



DETERMINATION OF MERGER NOTIFICATION M/19/011 MERCK KGAA/VERSUM MATERIALS INC.

Section 21 of the Competition Act 2002

Proposed acquisition by Merck KGAA of sole control of Versum Materials, Inc.

Dated 19 June 2019

Introduction

1. On 10 May 2019, in accordance with section 18(1)(a) of the Competition Act 2002, as amended (the “Act”), the Competition and Consumer Protection Commission (the “Commission”) received a notification of a proposed transaction (the “Proposed Transaction”) whereby Merck KGaA (“Merck”), through EMD Performance Materials Holding, Inc. (“EMD”), a special purpose vehicle formed specifically for the purposes of the Proposed Transaction, would acquire sole control of Versum Materials, Inc. (“Versum”).

The Proposed Transaction

2. The Proposed Transaction is to be implemented by way of a merger carried out in accordance with the General Corporation Law of the State of Delaware. The terms and conditions upon which the Proposed Transaction is to take place are set out in an Agreement and Plan of Merger dated 12 April 2019 (“the Merger Agreement”) between Merck, EMD and Versum. On the basis of the Merger Agreement, the Commission considers that the undertakings involved have demonstrated a good faith intention to conclude an agreement for the purposes of section 18(1A)(b)(ii) of the Act.
3. The Proposed Transaction is conditional, amongst other things, on the approval of the Merger Agreement by a majority of the Versum shareholders. Upon closing of the Proposed Transaction, Versum will be merged with EMD which will then cease to have



a separate corporate existence. EMD is wholly-owned by EMD Group Holding, Inc.¹, which, in turn, is a wholly-owned indirect subsidiary of Merck. As a result of the Proposed Transaction, Versum will become a subsidiary of EMD Group Holding, Inc. and, thereby, an indirect subsidiary of Merck.

The Undertakings Involved

The Acquirer - Merck KGAA

4. Merck, a German corporation with General Partners, is a global science and technology company headquartered in Darmstadt, Germany.²
5. E. Merck KG, a German limited partnership, acts as the general partner of Merck and holds 70.274% of its total share capital. Third-party shareholders hold the remainder of the total share capital, which is divided into shares listed on the Frankfurt stock exchange.³ Although E. Merck KG does not participate in the management of Merck, according to the parties, it makes the fundamental entrepreneurial decisions. The Merck family currently holds 99.9% of the share capital of E. Merck KG, while the remaining interests are held by the members of the Executive Board of Merck.
6. Merck operates in three business sectors:
 - (i) *Healthcare*: Merck's Healthcare business comprises two businesses, Biopharma and Allergopharma. Merck's Biopharma business discovers, develops, manufactures and markets innovative pharmaceutical and biological prescription drugs to treat cancer, multiple sclerosis, infertility, growth disorders, as well as certain cardiovascular and metabolic diseases. Merck's allergy business Allergopharma is active in the field of allergy immunotherapy. In 2018, Healthcare generated 42% of Merck's group-wide sales.

¹ EMD Group Holding, Inc. is a special purpose vehicle formed specifically for the purposes of the Proposed Transaction.

² Merck is not affiliated with the US Pharmaceuticals company, Merck & Co, Inc (known as MSD in Ireland).

³ Merck is listed on the Frankfurt-based Xetra Dax stock exchange as, MRK. <https://www.xetra.com/xetra-en/instruments/shares/list-of-tradable-shares/xetra/1064310!tradable>



- (ii) *Life Science:* Merck's Life Science business supplies tools, high-grade chemicals, and equipment to academic labs, biotech and biopharmaceutical manufacturers, as well to the industrial sector. Merck's Life Science portfolio includes products ranging from lab water systems to genome-editing tools, antibodies and cell lines. Merck's Life Science business also supplies end-to-end bioprocessing systems to support the manufacturing needs of both emerging biotech and large pharmaceutical companies. In 2018, Life Science generated 42% of Merck's group-wide sales.
- (iii) *Performance Materials:* Merck's Performance Materials business comprises the specialty chemicals business of Merck and supplies solutions for displays, computer chips and surfaces of all kinds. Performance Materials is organised in three business units: (i) Display Solutions, (ii) Surface Solutions, and (iii) Semiconductor Solutions.
- Merck's Display Solutions business unit comprises the company's liquid crystals, OLED (organic light-emitting diodes), photoresists and liquid crystal windows businesses.
 - Merck's Surface Solutions business unit provides materials and solutions for the creation of aesthetically pleasing, resistant and intelligent surfaces. The company's pearlescent pigments are used in automotive coatings, cosmetics, packaging, product design and food creations. In addition, its functional solutions are used in a range of applications, including dirt-repellent and easy-care surfaces as well as laser markings of plastic parts and cables.
 - Merck's Semiconductor Solutions business unit supplies products for integrated circuits, microelectronic systems, antireflection coatings, and for the miniaturization of transistor structures. Merck's electronic materials for the semiconductor, display and LED industries include lithography materials, such as photoresists, developers, solvents and photoresist ancillaries, deposition precursors, spin-on dielectrics, and abrasive particles



for chemical mechanical polishing (“CMP”) slurries. For semiconductor applications, Merck’s abrasive particles for CMP slurries [...]

