

Competition Act 1998

Decision of the Office of Fair Trading
No. CA98/07/2003

Refusal to supply unprocessed holographic photopolymer film: E.I. du Pont de Nemours & Company and Op. Graphics (Holography) Limited

9 September 2003
(Case CP/1761/02)

SUMMARY

The OFT has investigated a complaint from Op. Graphics (Holography) Limited concerning E.I. du Pont de Nemours & Company's refusal to continue to supply unprocessed holographic photopolymer film.

On the basis of the material available to it the Office of Fair Trading does not consider that the prohibition imposed by section 18 of the Competition Act 1998 has been infringed by E.I. du Pont de Nemours & Company. Whilst on the basis of its investigation it is likely that DuPont is dominant in the market for the manufacture and supply of the unprocessed holographic photopolymer film worldwide, the OFT does not consider that the conditions for abuse are met in this case.

I THE FACTS

The undertakings

- 1 E.I. du Pont de Nemours & Company ('DuPont') is a large multinational conglomerate with interests in a variety of areas including agriculture and nutrition, textile manufacture, coatings and polymers, pharmaceuticals, pigments and chemicals. DuPont's 2001 Annual Report recorded that the company had an annual turnover of US\$24,726 million in 2001. Dupont's interests in the production and sales of holograms and holographic materials consist of:
 - a. DuPont Holographics (formerly known as Krystal Holographics) - a 100 per cent owned DuPont subsidiary which manufactures holograms and is located in Logan, Utah;
 - b. DuPont Authentication Systems ('DAS') - a joint venture company, 60 per cent owned by DuPont, which sells unprocessed holographic photopolymer film ('HPF') but does not make any holograms or HPF itself; and
 - c. a manufacturing plant in Pennsylvania where HPF is produced. The plant is a shared asset of several DuPont businesses including DAS.
- 2 DuPont was initially only active in the production of unprocessed HPF until it set up DuPont Holographics in 1999 and began designing and manufacturing HPF based holograms for use in:
 - a. graphic arts applications (such as art gallery or decorative advertising displays); and
 - b. security and authentication applications (such as passports and national identity cards, credit cards, authenticity tags on clothing etc).
- 3 In August 2001 DAS was formed as a joint venture with Label Systems Inc, a producer of holographic security and identification products, to promote the use of HPF technology in anti-counterfeiting and authentication products. DuPont holds exclusive rights to produce and distribute its unprocessed HPF products worldwide and for the purposes of this decision 'DuPont' refers to the DuPont parent company and its subsidiaries.
- 4 Op. Graphics (Holography) Limited ('OPG') is a small company based in Leeds which designs and produces a range of innovative hologram products which are

sold worldwide. From its date of incorporation in 1986 OPG has specialized in producing holograms for display and exhibition purposes. In 2001, after four years of investment in development work, OPG was able to diversify and obtained contracts to provide imaged HPF holographic inserts (the 'OPG Products') to (a) a manufacturer of motorcycle helmets (to give the visors a very distinctive decorative effect) and (b) a manufacturer of electric fires (the holograms being used to give electric fires a realistic 'flame effect'). Given the level of investment and research work involved, OPG is highly dependent upon fulfilling these contracts.

The product

- 5 Unprocessed HPF is a photopolymer film used for recording high resolution holograms. Unprocessed HPF is a relatively new product which was first developed in 1997 and first supplied commercially in 1998. It has a three layered structure (cover sheet, photopolymer and base), it is green, light sensitive (requiring an Argon laser for exposure) and is supplied in roll form. It is known by the trade name of Omnidex and it can be used to produce holograms for use in graphic arts applications, security and authentication applications and certain specialised industrial applications such as Holographic Optical Elements.

The complaint

- 6 Between April 1998 and November 2001 OPG was supplied with unprocessed HPF by DuPont and used the product to develop a range of highly specialised high resolution holograms for sale to companies in the UK and abroad. OPG considers that HPF is the only suitable holographic material for the manufacture of the OPG Products as, in contrast to holograms produced using other available materials, the holograms produced using HPF are both transparent and heat resistant.
- 7 On 30 November 2001 OPG received a fax from DuPont which gave 120 days notice of the termination of the existing supply agreement with OPG in accordance with the terms of that agreement. Following exchanges of correspondence and several telephone conversations, on 11 January 2002 Dupont confirmed to OPG that the existing supply contract was to be terminated and that supplies of unprocessed HPF would no longer be available. OPG was however also informed that HPF would be supplied under the terms of the terminated supply agreement between 1 April 2002 and 31 December 2002 on the condition that orders specifying amounts and shipping dates during this period were provided to DuPont prior to 31 March 2002. From 11 January 2002 OPG continued to contact DuPont in an effort to secure long term supplies of unprocessed HPF beyond 31 March 2002.

