

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MARYLAND

IN RE TITANIUM DIOXIDE ANTITRUST  
LITIGATION

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CIVIL ACTION No.: RDB-10-0318

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THIS DOCUMENT RELATES TO:  
ALL ACTIONS

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**MEMORANDUM OPINION**

This class action concerns an alleged price-fixing conspiracy in the market for titanium dioxide.<sup>1</sup> The Plaintiff class representatives Haley Paint Company, Isaac Industries, Inc., and East Coast Colorants, LLC, doing business as Breen Color Concentrates, and the class of titanium dioxide purchasers whom they represent (together, “Plaintiffs”) claim that Defendants Kronos Worldwide Inc. (“Kronos”), and Cristal USA Inc., formerly known as Millennium Inorganic Chemicals, Inc. (“Millennium”), together with E.I. du Pont de Nemours & Co. (“DuPont”), Huntsman International LLC (“Huntsman”), and Tronox Inc. (“Tronox”), engaged in an unlawful conspiracy in violation of Section 1 of the Sherman Act, 15 U.S.C. § 1, to fix, raise, or maintain the price of titanium dioxide in the United States.<sup>2</sup>

<sup>1</sup> Titanium dioxide (“TiO2”) is a “dry chemical powder that is the world’s most widely used pigment for providing whiteness, brightness, and opacity . . . to many products, particularly paints and other coatings.” *See* Mem. Op. Granting Mot. for Class Certification 2, ECF No. 337 (internal quotation omitted).

<sup>2</sup> This case was originally filed against five entities: DuPont, Huntsman, Kronos, Millennium, and the National Tiioxide Company Limited. *See* Am. Consolidated Compl. (ECF No. 51). In addition, the Consolidated Complaint alleged that the following persons were co-conspirators, though they were not named as parties: Lyondell Chemical Company (“Lyondell”); Tronox; the consulting company International Business Management Associates, Inc. (“IBMA”); and James R. Fisher (“Fisher” or “Jim Fisher”), the President and Chief Executive Officer of IBMA. Alleged co-conspirators Lyondell and Tronox were never named in this action, presumably because each filed for bankruptcy

Plaintiffs allege that as a consequence of the unlawful conspiracy, the Defendants were successful in charging artificially inflated prices for titanium dioxide.

Presently pending before this Court are two Motions for Summary Judgment filed by Kronos (ECF No. 432) and Millennium (ECF No. 439), as well as a Joint Motion for Summary Judgment submitted by the two Defendants jointly (ECF No. 442).<sup>3</sup> The parties' submissions have been reviewed, and a hearing was held on June 25, 2013. For the reasons that follow, this Court DENIES the Motions for Summary Judgment filed by Kronos (ECF No. 432) and Millennium (ECF No. 439) and the Joint Motion for Summary Judgment (ECF No. 442), as it pertains to the remaining Defendants Kronos and Millennium.

#### BACKGROUND

This Court reviews the facts and all reasonable inferences in the light most favorable to the nonmoving party. *Scott v. Harris*, 550 U.S. 372, 378 (2007). Antitrust law, however, “limits the range of permissible inferences from ambiguous evidence,” such that “conduct as consistent with permissible competition as with illegal conspiracy does not, standing alone, support an inference of antitrust conspiracy.” *Matsushita Electric Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 588 (1986). The Plaintiff class representatives, Haley Paint Company, Isaac Industries, and East Coast Colorants, LLC, doing business as Breen Color

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under Chapter 11 of the United States Bankruptcy Code in January 2009. Further, the Plaintiffs did not name IBMA or Jim Fisher as parties to this case. The National Titanium Dioxide Company Limited, which is domiciled in the Kingdom of Saudi Arabia, was dismissed from this action for lack of personal jurisdiction on March 31, 2011. *See* Mot. Dismiss Op. & Order, ECF Nos. 103 & 104. Finally, on August 6, 2013, this Court ordered a stay of all proceedings between the Class Plaintiffs, DuPont, and Huntsman, as those parties have reached agreements in principle to settle and release the class claims in this litigation, as against DuPont and Huntsman. *See* Stay Order, ECF No. 484. All told, the remaining Defendants in this case are Millennium and Kronos.

<sup>3</sup> The Defendants' pending Motion to Compel Arbitration and Stay Proceedings, Dismiss for Improper Venue, Strike Jury Demands, and Amend the Class Definition (ECF No. 423) will be addressed in a separate Memorandum Opinion.

Concentrates, are small purchasers of titanium dioxide. They bring this case under Section 1 of the Sherman Act, alleging that the Defendants, as well as DuPont, Huntsman, and Tronox Inc. (“Tronox”),<sup>4</sup> which are the market leaders in the production of titanium dioxide, conspired to fix prices during a period from February 1, 2003 to the present (the “Class Period”). They seek treble damages and injunctive relief under the Clayton Act, 15 U.S.C. §§ 4, 16.

The Plaintiff class representatives bring suit on behalf of a class defined as “[a]ll persons and entities who purchased titanium dioxide in the United States directly from one or more Defendants or Tronox, or from any predecessors, parents, subsidiaries, or affiliates thereof, between February 1, 2003, and the present.” Order Granting Mot. Certify 2, ECF No. 338. The Plaintiffs’ allegations center on the following evidence: the crisis in the titanium dioxide industry prior to the Class Period; DuPont’s entrance into a European trade group, the Titanium Dioxide Manufacturers Association (“TDMA”), which created greater opportunities for interaction among the pigment producers; the introduction of a statistics program, which allowed the Defendants to collect global industry information; the routine communication of confidential, commercially sensitive information to other firms and industry consultants during the Class Period; repeated price increase announcements allegedly executed in lockstep by the Defendants Millennium and Kronos, DuPont, Huntsman, and Tronox; and interfirm sales of titanium dioxide.