In 2018, Performance Materials accounted for 16% of Merck’s group-wide sales.

7. Merck has eight indirectly wholly-owned subsidiaries incorporated in the State,⁴ as well as branch offices of two indirectly wholly owned subsidiaries: Merck Chemical Ltd. And Merck Finance S.a.rl.⁵
8. For the year ending 31 December 2018, Merck’s worldwide turnover was approximately €14.84 billion of which €[...] was generated in the State.

The Target – Versum Materials

9. Versum is a US-incorporated global provider of specialty materials and delivery systems to the semiconductor and display industries. Versum is listed on the New York Stock Exchange.⁶
10. Versum’s business is organised in two operating segments:
 - *Materials:* Versum provides high purity specialty materials focusing mainly on integrated circuit customers, as well as on flat-panel display customers. The segment operates in two product categories, namely Advanced Materials (“AM”) and Process Materials (“PM”). The AM product group supplies materials through three key product platforms: (i) deposition materials, which are chemical precursors used to deposit chemical thin films onto semiconductor wafers; (ii) planarisation products, which include CMP slurries and post-CMP cleans; and (iii) formulated cleans which are chemicals used to selectively

⁴ These are: Merck Finance Limited (corporate functions, finance and administrative); Merck Millipore Limited (Life Science, operating company); Merck Serono (Ireland) Limited (Healthcare, operating company); Millipore Cork Unlimited Company (corporate functions, holding company); SAFC Arklow Limited (Life Science, dormant); Shrawdine Limited (corporate functions, holding company); Sigma-Aldrich Ireland Limited (Life Science, operating company); and Silverberry Limited (corporate functions, holding company).

⁵ Merck Chemicals Ltd and Merck Finance S.a.r.l.

⁶ Versum is listed on the New York Stock Exchange under the mnemonic “VSM”. For further details see: <https://www.nyse.com/quote/XNYS:VSM>



remove debris and contamination off the wafer. Most of these products are tailored to and developed in collaboration with customers and partners to align with new requirements and needs. The PM product group supplies high-purity gases and chemicals used in cleaning reactor chambers and etching features into thin films of materials deposited onto a wafer, doping thin films to tailor their electrical properties, and film deposition processes for the semiconductor, displays and LED industries.

- *Delivery System and Services:* Designs, manufactures, installs, operates, and maintains chemical, gas and slurry delivery cabinets supplying products from source containers to the customers' manufacturing tools. Similarly, Versum works in close collaboration with its customers to tailor these products to meet their needs and process requirements. Versum also provides related turnkey installation and onsite operating services - it assists its customer with project management, inventory management, quality assurance, and product container change-out services.

11. Versum has one wholly-owned subsidiary operating in the State; Versum Materials Ireland Limited. [...]
12. For the year ending 30 September 2018, Versum's worldwide turnover was €1.16 billion of which €[...] million was generated in the State.

Rationale for the Proposed Transaction

13. The parties state in the notification that:

"The Merck and Versum businesses have highly complementary capabilities, with very little product overlap. As such, customers will benefit from increased scale, product and service depth, enhanced global presence and a strengthened supply chain which would help to drive innovation supported by long-term tailwinds in the industry."

Third Party Submissions

14. No submission was received. The Commission did however contact a customer of both Merck and Versum who informed the Commission that the Proposed Transaction will



reduce its suppliers of deposition precursors from 5 to 4. As a result, the customer stated that it will have to “expand beyond its current supply base to ensure competition, innovation and availability of products at a reasonable cost”. These concerns are addressed in this Determination.

Horizontal Overlap

15. There is an overlap in the activities of the parties in the State in relation to the sale of deposition precursors, specifically those used in Chemical Vapour Deposition (“CVD”).
16. CVD refers to the process of growing, coating, or otherwise transferring a very thin (between a few nanometers to approximately 100 micrometers) film of material onto a semiconductor wafer, either onto a substrate surface to be coated or onto a previously deposited coating to form layers. Deposition is used throughout the semiconductor fabrication process to build up layers of material on the wafer.
17. The parties do not have any production, supply or distribution facilities in the State. [...]

