel designed and enabled to operate at a temperature greater than 45 degrees C; and
 2. Designed for depositing a ‘work function’ metal having all of the following:
 - i. Deposition of TiAlC; and,
 - ii. Enabling a ‘work function’ greater than 4.0eV

Technical notes:

1. ‘Work function metal’ is a material that controls the threshold voltage of a transistor.
2. ‘Step Coverage’ is defined as the ratio of film thickness on the bottom of a trench defined by two adjacent stripes and the film thickness on the top of the stripes, where the depth of the trench is more than 5 times the width of the trench with openings smaller than 25nm.