At the outset, this Court notes that the Plaintiffs’ case stands on circumstantial evidence alone—there is no “smoking gun” that explicitly reveals an agreement to conspire.

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<sup>4</sup> Tronox is a former subsidiary of Kerr-McGee Corporation (“Kerr-McGee”). This Memorandum Opinion refers to the company as Tronox and Kerr-McGee interchangeably.

Nevertheless, in the absence of an admission of guilt by the Defendants, the Plaintiffs may rely on purely circumstantial, or “ambiguous,” evidence from which the existence of a conspiracy may be inferred. *See In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651, 654, 661-62 (7th Cir. 2002) (“[M]ost cases are constructed out of a tissue of [ambiguous] statements and other circumstantial evidence, since an outright confession will ordinarily obviate the need for a trial.”).

A. Declines in Price and Consumption of Titanium Dioxide: 1990s through 2001

In the 1990s, the titanium dioxide industry suffered substantial declines in consumption and price. *See generally* Pls.’ App. M, ECF No. 451-28 (documenting presentations, reports, e-mails, and articles on the subject of unprecedented declines in price and consumption of titanium dioxide). A Huntsman marketing report in 2001, for example, indicated that the real price per ton of titanium dioxide plummeted from \$3,200 in 1991 to \$1,900 in 2000. *See id.* at entry 08/xx/2001 (no exact date in original). An editorial written by industry consultant Jim Fisher (“Fisher”) of International Business Management Associates, Inc. in 2002 confirmed these declines. *See id.* at entry 05/24/2002; *see also* PX 53, ECF No. 451-88. Specifically, Fisher spoke of a 6 percent decline in world pigment consumption leading to lower price levels “not seen since the early 1990s.” *Id.* Echoing this evidence, a Millennium “Corporate Strategy” report described a decline in “industry profitability . . . driven by overcapacity and a decline in real prices . . . over the last decade.” Pls.’ App. M, entry 04/02/2003.

In particular, 2001 was considered a “disastrous” year. *Id.* at entry 06/11/2002. Two titanium dioxide plants—Millennium’s plant in Baltimore, Maryland and Kerr-McGee’s plant

in Antwerp, Belgium—“were forced” to close in 2001, and the pigment producers were “bloodied badly” by falling prices and reduced profit margins. *Id.* at entries 02/01/2002 & 06/17/2002. Ian Edwards, DuPont’s Global Business Director, was quoted as saying that in 2001 “capacity utilization was lower than at any point in the 1990s,” while Gary Cianfichi, Millennium’s Director of Sales for Europe, explained that prices declined by about 15 percent due to poor demand, utilization, and operating rates. *Id.* at entry 10/21/2002. As a Millennium “Press Briefing” presentation summarized, “TiO<sub>2</sub> profitability hit an all time low” in the fourth quarter of 2011. *Id.* at entry 11/18/2002. Because of these declines in the market, the Plaintiffs argue that the Defendants were motivated to create a cartel.

B. Introduction of DuPont in the Titanium Dioxide Manufacturers Association and Formation of the Global Statistics Program in 2002

DuPont is the global leader in the titanium dioxide industry. Its pigment production occurs in North America, and it enjoys a cost advantage over its competitors because of its relatively inexpensive process of production called the chloride process. *See generally* Pls.’ App. O, ECF No. 451-30. Kronos, Millennium, Huntsman, and Kerr-McGee, on the other hand, are the major European producers of titanium dioxide. They are members of the Titanium Dioxide Manufacturers Association (“TDMA”), a trade group founded by the European producers of titanium dioxide and part of a larger trade association for the European chemical industry, the Conseil Européen des Fédérations de l’Industrie Chimique (“CEFIC”), based in Brussels, Belgium. *See* PX 9, ECF No. 451-44. Prior to the Class Period, the TDMA members participated in a statistics program through which they shared information regarding their titanium dioxide production. *See id.* Because the TDMA

included only the European pigment producers, the program's data was limited to the European section of the industry. *See id.*

DuPont sought membership in the TDMA, but until 2002 the TDMA restricted its membership to European producers. *See id.* According to Millennium's Gary Cianfichi, some TDMA members preferred to exclude non-European producers to prevent their access to the valuable production information shared in the TDMA's statistics program, "especially consumption of TiO<sub>2</sub> and inventory information." *Id.* at MIC0024893. Other TDMA members, however, favored including DuPont in the group, because with the addition of DuPont, the statistics program could be expanded to include global production data. *Id.* Millennium, for one, advocated expanding the TDMA to include DuPont. *See id.*

As early as January 27, 2000, the TDMA held a meeting at which the members discussed the possibility of expanding the group's membership to include non-European producers and forming a new global statistics program. *See* PX 1, ECF No. 451-36. Discussions continued at TDMA meetings throughout 2000 and 2001, with some members, in particular Kerr-McGee, voicing opposition to the inclusion of DuPont, while others remained convinced of its advantage to the industry. *See, e.g.,* PX 2, ECF No. 451-37; PX 5, ECF No. 451-40; PX 11, ECF No. 451-46; PX 16, ECF No. 451-51. In September 2001, the TDMA's General Committee held a meeting at CEFIC's headquarters in Brussels. *See* PX 16 at MIC04280832. At that meeting, the members agreed to move forward with a new global statistics program ("the Global Statistics Program"), in which the current TDMA members and DuPont would participate. *See* PX 21 at MIC0325371, ECF No. 451-56. To include DuPont, the committee acknowledged that the TDMA would have to amend its

operating rules. *See* PX 16 at MIC04280832. In addition, the committee determined that the Global Statistics Program would serve as the TDMA's sole statistics program, and that the onus would be on individual TDMA members to ensure that their participation in the program complied with their home countries' antitrust laws. *See id.*