Market Definition

Product Market Definition

18. The Commission defines markets to the extent necessary depending on the particular circumstances of a given case. In this instance, it is not necessary for the Commission to define the precise markets because doing so will not alter the Commission’s assessment of the likely competitive effects of the Proposed Transaction in the State.
19. The parties have not identified any relevant CCPC or EU Commission merger control decisions in this area. The parties note that the CCPC previously considered what were described as “thin film materials” in its merger Determination, M/16/067 Fujifilm / Wako Pure Chemicals.⁷ There was no overlap between the parties’ activities in the State

⁷ This Determination is available to download from the CCPC’s website at:

https://www.ccpc.ie/business/wp-content/uploads/sites/3/2016/12/M-16-067-Determination-FUJIFILM_Wako-Pure-Chemicals.pdf



in that merger and as such the CPCC did not consider relevant markets in its Determination.

20. For the purpose of assessing whether the Proposed Transaction might result in a substantial lessening of competition, the Commission has analysed its impact by reference to the potential market for the sale of deposition precursors as this is the only area of overlap between the parties in the State.

Geographic Market Definition

21. The parties submit that the relevant geographic market for deposition precursors is worldwide in scope.
22. The parties state that deposition precursors are high value and low volume, transportation costs are relatively low and account for less than [...] of the total sales price of these products. While product support considerations may require a local presence in proximity to semiconductor manufacturers, materials manufacturers like Merck and Versum ship their products from a small number of production facilities to customers around the world with little or no regional differences in pricing or quality.
23. In this case, it is not necessary for the Commission to conclude on the potential geographic market in respect of the sale of deposition precursors because, regardless of how the geographic market is defined, the Proposed Transaction is unlikely to result in a substantial lessening of competition in any market for goods and services in the State. For the purpose of assessing whether the Proposed Transaction might result in a substantial lessening of competition, the Commission has analysed its impact by reference to the State.

Competitive Analysis

24. The parties have provided market share estimates for their sales of deposition precursors both worldwide and in the State.

Table 1: Sales of deposition precursors (worldwide) 2018



Company name	Sales (€) millions	Market share (%)
Merck	[...]	[...]
Versum	[...]	[...]
Air Liquide	[...]	[...]
DNF	[...]	[...]
Adeka	[...]	[...]
Others	[...]	[...]
Total	[...]	[...]

Source: Market share estimates provided by the parties.

Table 2: Sales of deposition precursors (in the State) 2018

Company name	Sales (€) millions	Market share (%)
Merck	[...]	[...]
Versum	[...]	[...]
Fujifilm	[...]	[...]
Air Liquide	[...]	[...]
Praxair	[...]	[...]
Others	[...]	[...]
Total	[...]	[...]

Source: Market share estimates provided by the parties.



25. Table 1 shows that although the combined market share of the parties is [...] at worldwide level, the Commission considers that there will remain a number of significant competitors including Air Liquide, Adeka, DNF, Tosoh, UpChem, Hansol, DowDuPont, Entegris, SK TriChem, BASF, SoulBrain, and Wonik. Furthermore, the customers for deposition precursors are large international integrated device manufacturers such as Intel, Samsung, SK Hynix and Taiwan Semiconductor Manufacturing Company (“TSMC”). Samsung, SK Hynix, and Intel are global companies that hold leading positions in the supply of finished semiconductors, and each company generates significantly greater revenues than the parties (respectively, €[...], €[...], and €[...] in 2018).⁸
26. Table 2 shows that the increment in market share in the State resulting from the Proposed Transaction is only [...]. This increment in market share is minimal and is unlikely to result in horizontal competition concerns in the State.
27. In light of the above, the Proposed Transaction does not raise any horizontal competition concerns in the State in relation to the supply of deposition precursors.

Vertical overlap

28. The parties informed the Commission that there is no vertical relationship in the State between Merck and Versum. The Commission has not identified any vertical relationship between the parties. Therefore, on that basis, the Proposed Transaction does not raise any vertical competition concerns in the State.

Conclusion

29. In light of the above, the Commission considers that the Proposed Transaction will not substantially lessen competition in any market for goods or services in the State.

Ancillary Restraints

30. No ancillary restraints were notified.

⁸ Source: The global revenue figures are sourced from the companies’ respective annual reports and converted to Korean Won/US Dollar exchange rate of 0.00085.



Coimisiún um
Iomaíocht agus
Cosaint Tomhaltóirí

**Competition and
Consumer Protection
Commission**



Determination

The Competition and Consumer Protection Commission, in accordance with section 21(2)(a) of the Competition Act 2002, as amended, has determined that, in its opinion, the result of the proposed acquisition whereby Merck KGaA, through EMD Performance Materials Holding, Inc., would acquire sole control of Versum Materials, Inc. will not be to substantially lessen competition in any market for goods or services in the State, and, accordingly, that the acquisition may be put into effect.

For the Competition and Consumer Protection Commission

Brian McHugh
Member
Competition and Consumer Protection Commission