

TABLE I-4 TO SUBPART I OF PART 98—DEFAULT EMISSION FACTORS (1-U<sub>ij</sub>) FOR GAS UTILIZATION RATES (U<sub>ij</sub>) AND BY-PRODUCT FORMATION RATES (B<sub>ijk</sub>) FOR SEMICONDUCTOR MANUFACTURING FOR 300 MM WAFER SIZE

Process type/sub-type	Process gas i										
	CF <sub>4</sub>	C <sub>2</sub> F <sub>6</sub>	CHF <sub>3</sub>	CH <sub>2</sub> F <sub>2</sub>	C <sub>3</sub> F <sub>8</sub>	c-C <sub>4</sub> F <sub>8</sub>	NF <sub>3</sub>	SF <sub>6</sub>	C <sub>4</sub> F <sub>6</sub>	C <sub>5</sub> F <sub>8</sub>	C <sub>4</sub> F <sub>8</sub> O
<b>Plasma Etching</b>											
1-U <sub>i</sub> .....	0.80	0.80	0.48	0.14	NA	0.29	0.32	0.37	0.09	NA	NA
BCF <sub>4</sub> .....	NA	NA	0.0018	0.0011	NA	0.079	NA	NA	0.27	NA	NA
BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	0.0011	NA	NA	0.12	NA	NA	0.29	NA	NA
BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Chamber Cleaning</b>											
In situ plasma cleaning:											
1-U <sub>i</sub> .....	NA	NA	NA	NA	NA	NA	0.23	NA	NA	NA	NA
BCF <sub>4</sub> .....	NA	NA	NA	NA	NA	NA	0.0046	NA	NA	NA	NA
BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Remote Plasma Cleaning:											
1-U <sub>i</sub> .....	NA	NA	NA	NA	0.063	NA	0.018	NA	NA	NA	NA
BCF <sub>4</sub> .....	NA	NA	NA	NA	NA	NA	0.040	NA	NA	NA	NA
BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
In Situ Thermal Cleaning:											
1-U <sub>i</sub> .....	NA	NA	NA	NA	NA	NA	0.28	NA	NA	NA	NA
BCF <sub>4</sub> .....	NA	NA	NA	NA	NA	NA	0.010	NA	NA	NA	NA
BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Wafer Cleaning</b>											
1-U <sub>i</sub> .....	0.77	NA	NA	0.24	NA	NA	0.23	0.20	NA	NA	NA
BCF <sub>4</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: NA denotes not applicable based on currently available information.

TABLE I-5 TO SUBPART I OF PART 98—DEFAULT EMISSION FACTORS (1-U<sub>ij</sub>) FOR GAS UTILIZATION RATES (U<sub>ij</sub>) AND BY-PRODUCT FORMATION RATES (B<sub>ijk</sub>) FOR MEMS MANUFACTURING

Process type factors	Process gas i											
	CF <sub>4</sub>	C <sub>2</sub> F <sub>6</sub>	CHF <sub>3</sub>	CH <sub>2</sub> F <sub>2</sub>	C <sub>3</sub> F <sub>8</sub>	C-C <sub>4</sub> F <sub>8</sub>	NF <sub>3</sub> Re-mote	NF <sub>3</sub>	SF <sub>6</sub>	C <sub>4</sub> F <sub>6a</sub>	C <sub>5</sub> F <sub>8a</sub>	C <sub>4</sub> F <sub>8</sub> O <sub>a</sub>
Etch 1-U <sub>i</sub> .....	0.7	<sup>1</sup> 0.4	<sup>1</sup> 0.4	<sup>1</sup> 0.06	NA	<sup>1</sup> 0.2	NA	0.2	0.2	0.1	0.2	NA
Etch BCF <sub>4</sub> .....	NA	<sup>1</sup> 0.4	<sup>1</sup> 0.07	<sup>1</sup> 0.08	NA	0.2	NA	NA	NA	<sup>1</sup> 0.3	0.2	NA
Etch BC <sub>2</sub> F <sub>6</sub> .....	NA	NA	NA	NA	NA	0.2	NA	NA	NA	<sup>1</sup> 0.2	0.2	NA
CVD 1-U <sub>i</sub> .....	0.9	0.6	NA	NA	0.4	0.1	0.02	0.2	NA	NA	0.1	0.1
CVD BCF <sub>4</sub> .....	NA	0.1	NA	NA	0.1	0.1	<sup>2</sup> 0.02	<sup>2</sup> 0.1	NA	NA	0.1	0.1
CVD BC <sub>3</sub> F <sub>8</sub> .....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.4

Notes: NA denotes not applicable based on currently available information.

<sup>1</sup> Estimate includes multi-gas etch processes.

<sup>2</sup> Estimate reflects presence of low-k, carbide and multi-gas etch processes that may contain a C-containing fluorinated GHG additive.