At a TDMA General Committee meeting on January 24, 2002, in Saariselka, Finland, the TDMA members unanimously agreed to change the TDMA operating rules and permit DuPont to participate as an "Associate Member." PX 29, ECF No. 451-64. An Associate Member could participate in the Global Statistics Program but would have no voting rights in the TDMA. *Id.* at MIC0025554. The concept of "Associate Membership" was specially created to permit DuPont, as well as a Japanese titanium dioxide manufacturer ISK,<sup>5</sup> to join the TDMA without having to open the trade group to other companies. *Id.*

Around the time of the January 24, 2002 meeting, industry consultant Jim Fisher was also proposing to the Defendants his own program for collecting sales data from all of the major titanium dioxide producers. *See* PX 27, ECF No. 451-62. As Fisher's proposal explained, it would be "critical for producers to have accurate information about their success in the market as well as knowing share positions of their competitors for sales as well as for inventory levels." *Id.* at IBMA-Fisher 000568. Just a few months later, Fisher authored an editorial for a pigment industry newsletter called "TiO<sub>2</sub> Worldwide Update," which is issued by a company called ARTIKOL, in which he commented on the industry's lack of profitability in 2001 due to increased pigment inventories and a "steady fall in pigment prices." PX 53 at IBMA-Fisher 001783. "To avoid sharp swings in TiO<sub>2</sub> pigment

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<sup>5</sup> ISK is not involved in this action.

selling prices and uncontrolled growth in pigment inventories,” Fisher recommended that pigment producers “more carefully monitor trends in end-use sectors and trends in demand for end-use products.” *Id.* at IBMA-Fisher 001784. Though the Defendants did not take up Fisher’s proposal, they moved forward with the TDMA’s Global Statistics Program. Fisher’s proposal and the changes to the TDMA in 2002 demonstrate that members of the titanium dioxide industry and industry consultants were becoming convinced of the need to share industry information.

Just days after the January 24, 2002 meeting, the Defendants increased the prices of titanium dioxide globally. DuPont announced a price increase on January 28, 2002. *See* PX 32, ECF No. 451-67. This increase was followed and matched by Millennium on January 30, 2002, Kronos on February 1, 2002, and Huntsman on February 12, 2002. *See* Pls.’ App. B, ECF No. 451-14 (cataloging the dates and contents of price increase announcements published by Millennium, Kronos, DuPont, Huntsman, and Tronox between January 28, 2002, and November 1, 2008).

At a TDMA meeting on September 24, 2002, DuPont and the Japanese titanium dioxide producer ISK were formally approved as Associate Members. *See* PX 59 at MIC0020230, ECF No. 451-94. By that time, the details of the Global Statistics Program were set. The TDMA agreed that the program would involve monthly reporting of the previous month’s sales production and inventory figures, starting with the October 2002 period, to CEFIC. PX 57 at KROWW00165909, ECF No. 451-92. CEFIC would then consolidate the data and return it to the TDMA members via e-mail. *Id.* at KROWW00165913. The program data that CEFIC collected would represent end use



figures rather than regional figures, in order “to maintain data confidentiality.” *See* PX 59 at MIC0020230. Kronos warned the TDMA members that the statistics generated by the Global Statistics Program were confidential and could not be shared with anyone outside of the TDMA. PX 60, ECF No. 451-95. In addition, all of the TDMA members agreed to a “one-off” exchange of historical data for the years 2000 through 2002. PX 59 at MIC0020230.

The Plaintiffs argue that by expanding the TDMA’s membership to include DuPont and creating the Global Statistics Program, the Defendants were able to disaggregate the consolidated statistical data provided by CEFIC and track individual firm inventories, market share, and capacity utilization. *See generally* Pls.’ App. E. This theory is supported by an e-mail written by Paul Bradley, a Huntsman employee, on September 18, 2002, in which he discussed the “new improved” Global Statistics Program. PX 58, ECF No. 451-93. Bradley wrote that with the data from DuPont, ISK, and the European TDMA members, the program would account for “75-80% of world production,” and Huntsman would be able “to derive Kronos (Canada), Millennium (Brazil), and DuPont (Brazil/Mexico) production as a total number by difference (CEFIC Americas less USA).” *Id.* at HILLC006005282. Under the old statistics program, Bradley noted, they were left to estimate that production information. *Id.*

The Plaintiffs allege that because of the TDMA’s Global Statistics Program, the Defendants were able to accomplish what Fisher had predicted months earlier—“avoid sharp swings in pigment selling prices and uncontrolled growth in pigment inventory.” PX

53 at IBMA-Fisher 001784. Sections C and D of this Memorandum Opinion address the Defendants' changed behavior following the initiation of the Global Statistics Program.

C. Parallel Price Increase Announcements

In Plaintiffs' Appendix B, the Plaintiffs submit a detailed record of price increase announcements by the Defendants Millennium and Kronos, as well as DuPont, Huntsman, and Tronox, characterizing this behavior as a "paradigm shift." *See* Pls.' App. B, ECF No. 451-14. They point first to the series of announcements following the January 24, 2002 TDMA meeting in Saariselka, Finland, which this Court discussed above. Four days after that meeting, DuPont announced a price increase of \$0.05 per pound, effective March 1, 2002.<sup>6</sup> Then Huntsman, Kronos, Millennium, and Tronox all followed suit with a price increase of the same amount and with the same effective date. *See* Pls.' App. B at effective date 3/1/2002. Another series of price increase announcements was initiated on June 11, 2002, when DuPont announced a price increase of \$0.06, to be effective on July 1, 2002. *See id.* at effective date 7/1/2002. Within three days, Millennium and Kronos matched that price increase. *See id.* Two weeks later, Huntsman announced a price increase of equal amount, effective August 1, 2002, which Tronox followed. *See id.*

These particular instances represent the beginning of a long pattern of seemingly coordinated price increase announcements by the Defendants Millennium and Kronos, as

