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**Section 57 of the Competition Act 2004**

**Grounds of Decision issued by the Competition and Consumer Commission of Singapore in relation to the proposed acquisition by Entegris, Inc, of CMC Materials, Inc.**

**Date: 26 May 2022**

**Case number: 400-140-2022-001**

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Confidential information in the original version of this Decision has been redacted from the published version on the public register. Redacted confidential information in the text of the published version of the Decision is denoted by [X].

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## I. INTRODUCTION

1. On 2 March 2022, the Competition and Consumer Commission of Singapore (“**CCCS**”) accepted a joint notification, pursuant to section 57 of the Competition Act 2004 (the “**Act**”), by Entegris, Inc. (“**ENTG**”) and CMC Materials, Inc. (“**CCMP**”) (collectively, the “**Parties**”) for a decision as to whether the proposed acquisition by ENTG of 100% of the equity shareholding of CCMP will infringe section 54 of the Act, if carried into effect (“the **Proposed Transaction**”).
2. In reviewing the Proposed Transaction, CCCS contacted 27 competitors<sup>1</sup> and 31 customers<sup>2</sup> of the Parties. Of the third parties contacted, 13 provided substantive responses<sup>3</sup>. The majority indicated that they were neutral or had no competition concerns about the Proposed Transaction, with the exception of three (3) third parties<sup>4</sup>. One third party suggested that the merged entity may limit its upstream supply of drums to downstream competitors of chemicals after the Proposed Transaction.<sup>5</sup> A third party suggested the possibility of potential tying/bundling of complementary products by the Parties<sup>6</sup>, while another third party raised a general concern that the merged entity may increase the prices of its chemicals after the Proposed Transaction<sup>7</sup>. One third party, while having no concerns with the Proposed Transaction, suggested the possibility of input foreclosure in relation to liquid filters used in the manufacture of chemicals.<sup>8</sup>
3. At the end of the consultation process and after evaluating all the information, including the Parties’ submissions and the feedback provided by third parties, CCCS concludes that the Proposed Transaction, if carried into effect, will not infringe section 54 of the Act.

## II. THE PARTIES

### *ENTG*

4. ENTG is a global developer, manufacturer and supplier of microcontamination control products, specialty chemicals and materials handling solutions for

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<sup>1</sup> Competitors: [REDACTED].

<sup>2</sup> Customers: [REDACTED].

<sup>3</sup> 13 third parties who provided substantive responses are: [REDACTED].

<sup>4</sup> [REDACTED], [REDACTED] and [REDACTED].

<sup>5</sup> Paragraph 17 of the Notes of Meeting with [REDACTED] dated 7 April 2022.

<sup>6</sup> [REDACTED]’s response dated 6 April 2022 to Question 2 of CCCS’s Request for Information (“**RFI**”).

<sup>7</sup> [REDACTED]’s response dated 28 March 2022 to Question 2 of CCCS’s RFI.

<sup>8</sup> [REDACTED] is neutral about the Proposed Transaction but has nevertheless raised the possibility of input foreclosure of liquid filters in its feedback. Paragraphs 13 and 14 of the Notes of Meeting with [REDACTED] dated 8 April 2022.

manufacturing processes in the semiconductor and other technology industries. ENTG's business is organized into three operating segments: Specialty Chemicals and Engineered Materials, Advanced Materials Handling, and Microcontamination Control.<sup>9</sup> ENTG engages in the same businesses in Singapore as it does globally.<sup>10</sup>

### *CCMP*

5. CCMP is a global supplier of consumable materials to semiconductor manufacturers and pipeline companies.<sup>11</sup> CCMP's business is organised in two operating segments: Electronic Materials and Performance Materials.<sup>12</sup> CCMP engages in the same businesses in Singapore as it does globally.<sup>13</sup>

## **III. THE PROPOSED TRANSACTION**

### *Nature of the Proposed Transaction*

6. Upon closing of the Proposed Transaction, CCMP will become a wholly owned subsidiary of ENTG.<sup>14</sup>

### *Merger under section 54 of the Act*

7. CCCS considers that the Proposed Transaction constitutes a merger pursuant to section 54(2)(b) of the Act as ENTG will acquire the entire business of CCMP via an acquisition of the latter's shares, thus conferring upon ENTG sole control of CCMP.