- 8 On 15 May 2002 OPG complained to the OFT that DuPont had abused its dominant position as the sole worldwide manufacturer and supplier of unprocessed HPF by refusing to continue to supply this product to OPG beyond 31 December 2002.

The OFT's investigation

- 9 Following an initial examination of OPG's complaint the OFT had reasonable grounds for suspecting an infringement of section 18 (the Chapter II prohibition) of the Competition Act 1998 (the Act) and commenced an investigation on 29 July 2002. Formal notices under section 26 of the Act requiring the provision of specified information and documents for the purposes of the investigation were sent to DuPont and nine undertakings to which DuPont previously or currently supplied unprocessed HPF. Information was also voluntarily provided by certain potential customers and business associates of OPG and separate meetings were held by the OFT with representatives of Dupont and OPG and their respective legal advisors in November and December 2002.

II LEGAL AND ECONOMIC ASSESSMENT

Introduction

- 10 Section 18 of the Act prohibits conduct by one or more undertakings which amounts to the abuse of a dominant position in a market if it affects trade within the United Kingdom or part of it. Under section 25 of the Act, the OFT may conduct an investigation if there are reasonable grounds for suspecting that the Chapter II prohibition has been infringed. Under section 60 of the Act, in the application of the Chapter II prohibition the OFT is required to ensure that there is no inconsistency with the principles laid down by the EC Treaty and the European Court and any relevant decision of the European Court. The OFT must also have regard to any relevant decision or statement of the European Commission.

Market definition

- 11 For the purposes of the Chapter II prohibition, dominance is assessed within a relevant economic market. The relevant market has two dimensions: the relevant goods or services (the product market) and the geographic extent of the market (the geographic market).

PRODUCT MARKET

- 12 The *Commission Notice on the definition of the relevant market for the purposes of Community competition law*,¹ states that a relevant product market comprises 'all those products and/or services which are regarded as interchangeable by any reason of the products' characteristics, prices and their intended use'.²
- 13 Holography is the process by which three dimensional visual information is recorded, stored and replayed and a hologram refers to the flat 'picture' that displays a multi-dimensional image under proper illumination. Holograms are most commonly produced using silver halide, embossing or photopolymer film. The production methods and end products of each of these methods differ in a number of important respects as discussed below.

Silver halide method

- 14 Silver chloride, silver bromide and silver iodide are collectively known as silver halides. These substances are used in various proportions to produce silver halide film which is used in hologram production. The website of the

¹ (OJ C 372, 3.12.1997, p.5).

² Above note 1, paragraph 7.

International Hologram Manufacturers Association³ (the IHMA) describes the silver halide method as being 'most suitable for one-off products and low volume production' and states that silver halide film is the highest priced holographic material available. OPG has also confirmed that it considers the silver halide method unsuitable for mass produced holograms. OPG has stated that silver halide film is not easy to obtain in large quantities since 'the only current supplier of commercially available silver halide based film is Slavich, a small company based in Russia. Delivery is erratic and production uncertain'.⁴ Slavich's 2003 price list also confirms that silver halide is comparatively more expensive than HPF and the materials used in the embossing method [see paragraph 17 below]. For example, five 300 x 400 mm sheet packs of Slavich's VRP-M, PFG-01 or PFG-03M silver halide film are priced at US\$125 (which equates to over US\$8 per square inch).

- 15 Holograms produced using the silver halide method are most commonly used in specialised, large scale or higher cost applications (for example, trade show and corporate displays) or small scale fine art applications. Unlike HPF, silver halide film is produced in sheet form (rather than rolls), it requires a Helium-Neon laser for exposure and holograms are produced using a 'wet' production technique. The silver halide method produces a duller image than the HPF method and silver halide film must be backed by a black opaque laminate to be made visible.

Embossing method

- 16 The embossing method, which is comparable to printing, allows large runs of holograms to be produced in a cost effective manner by transferring complex patterns to plastic or foil recording materials. Light interacts with these patterns to create a holographic image. Examples of embossed holograms can be found on clothing, wrapping paper, video boxes, credit cards etc. DuPont estimates that the vast majority (between 95 and 98 per cent) of mass produced holograms are currently created using the embossing method. The embossing method is described by the IHMA as being the cheapest method of hologram production and is subsequently used for the vast majority of mass produced holograms. A widely recognised drawback of this method is that embossed holograms lack depth in comparison to holograms produced using other methods.

³ www.ihma.org.

⁴ Letter from OPG dated 15 May 2002, page 21, paragraph 10.3.