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<sup>6</sup> *See* Pls.' App. B at effective date 3/1/2002. Because titanium dioxide contracts were individually negotiated, the announced price or "list price" was often different from the price that customers actually paid. Nevertheless, the price increase announcements may be indicative of collusion, because an agreement to fix prices is a Section 1 violation, regardless of whether defendants are successful in charging those prices. *In re Flat Glass Antitrust Litig.*, 385 F.3d 350, 362-62 (3d Cir. 2004) ("[A] horizontal agreement to fix prices need not succeed for sellers to be liable under the Sherman Act." (citing *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 224 nn.59, 60 (1940))).

well as DuPont, Huntsman, and Tronox, during the Class Period. In 2003, the five pigment producers executed two sets of price increase announcements. In January 2003, Millennium, Kronos, DuPont, and Huntsman each announced a price increase of \$0.06 per pound, to be effective on February 1, 2003. *See id.* at effective date 2/1/2003. Tronox published a price increase announcement of the same amount, effective February 15, 2003, within two weeks of the Defendants' announcements. *See id.* at effective date 2/15/2003. The second wave of announcements came in September 2003, when DuPont led a price increase of \$0.06, effective October 1, 2003. *See id.* at effective date 10/1/2003. Defendants Millennium and Kronos, as well as Huntsman and Tronox, followed suit within twenty days. *See id.*

In 2004, Millennium, Kronos, DuPont, Huntsman, and Tronox again engaged in four parallel, or nearly parallel,<sup>7</sup> price increases. *See id.* at effective dates 3/15/2004; 6/15/2004 & 7/1/2004; 10/1/2004; and 1/1/2005. These announcements differ from those of 2002 and 2003, however, because DuPont did not always announce first. While DuPont led one price increase on May 25, 2004, *see id.* at effective dates 6/15/2004 & 7/1/2004, Tronox led a price increase in February 2004 and Millennium led two in September and November 2004. *See id.* at effective dates 3/15/2004; 10/1/2004; and 1/1/2005. Each Defendant matched these price increase announcements within a relatively short period of time—and in one case, all of the pigment producers followed suit within one week. *See id.* at effective date 3/15/2004.

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<sup>7</sup> By nearly parallel, this Court refers to sets of price increase announcements in which the amounts differed by \$0.01 or \$0.02 cents, or where a pigment producer's announced increase was to be effective on a later date. *See, e.g.,* Pls.' App. B at effective dates 6/15/2004 (all pigment producers but Kronos announcing a price increase of \$0.04 per pound, to be effective on June 15, 2004) & 7/1/2004 (Kronos announcing a price increase of \$0.04, effective July 1, 2004, just after the other four pigment producers).

From 2005 through 2010, the Defendants engaged in a similar pattern of pricing behavior. All in all, Millennium, Kronos, DuPont, Huntsman, and Tronox published parallel, or in a few cases nearly parallel, price increase announcements four times in 2005,<sup>8</sup> once in 2006,<sup>9</sup> twice in 2007,<sup>10</sup> three times in 2008,<sup>11</sup> three times in 2009,<sup>12</sup> and four times in 2010.<sup>13</sup> While DuPont initiated the price increases in most cases, Kronos and Millennium occasionally announced first. *See generally* Pls.’ App. B. Notably, Huntsman never led a price increase announcement until August 24, 2010, after the Plaintiffs filed their initial Complaint in this action on February 29, 2010.<sup>14</sup> On November 8, 2010, Huntsman initiated another price increase announcement, which all of the Defendants matched. *See id.* at effective date 1/1/2011.

All of these price increase announcements occurred in relatively close proximity, but a few particularly demonstrate the five pigment producers’ tendency to execute the announcements in lockstep. For example, DuPont announced a price increase of \$0.06 per pound on September 29, 2005, at 11:00 a.m. E.S.T., which Tronox matched within seven hours and Kronos matched within eight hours. *See* PX 134, ECF No. 415-169. That evening, Millennium’s Jim Clover sent an e-mail to Gary Cianfichi and others at Millennium, commenting that their competitors’ announcements were “too much fun to ignore.” PX

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<sup>8</sup> *See id.* at effective dates 4/1/2005; 7/1/2005; 10/1/2005; and 1/1/2006.

<sup>9</sup> *See id.* at effective dates 6/15/2006 & 7/1/2006.

<sup>10</sup> *See id.* at effective dates 7/1/2007; and 10/15/2007 & 10/17/2007.

<sup>11</sup> *See id.* at effective dates 1/15/2008 & 1/18/2008; 7/1/2008 & 8/1/2008; and 9/2/2008, 9/3/2008, 9/4/2008 & 9/5/2008.

<sup>12</sup> *See id.* at effective dates 8/1/2009; 10/1/2009; and 1/1/2010.

<sup>13</sup> *See id.* at effective dates 4/1/2010; 6/1/2010; 9/1/2010, 9/15/2010 & 10/1/2010; and 1/1/2011.

<sup>14</sup> *See id.* at effective date 9/1/2010. It is noteworthy that Huntsman, a self-described “small fry” among producers of titanium dioxide, had the lowest United States market share of any of the original five Defendants during the Class Period. Huntsman Mot. Summ. J. 4, ECF No. 430.

135, ECF No. 415-170. Millennium and Huntsman announced parallel price increases the next day. *See* Pls.’ App. B at effective date 10/1/2005. Similarly, DuPont announced a \$0.06 per pound price increase, to be effective January 1, 2010, on December 7, 2009. *See id.* at effective date 1/1/2010. Two days later, on December 9, 2009, Kronos, Millennium, and Tronox matched the increase, and Huntsman followed suit on December 11, 2009. *See id.* These instances suggest that the Defendants engaged in little deliberation before making their pricing decisions.