## **IV. COMPETITION ISSUES**

8. The Parties submitted that ENTG and CCMP have limited overlap in the supply of chemical mechanical planarization ("CMP") slurries ("CMP Slurries")<sup>15</sup> and cleaning solutions ("Cleans") globally and in Singapore.<sup>16</sup>

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<sup>9</sup> Paragraph 10.6 of Form M1.

<sup>10</sup> Paragraph 10.9 of Form M1.

<sup>11</sup> Paragraph 10.7 of Form M1.

<sup>12</sup> Paragraph 10.8 of Form M1.

<sup>13</sup> Paragraph 10.10 of Form M1.

<sup>14</sup> Paragraph 11.4 of Form M1.

<sup>15</sup> CMP Slurries are liquid dispersions containing active chemicals and micro abrasive grains used in the CMP process to polish the surface of the film deposited upon the silicon wafer in the manufacturing of semiconductors.

<sup>16</sup> Paragraph 15.1 of Form M1.

9. In respect of Cleans, ENTG only supplies formulated Cleans<sup>17,18</sup>. On the other hand, CCMP primarily supplies commodity Cleans<sup>19</sup> and only a limited amount of formulated Cleans.<sup>20</sup>
10. In reviewing the Proposed Transaction, CCCS assessed whether the Proposed Transaction would lead to non-coordinated and coordinated effects that result in a substantial lessening of competition (“SLC”) in relation to the overlapping products.
11. Given that ENTG supplies drums<sup>21</sup> and accompanying fluid transfer products<sup>22</sup> to CCMP for the delivery of CMP Slurries and Cleans as well as liquid filters<sup>23</sup> to CCMP for the manufacture of CMP Slurries and Cleans<sup>24</sup>, and that the Parties supply products that are complementary i.e., CMP Slurries, Cleans and CMP pads<sup>25,26</sup> CCCS also considered if the Proposed Transaction would lead to vertical effects and conglomerate effects that may lead to a SLC in the relevant markets of these products.

## V. COUNTERFACTUAL

12. CCCS considers the appropriate counterfactual to be the prevailing conditions of competition prior to the Proposed Transaction. There is no third party feedback or evidence to suggest that the market structure or competitive dynamics in the counterfactual would differ from the status quo.

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<sup>17</sup> Formulated Cleans are chemical formulations specifically engineered to accomplish specialised removals during the cleaning process.

<sup>18</sup> Paragraph 1.20 of the Parties’ responses dated 17 February 2022 to CCCS’s email dated 3 February 2022.

<sup>19</sup> Commodity Cleans (also referred to as “bulk wet chemicals”) are basic chemistries or simple blends thereof used for a number of non-specialised purposes, including non-semiconductor applications such as cleaning hard disk drives.

<sup>20</sup> Paragraph 15.3b of Form M1. According to the Parties, commodity Cleans and formulated Cleans include etchants and photoresist strippers (Paragraph 3.9 of the Parties’ response dated 22 March 2022 to CCCS’s letter dated 7 March 2022 (the “**22 March 2022 Response**”)).

<sup>21</sup> Drums are containers used to store and transport fluids including e.g., chemicals, mineral oils and other liquids used in different industries such as food, life sciences, semiconductor, LED, water treatment and flat panel display.

<sup>22</sup> Fluid transfer products are typically used in conjunction with drums to perform the function of fluid transfer and handling for the purposes of chemicals manufacturing.

<sup>23</sup> Liquid filters are equipment used to separate suspended particles from a fluid stream by the filter medium. The objective of the filtration process is to allow liquid stream to pass through while unwanted particles are retained.

<sup>24</sup> Paragraph 1.2 and 1.3 of the Parties’ response dated 1 May 2022 Response to CCCS’s letter dated 14 April 2022.

<sup>25</sup> CMP pads are flat, disk-shaped surfaces against which silicon wafers are pressed in order for the silicon wafer surfaces to be polished.

<sup>26</sup> Paragraph 34.24 of Form M1; paragraph 37.1 of the 22 March 2022 Response.

## VI. RELEVANT MARKETS

13. Based on the Parties' submission and third party feedback, CCCS considers that the relevant markets for the purpose of assessing the non-coordinated and coordinated effects are the global supply of:
  - a. CMP Slurries; and
  - b. formulated Cleans.
14. CCCS also considers that the relevant markets for the purpose of assessing vertical effects are the global supply of:
  - a. **Upstream markets:** (i) Wet Chemical Drums (i.e., drums used for the transportation of wet chemicals i.e., CMP Slurries and Cleans) and (ii) liquid filters; and
  - b. **Downstream markets:** (i) CMP Slurries, (ii) formulated Cleans and (iii) commodity Cleans.