HPF method

- 17 Holograms produced using the HPF method can be used for a variety of purposes, from one-off specialist items to mass produced applications. Whilst less expensive to produce than silver halide holograms, HPF holograms are significantly more expensive to produce than similar sized embossed holograms due to the higher cost of the materials used in the process. Therefore HPF holograms tend to be used where higher quality and higher resolution is required in large production runs. DuPont has confirmed that the price of material used in the embossing method will typically be in the range of [*confidential information removed*] per square inch in contrast to [*confidential information removed*] per square inch for HPF.⁵
- 18 The HPF production process involves embedding HPF between polyester layers to produce a hologram which has high diffraction efficiency (i.e. it has lower light requirements) and high resolution (i.e. detailed imaging). HPF uses 'dry' processing techniques (essentially HPF is baked in a special scroll oven) and the film must be laminated to photosensitive material following exposure using specialised equipment. DuPont's website claims that the enhanced quality of HPF holograms differentiates them from embossed holograms:
- 'Our photopolymer holograms are the brightest and most viewable holograms available today, containing up to five times the resolution and detail found in more readily available embossed holograms'.⁶
- 19 Unlike other hologram production techniques which capture the image as only a surface-relief pattern, HPF holograms record the image throughout the entire thickness of the film resulting in a much higher density of recorded information.
- 20 One might expect there to be a degree of demand side substitution between holograms produced using different processes. However, in addition to the differences in the physical properties and processes used in their production described above both OPG and DuPont highlight that HPF is the only substance capable of producing specialised holograms of the very highest quality and resolution. This feature, together with the significant difference in cost between unprocessed HPF and materials used to produce embossed and silver halide holograms, suggests that the degree of demand side substitution for silver halide, embossing or unprocessed HPF will be marginal (particularly where holograms are produced on a large scale). Furthermore, the exclusive rights enjoyed by DuPont in respect of HPF result in an absence of supply side substitutability in the production of unprocessed HPF.

⁵ E-mail from Cleary, Gottlieb, Steen & Hamilton to OFT dated 12 February 2003.

⁶ www.dupont.com/holographics/security.html.

- 21 Given the factors outlined above, although we have not reached a firm view on the appropriate product market in this case, it is likely that a discrete product market exists for the manufacture and supply of unprocessed HPF.

GEOGRAPHIC MARKET

- 22 DuPont has exclusive rights to produce and distribute HPF throughout the world. It has only supplied it to a very limited number of companies worldwide (as well as using unprocessed HPF itself). Unprocessed HPF is shipped directly from DuPont's production facilities in the United States to customers based in the USA, Hong Kong, Germany, Japan and the UK. This suggests that the geographic market for the manufacture and supply of unprocessed HPF is worldwide.

CONCLUSION

- 23 The OFT considers that the relevant market for the purposes of this decision is likely to be the market for the manufacture and supply of unprocessed HPF worldwide. Unprocessed HPF is an input into holographic products traded in downstream markets for graphic arts applications, security and authentication applications and specialised industrial applications.

Dominance

- 24 The European Court has established that a dominant position 'relates to a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of consumers'.⁷ The Court has further stated that dominance can be presumed in the absence of evidence to the contrary if an undertaking has a market share persistently above 50 per cent.⁸
- 25 DuPont considers that HPF is only one of a number of alternative technologies used to manufacture holograms and that the HPF method of producing holograms accounted for only around 3.5 per cent of total worldwide hologram production in 2001. Accordingly, DuPont argues that it does not hold a dominant market position. However, given that Dupont holds exclusive worldwide rights relating the manufacture and distribution of unprocessed HPF, on the assumption that the manufacture and supply of unprocessed HPF worldwide is the correct

⁷ *United Brands Co v Commission* case 27/76 [1978] 1 CMLR 429, para. 65.

⁸ *Case C62/86 AKZO Chemie DB v Commission* [1993] 5 CMLR 215.

relevant market, it follows that DuPont has a dominant position in the market for the manufacture and supply of unprocessed HPF worldwide.

Alleged abuse

26 The European Court has said that:

'The concept of an abuse is an objective concept relating to the behaviour of an undertaking in a dominant position which is such as to influence the structure of a market where, as a result of the very presence of the undertaking in question, the degree of competition is weakened and which, through recourse to methods different from those which condition normal competition in products or services on the basis of the transactions of commercial operators, has the effect of hindering the maintenance of the degree of competition still existing in the market or the growth of that competition.'⁹

27 The OFT takes the view that, depending upon the circumstances, a refusal to supply an existing customer by a dominant undertaking may constitute an infringement of the Act if no objective justification can be demonstrated.¹⁰ Whether such conduct by a dominant undertaking actually represents an abuse will however be a question of fact and degree taking into consideration the intention of the dominant undertaking in pursuing the conduct, the effect (both direct and indirect) of the conduct on the undertaking's competitors and customers and the extent to which the conduct is plainly restrictive of competition.