The context surrounding these price increase announcements is also important to consider. The TDMA’s General Committee met in person three times a year, almost always in January, May, and September. *See generally* Pls.’ App. A (cataloging competitor contacts during the Class Period). The Plaintiffs proffer that each price increase announcement came within sixty days of a TDMA General Committee Meeting. *See id.* This fact is of limited value, considering that with three meetings in January, May, and September, a sixty-day period before and after each meeting covers nearly every day of the year. The Plaintiffs also submit, however, that 88 percent of the price increase announcements listed in Plaintiffs’ Appendix B came within 30 days of a General Committee meeting of the TDMA. *See* Pls.’ Apps. A & B. This fact deserves greater attention, as it suggests that the Defendants may have used the TDMA meetings to communicate their pricing plans, coordinate price increases, and confirm that each competitor would follow the leader on a price increase.

A comparison of the price increases documented in Plaintiffs’ Appendix B with those that occurred in the prior eight-year period gives support to the Plaintiffs’ characterization of the Defendants’ changed behavior as a “paradigm shift.” The Plaintiffs submit Plaintiffs’

Exhibit 92, a chronology of titanium dioxide price increases in the United States from 1998 through 2004. *See* PX 92, ECF No. 451-127. Whereas Appendix B documents eight price increase episodes involving all of the pigment producers at issue—the Defendants Millennium and Kronos, DuPont, Huntsman, and Tronox—during a three-year period from January 2002 through January 2005, there was only one industry-wide increase in 2000 and none in 2001. *Compare* Pls.’ App. B at effective dates 3/1/2002-1/1/2005, *with* PX 92. Even more to the point, during the entire 1994-2001 period, Millennium’s predecessor SCM, Kronos, DuPont, Huntsman, and Tronox together engaged in just one parallel price increase, in 1995. *See* PX 92. There were just three price increases in which four of the five pigment producers at issue participated—in 1994, 1998, and 2000. *See id.* These figures stand in stark contrast to the nine-year period from 2002 through 2010, during which all of the pigment producers participated in twenty-five parallel price increase announcements. *See* App. B. Finally, while there was a rescinded price increase by Kronos in September 1994, *see* PX 92, no price increase was rescinded by any of the pigment producers during the entire Class Period. After a careful analysis of the preceding period of eight years—before DuPont joined the TDMA and the Global Statistics Program was initiated—it becomes clear that the frequency and nature of the Defendants’ price increase announcements changed dramatically.

Finally, the Plaintiffs urge that these price increases occurred during a period in which demand for titanium dioxide in the United States was either low and stable, or in decline. *See generally* Pls.’ App. K. The Plaintiffs also emphasize that this period was marked by excess industry capacity. *See generally* Pls.’ Apps. D & K. These market factors would generally

result in reduced prices. Thus, the Plaintiffs contend, the titanium dioxide industry was conducive to price-fixing.

D. Increased Interfirm Communications and Other Evidence of Cartel Practices

The Plaintiffs also proffer a mass of evidence demonstrating increased communications among competitors, alleged signaling by competitors to each other of their intent to increase price, and the sharing of firm-specific titanium dioxide information with competitors and industry consultants, especially Jim Fisher, during the Class Period. *See, e.g.*, Pls.' App. A, ECF No. 451-13 (recording industry-wide and multi-lateral meetings of the pigment producers); Pls.' App. C, ECF No. 451-15 (documenting statements by the Defendants allegedly indicating motive, contact with competitors and industry consultants, parallel price increases, reliance on the Global Statistics Program data, and price signaling); Pls.' Apps. F1, F2 & F3, ECF Nos. 451-19, 20 & 21 (detailing communications between the Defendants and industry consultant Jim Fisher); Pls.' App. J, ECF No. 451-25 (noting alleged price signaling by the Defendants). In the interest of brevity, this Court focuses its attention on Plaintiffs' Appendix C, which is the most concise record of the issues that the Plaintiffs contend defeat summary judgment and raise genuine issues of material fact.

After careful review, this Court finds that Plaintiffs' Appendix C reveals the following: (1) statements by the Defendants that are suggestive of cartel behavior, including references to greater discipline and more informed decision making as a result of the sharing of production information; (2) announcements of price increases seemingly followed in lockstep, coupled with statements by the Defendants suggesting a goal of stabilizing relative market share in the industry; (3) the routine sharing of information between the individual

firms and industry consultant Jim Fisher; (4) increased communications regarding price increases shortly after the Defendants received the monthly consolidated data of the Global Statistics Program, as well as statements by the Defendants emphasizing the confidential nature of the program; and (5) statements by the Defendants indicating their awareness that their behavior might appear collusive. Some of the most demonstrative items included in Plaintiffs' Appendix C are described herein.

### 1. Greater Discipline

Statements by the pigment producers emphasizing industry discipline and more informed decision making suggest that the Defendants may have been engaging in cartel behavior. Around the time of a TDMA General Committee meeting held in Brussels on September 27, 2001, Millennium produced a "Strategic Planning Presentation" and included a slide titled "TiO<sub>2</sub> Industry Trends." *See* PX 22 at MIC04080305, ECF No. 451-57. The list of "Trends" included "[p]ossibly more discipline on pricing and capacity." *Id.* On April 17, 2002, David Vercollone of Millennium wrote to his colleagues at Millennium that the TDMA's Global Statistics Program was "an important effort for us to get the industry to make more informed decisions" and "the best opportunity we have in structuring industry data for all our collective needs." *See* PX 45 at MIC05771277, ECF No. 451-80. Vercollone's uses of "we" and "our" suggest he was speaking about the benefits of the Global Statistics Program to the members of the TDMA, not just Millennium.