## VII. COMPETITION ASSESSMENT

### (a) Non-Coordinated Effects

15. Based on the information received, CCCS has assessed that the Proposed Transaction is unlikely to give rise to non-coordinated effects for the following reasons:
  - a. The combined market share and post-merger CR3 for both CMP Slurries and formulated Cleans generally do not cross the indicative thresholds in the *CCCS Guidelines on the Substantive Assessment of Mergers*. The incremental market shares of the merged entity are low for each relevant market for CMP Slurries and formulated Cleans;
  - b. The Parties are not the closest competitors to each other in the relevant markets for CMP Slurries and formulated Cleans. There are other major alternative suppliers of CMP Slurries and formulated Cleans and customers source from multiple suppliers;

c. Barriers to entry and expansion of each relevant market for CMP Slurries and formulated Cleans are at most likely to be moderately high with suppliers needing to undergo a qualification process for new products offered to a customer. However, such barriers do not appear insurmountable in view of the presence of multiple suppliers; and

d. Larger customers of the Parties are likely to have countervailing buyer power.

**(b) Coordinated Effects**

16. Based on the information received, CCCS has assessed that that the Proposed Transaction is unlikely to give rise to coordinated effects for the following reasons:

a. The Proposed Transaction will not significantly increase concentration in the relevant markets for CMP Slurries and formulated Cleans. There remain multiple suppliers of CMP Slurries and formulated Cleans in the market post-Proposed Transaction;

b. There exist customers with countervailing buyer power that will reduce the ability of competitors in the relevant markets for CMP Slurries and formulated Cleans to align and gain the stability required for coordination to occur or be sustainable; and

c. Suppliers in the relevant markets for CMP Slurries and formulated Cleans may not have the ability to easily align their behaviour or monitor each other to detect deviation from coordination as the outcomes of the bidding process for CMP Slurries and formulated Cleans are typically not made known to other bidders.

**(c) Vertical Effects**

17. Based on the information received, CCCS has assessed that the Proposed Transaction is unlikely to give rise to vertical effects for the following reasons:

a. Input foreclosure is unlikely as ENTG does not appear to be a very significant supplier of Wet Chemical Drums or liquid filters, and there exists other viable alternative suppliers for customers to switch to and customers do source from multiple suppliers. Barriers to entry and expansion and switching for both Wet Chemical Drums and liquid filters do not appear to be insurmountable.

Further, Wet Chemical Drums or liquid filters are unlikely to be significant input costs for the supply of CMP Slurries and Cleans; and

b. Customer foreclosure is unlikely as CCMP is not a significant buyer of Wet Chemical Drums or liquid filters for the delivery or manufacture of CMP Slurries and Cleans.

**(d) Conglomerate effects**

18. Based on the information received, CCCS has assessed that Proposed Transaction is unlikely to give rise to conglomerate effects for the following reasons:

a. The merged entity does not have a significant degree of market power in the markets for CMP Slurries, formulated Cleans and CMP pads;

b. None of these products are typically purchased or sold as a bundle and the Proposed Transaction is unlikely to change this behaviour; and

c. Third parties are generally able to switch to alternative suppliers even though some time and costs are needed to qualify alternative suppliers.

**(e) Conclusion on competition assessment**

19. Given that the Proposed Transaction is unlikely to give rise to co-ordinated, non-coordinated, vertical and conglomerate effects, CCCS concludes that the Proposed Transaction will not result in an SLC in Singapore.

**VIII. EFFICIENCIES**

20. Given that the competition assessment does not indicate an SLC, it is not necessary for CCCS to make an assessment on the claimed efficiencies by the Parties.



**IX. CONCLUSION**

21. For the reasons above and based on the information available, CCCS has assessed that the Proposed Transaction, if carried out into effect, will not lead to an SLC and consequently, will not infringe section 54 of the Act.
22. In accordance with section 57(7) of the Act, this decision will be valid for a period of one (1) year from the date of this decision.



Sia Aik Kor  
Chief Executive  
Competition and Consumer Commission of Singapore