28 The OFT accepts that it is only in exceptional circumstances that competition law should deprive an undertaking of the freedom to determine its trading partners.¹¹ Typically these circumstances arise where the product concerned is an essential facility or where refusal to supply by a dominant undertaking eliminates competition in a downstream or associated market.

29 Refusing access to an essential facility may, depending on the circumstances, amount to an abuse of a dominant position.¹² The OFT considers that treating unprocessed HPF for use in graphics arts applications as an essential facility would be too broad an interpretation of that concept. The essential facilities concept is generally applied to facilities such as ports utility distribution

⁹ Case 85/76 *Hoffmann-La Roche v Commission* [1979] ECR 46, para. 91.

¹⁰ Cases 6 and 7/73 *Commercial Solvents v Commission* [1974] ECR 223 [1974] 1 CMLR 309.

¹¹ Opinion of Advocate General Jacobs in Case C-7/97 *Oscar Bronner GmbH & Co. KG v Mediaprint Zeitungs-und Zeitschriftenverlag GmbH & Co KG* [1998] ECR I-7791, [1999] 4 CMLR 112.

¹² See for example *Sea Containers / Stena Sealink* 94/19 (1994) OJ L15/8.

networks and some telecommunications networks (for example) where access is indispensable in order for the would-be customer to compete¹³ and duplication of the facility is impossible or extremely difficult.¹⁴ Unprocessed HPF is the product of research and development by DuPont. The effect of treating every new product which, at the time of its discovery, had unique properties as an essential facility (if this product was a necessary input into a downstream market), would be to permit an excessive degree of interference with the freedom of undertakings to choose their own trading partners. As stated above, competition law should have this effect only in exceptional circumstances.

- 30 In *Commercial Solvents*, which examined a dominant undertaking's refusal to supply raw materials which were inputs into a downstream market in which that undertaking was itself active, the European Court said that:

'An undertaking which has a dominant position within the market in raw materials and which, with the object of reserving such raw materials for manufacturing its own derivatives, refuses to supply a customer, which is itself a manufacturer of these derivatives, and therefore risks eliminating all competition on the part of this customer, is abusing its dominant position.'¹⁵

- 31 The risk that DuPont's refusal to supply unprocessed HPF to OPG will eliminate competition on a downstream or neighbouring market does not appear to be a concern in this case as DuPont has confirmed that it will cease producing HPF holograms for graphic arts applications in competition with OPG.
- 32 At a meeting with OFT officials DuPont confirmed that its sales of processed HPF for graphic arts applications are 'to be phased out', and in its response to a section 26 notice DuPont confirmed that its own sales of holograms for use in graphic arts applications fell by [confidential information removed] from [confidential information removed] in 2001 to [confidential information removed] in 2002 as a direct result of this planned withdrawal.
- 33 DuPont has subsequently confirmed that it has now ceased using HPF to produce standard holograms for use in graphic arts applications and that the process of ceasing production of all HPF holograms will be completed by 2004. It therefore appears unlikely that DuPont's refusal to supply unprocessed HPF to OPG is aimed at eliminating competition in any downstream or associated market in which OPG is currently active.

¹³ *Oscar Bronner GmbH & Co. KG v Mediaprint Zeitungs-und Zeitschriftenverlag GmbH & Co KG* [1998] ECR I-7791, [1999] 4 CMLR 112.

¹⁴ *European Night Services v Commission* [1998] ECR II -3141 [1998] 5 CMLR 718.

¹⁵ Above note 10.

- 34 Although not considered material to this decision, DuPont has informed the OFT that it has adopted an overall strategy of promoting the security and authentication applications of HPF. Part of this strategy is the large scale supply of unprocessed HPF only to undertakings with experience of and premises already suited to highly secure production. DuPont considers that in order to obtain large scale contracts with these customers it must be able to guarantee complete supply chain security. Du Pont has concerns about its ability to provide this guarantee if it continues to supply HPF to customers for use in graphic arts applications.

III CONCLUSION

35 On the basis of the information available, the OFT does not consider that the Chapter II prohibition has been infringed by DuPont's refusal to continue to supply unprocessed HPF to OPG. The OFT considers unprocessed HPF for use in graphics arts applications cannot be treated as an essential facility and in view of DuPont's decision to withdraw from the graphic arts sector, in which OPG competes, the refusal does not appear to be anti-competitive. As available information does not support the finding of infringement, this investigation has been terminated and the case file closed.

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