At an industry-wide conference in Miami, Florida in February 2003, Millennium's former Vice President of Global Coatings Bruce Zwicker gave a presentation in which a slide referred to possible industry "tightness" in the future. *See* PX 69 at MIC00078617,



ECF No. 451-104. Ian Edwards, DuPont's Global Business Director for titanium dioxide, also presented at the conference. *See* PX 223, ECF No. 451-258. Subsequently, Edwards explained in an e-mail to others at DuPont that his "goal at the time had been to stress the need for the industry to get its' [sic] financial house in order." *Id.* Edwards added that the "written version," which he attached to the e-mail, "is fairly cautious in how [he] said that—verbally at the conference [he] was more direct." *Id.*

Finally, Millennium's John Hall sent an e-mail on December 14, 2007, to his colleague Jim Clover and others at Millennium regarding the need to "improve price." PX 179, ECF No. 451-214. Hall recommended that Millennium "[b]e disciplined, keep [its] volume, do not take others." *Id.* When asked at a deposition what Hall meant by "do not take others," he explained that he was referring to the volume of titanium dioxide sales of Millennium's competitors. PD6, Hall Dep. 48-49, ECF No. 451-328.

## 2. Coordinated Price Increases with the Goal of Stabilizing Market Share

Plaintiffs' Appendix C also contains numerous statements by the Defendants that are suggestive of coordinated price increase announcements, with a goal of stabilizing market share. On January 7, 2002, Dave Young of DuPont sent an e-mail to his colleagues regarding a "Price Increase Initiative." PX 25, ECF No. 451-60. Under the heading "Timing," Young described two alternatives. *Id.* The first was to announce the price increase on "February 4, effective March 1." *Id.* The second alternative involved a price increase announcement on "January 25, effective February 15." *Id.* The latter option, Young wrote, "could give our competitors a change [sic] to announce 'differently' on March 1." *Id.* On June 14, 2002, Connie Hubbard, DuPont's Competitive Intelligence Manager,

drafted an entry in DuPont's "Competitive Intelligence" database regarding a discussion she had with industry consultant Jim Fisher on June 7, 2002, several days before DuPont's June 11, 2002 price increase announcement. *See* PX 56, ECF No. 451-91. In the entry, Hubbard noted that Jim Fisher had called her to confirm that Huntsman had announced a "\$150/T increase" in North America. *Id.* Hubbard noted that "[a]s this call came before the DuPont announcement, [she] told [Fisher] that [she] had not seen any press release or announcement on Huntsman (or DuPont) and asked him his source." *Id.*

On August 25, 2004, Millennium's European sales director Tim Edwards sent an e-mail to Gary Cianfichi, regarding a draft price increase announcement. *See* PX 97, ECF No. 451-132. Edwards suggested that the October 1 announcement date was "a bit early," while an announcement on November 1 would give "others [a] chance to get on their horses." *Id.* On September 13, 2004, Bob Lee, Millennium's Chief Executive Officer, as well as Millennium's Deputy General Counsel and Director of Corporate Development, met with Tom Keenan, the President of Huntsman, and Mahomed Maiter, Huntsman's Vice President, in Baltimore, Maryland. *See* PX 100, ECF No. 451-135. The next day, Millennium's Gary Cianfichi sent an e-mail to colleagues, stating "now that we have competition on board for the Oct 1 price increase announcement, please relook at your agents['] commissions." PX 101, ECF No. 451-136.

DuPont's DeLisle Plant in southern Mississippi was shut down due to Hurricane Katrina in August 2005. In November 2005, Tronox's Vice President of Investor Relations Robert Gibney sent an e-mail to colleagues about DuPont's strategy regarding the DeLisle Plant. *See* PX 138, ECF No. 451-173. According to a report by financial firm JP Morgan,

the head of DuPont's coating division stated that DuPont would "bring DeLisle up gradually and NOT flood the market with product." *Id.* Gibney also wrote that DuPont would not be "aggressively pursuing their lost share and will be diligent in bringing the volume back to the market." *Id.*

On July 9, 2007, Michael Card of Millennium sent an e-mail to colleagues with the subject line "2008 Sales Plan." *See* PX 170, ECF No. 451-205. Card wrote that Millennium's market share was 20 percent in the year to date, while the company's historical share was 21 percent. *Id.* Regarding the market share that Millennium was "not getting," Card stated, "[w]e should have this extra share—customers have been and want to buy this from us. Competitors will let us have this." *Id.* at MIC01374700.

On or about November 21, 2007, Millennium's Jim Clover made a handwritten notation reading, "Don't steal Dup tonnes." PX 177, ECF No. 451-212.

Huntsman's Mike Quinn sent an e-mail to colleagues on June 3, 2008 with the subject line "Pricing Posture." PX 194, ECF No. 229. Quinn explained, "There is strong evidence that pricing of TiO<sub>2</sub> in plastics markets will increase effective June 1. . . . Our position at this time is that we support implementing a 3 cpp price increase this month . . . but will defer to the market competitiveness brought forth by the larger TiO<sub>2</sub> suppliers." *Id.* "Remember," Quinn added, "we can't lead a price increase but we sure can kill it; and we won't be left behind if others push the pricing up." *Id.*

Lastly, on December 4, 2008, Joe Maas of Kronos sent an e-mail to his colleagues about Kronos's November 2008 sales. PX 219, ECF No. 451-254. Maas wrote that the company's sales volume "was the lowest November volume since 1998 and the worst sales

volume month since December 2003!” *Id.* The “good news,” Maas explained, was that Kronos’s “average price worldwide increase[d] by 17 US\$/MT and we have now realized since May a total average price increase of 205 US\$/MT.” *Id.* He concluded, “[i]t appears that we and our competitors are prepared to reduce production rather than chase phantom volume.” *Id.*

### 3. Communications with Jim Fisher

The Plaintiffs document numerous examples of communications between the Defendants and Jim Fisher in which sensitive information was exchanged or the Defendants acknowledged Fisher’s role in sharing industry information. Under the Plaintiffs’ theory, Jim Fisher acted as a conduit, helping to facilitate the alleged price-fixing conspiracy. For example, on May 23, 2002, Joe Maas of Kronos sent an e-mail to Jim Fisher noting that his family was looking forward to their vacation at Fisher’s new home. PX 52, ECF No. 451-87. Maas also mentioned “on a business note” that he had heard Huntsman announced a price increase of “150\$/mt????!!!” *Id.* “It sounds weird to me,” wrote Maas, “[c]an you confirm anything from your lofty position??” *Id.*

On July 31, 2003, Gary Cianfichi of Millennium sent an e-mail to his colleagues John Hall and Rick Rowe with the subject line “US TiO<sub>2</sub> stats.” PX 79, ECF No. 451-114. In the e-mail, Cianfichi primarily reported that Millennium had decided to “stop our US TiO<sub>2</sub> statistics reporting to the [Department of Commerce]” in order “not to telegraph a possible US TiO<sub>2</sub> inventory buildup by us and others.” *Id.* He concluded the email, “PS – John – also note that Bob asked me to talk to Fisher to ask him to do a little job for us – ascertain

relative TiO<sub>2</sub> inventory levels for some of our key competitors. A little task but I'll speak to Jim this week on this." *Id.*

In March 2005, the pigment producers attended an industry-wide conference in Cannes, France. PX 125, ECF No. 451-160. Jim Fisher later wrote, in the context of an expert report for unrelated litigation, that at the conference, the pigment producers "discussed the need to take advantage of tight market conditions to improve pricing." PX 126 at TRONOX0000089, ECF No. 451-161. Fisher's report went on to mention that John Hall of Millennium "noted in his presentation that the industry should avoid responding to increased demand with 'over-investment in capacity' as had happened in the past." *Id.* This piece of evidence suggests that Fisher was privy to pricing information of the titanium dioxide producers, as well as that the producers shared that information with each other as well as with Fisher.

On August 29, 2007, Connie Hubbard of DuPont drafted an entry in DuPont's Competitive Intelligence database with the subject line "Comments from Jim Fisher." PX 171, ECF No. 451-206. Hubbard noted that Fisher had told her, regarding "pricing," that he was "[v]ery confident that Tronox, Kronos, and Huntsman will follow." *Id.*

Lastly, on December 2, 2009, Joe Maas of Kronos sent an e-mail to Jim Fisher and attached what Maas titled an "R&D Org Chart." PX 241, ECF No. 451-276. Although Gary Cianfichi of Millennium is not mentioned in the e-mail's header, the Plaintiffs aver that the chart came from Cianfichi's files. In the body of the e-mail, Maas wrote to Fisher, "please do not copy it verbatim [sic] and screw up a few facts so it does not look like too much inside info." *Id.*

#### 4. The Global Statistics Program

Throughout the Class Period, the Defendants stressed the confidential nature of the Titanium Dioxide Manufacturers Association's Global Statistics Program. On May 5, 2003, Millennium's Gary Cianfichi sent an e-mail to colleagues at Millennium and included the first quarterly end use data from the new Global Statistics Program. PX 76, ECF No. 451-111. Cianfichi set out "what we can and can not do" with the statistical data. *Id.* at MIC01140263. He explained that the statistics could not be copied or given to anyone without his approval, as they had "a high level of very confidential information in them that we do not want others to see. Others include both internal [Millennium] people at any level, customers, journalists, outside consultants, vendors trade groups etc." *Id.* Cianfichi emphasized, "We do not want anyone even referring to the existence of this type of data to any other parties." *Id.* Later in the e-mail, Cianfichi explained that any references made to the public regarding market details should be described as "[Millennium] estimates and never as CEFIC data." *Id.*

Kronos's Henry Basson passed along to Kronos colleagues an e-mail from Gary Cianfichi at Millennium about the confidential nature of the Global Statistics Program. PX 105. Basson wrote, "Any TDMA statistics that are shared with you or any specifics which you may share with your co-workers, should UNDER NO CIRCUMSTANCES BE DIVULGED TO ANY THIRD PARTIES as this information is Confidential to the TDMA members." *Id.*

Likewise, the Defendants made statements suggesting the Global Statistics Program's influence on the pricing decisions of the Defendants. On June 16, 2006, DuPont's Ian

Edwards sent an e-mail to colleagues at DuPont regarding price increases announced by Millennium and Huntsman on the previous day. PX 148, ECF No. 451-183. “The timing may be no coincidence,” Edwards explained, because “their reading of the CEFIC info like ours should give them confidence that [North America] price increases can be prosecuted despite the flat market in [North America] itself.” *Id.* That same day, Connie Hubbard of DuPont forwarded a Kronos price increase announcement to Edwards, copying other colleagues and stating, “Ian, Looks like John’s leadership woke up the majors and the May CEFIC data gave them some conviction.” PX 149.

#### 5. The Defendants’ Awareness of Their Seemingly Coordinated Behavior

Finally, it is crucial to note that some of the contents in Plaintiffs’ Appendix C suggest that the Defendants were aware that their pricing behavior would appear coordinated to the outside world, and they attempted to minimize any appearance of collusion. On February 23, 2005, Millennium’s Gary Cianfichi drafted a memorandum regarding the company’s “price announcement process.” PX 123 at MIC0029317, ECF No. 451-158. The primary subjects of the memorandum were the methods of issuing price increase announcements in the “Internet age” and the “[c]ompetitive landscape” in the titanium dioxide industry. *Id.* The memorandum concluded with two lists titled, “What [Millennium] wants to do” and “What we do not do.” *Id.* The first item on the second list read, “No colluding, no history of colluding—we are professional and know the requirements.” *Id.*

Likewise, on May 22, 2008, DuPont’s Ian Edwards sent an e-mail to his colleague John Gallagher with the subject line, “reactions to R&H surcharge, and our plan for coatings

price?” PX 192, ECF No. 451-227. In the e-mail, Edwards said it was “evident that the plan we seem to be working around today, whereby we announce an intent to raise price and then in effect wait until others take action (or make firm commitments to action) that we can follow, simply isn’t working for us.” *Id.* Edwards noted parenthetically, “in addition, we cannot get exposed to any interpretation of our price increase announcements as being price signaling.” *Id.*

On May 29, 2008, DuPont’s Peter O’Sullivan sent an e-mail to colleagues at DuPont about a global price increase that would be announced shortly before an American Coatings Show in Charlotte, North Carolina. PX 193 at DUPTIO20965019, ECF No. 451-228. “Tomorrow we will issue a global price increase announcement,” O’Sullivan wrote, and “[m]aking public announcements in close proximity to a large industry gathering requires heightened awareness to the inappropriateness of interactions with competitors.” *Id.* “I know we are always mindful of the perception any dialogue with competitors can leave with others, but please be certain next week to refrain from any dialogue with any competitors.” *Id.*

Around the same time, Millennium modeled some of its price increase announcements off of the announcements of other pigment producers. On June 25, 2008, Millennium’s Manager of Global Corporate Communications explained to colleague Jim Clover that Millennium should not use DuPont’s language when drafting its own announcements. PX 195, ECF No. 451-230. “I know we have the [DuPont] announcement there as a reference,” the manager wrote, “but as a practice we shouldn’t do that even in draft form.” *Id.* at MIC02023612. On September 2, 2008, DuPont announced a price



increase to be effective immediately. *See* Pls.' App. B at effective date 9/2/2008. The next day, Millennium's Manager of Global Corporate Communications "made some changes" to its draft announcement in which it would be matching DuPont's price increase, because the draft was "too much like DuPont's." PX 207.

Most recently, on September 2, 2010, after the Complaint in this case was filed, Millennium's Dave Murrer sent an e-mail to his colleagues with the subject line, "DuPont Price increase – North America +\$0.08 Oct 1." PX 253, ECF No. 451-288. His e-mail was responding to a colleague's statement about a Huntsman price increase announced on August 24, 2010. *Id.* This was the first time in the North American market that Huntsman initiated a price increase, and each Defendant followed it, though with different amounts and dates on which the increases would become effective. *See* Pls.' App. B. The colleague wrote, "Wow – we now have different dates and amounts from all 3 that have announced. . . . I am not sure what our position will be or legal implications, but I would stick with our date and amount." PX 253 at MIC00117020. "A key learning from this is we should have waited to announce." *Id.*

#### E. Interfirm Sales of Titanium Dioxide

Finally, the Plaintiffs submit evidence showing that the Defendants discussed, and in some case agreed to, interfirm sales of titanium dioxide, as well as entered into joint ventures and swapped raw materials. *See generally* App. H, ECF No. 451-23. According to the Plaintiffs, "in times of need, Defendants routinely assisted each other, rather than compete and sell directly to each other's customers." Pls.' Resp. in Opp. 92. One example is the joint venture between Huntsman and Kronos, the Louisiana Pigment Company. The Plaintiffs'

argue that the joint venture facilitated the alleged conspiracy by giving the two competitors opportunities to collude. In a January 2002 monthly report produced by Huntsman, the firm noted the financial performance of the Louisiana Pigment Company. *See* PX 37, ECF No. 451-72. The report included that the joint venture's production declined to "9082 te, the reduced rate being a result of the JV partner wishes due to high Y/E stocks." *Id.* at HILLC000549126. This report seems to suggest that Huntsman agreed to reduce the joint venture's output because of Kronos's large inventory.

Another example is a series of transactions between Millennium and DuPont in early 2007, in which Millennium purchased titanium dioxide from DuPont. The Plaintiffs' expert Dr. Lamb analyzed these sales and found that Millennium paid a price of eighty-eight cents per pound for DuPont's product, while the lowest price paid by any other purchaser in January 2007 was nine cents higher. *See* PX 284, ECF No. 451-319. The average price paid by other purchasers during this time period was nineteen cents higher per pound than the price charged to Millennium. *Id.* Instead of competing for Millennium's customers, DuPont appears to have provided help to Millennium, selling titanium dioxide at a rate lower than that on the market.

Finally, the Plaintiffs stress an e-mail from December 2008—during the economic recession—in which Millennium's John Hall wrote to a colleague in Saudi Arabia, with the subject line "A concept – 'Co-opertition.'" PX 215, ECF No. 451-250. In the e-mail, Hall introduced a possibly "crazy idea . . . perhaps worthy of some consideration" because of the "very difficult times." *Id.* He proposed that Millennium consider consolidating "production with a competitor in order to increase rates and reduce cost for similar product in the

market.” *Id.* Hall later testified that he came up with the word “co-opertition” himself and suggested the idea because of “a lot of excess capacity” and “very weak demand” in the titanium dioxide industry. PD 6, Hall tr. 171-73, ECF No. 451-328.

#### F. Contrasting Evidence

A great deal of the evidence submitted by the Plaintiffs is not in dispute. Rather, the parties clash in their interpretation of the facts and the legal significance to be assigned to them. The Defendants do not contest, for example, that profits were “unappealing” and prices were decreasing during the years prior to the Class Period. *See* Joint Mot. for Summ. J. 29, ECF No. 459. Moreover, there is no dispute that the TDMA amended its operating rules to allow DuPont to participate as an “Associate Member”; that the TDMA thereafter established a new Global Statistics Program, which was kept secret; and that the price increase announcements recorded in Plaintiffs’ Appendix B occurred. The Defendants argue, however, that this conduct happened as a result of the Defendants’ lawful, procompetitive business purposes, and that the evidence therefore cannot withstand summary judgment.

##### 1. Vigorous Price Competition

Notwithstanding the mountain of evidence essentially conceded by the parties, there are some disputes about key facts. First, the Defendants contend that contrary to the Plaintiffs’ argument, there was vigorous competition among the five largest producers of titanium dioxide both before and during the Class Period. They cite to Defendants’ Appendix B,<sup>15</sup> which documents numerous instances from August 1999 until March 2010 in

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<sup>15</sup> Defendants’ Appendix B is attached to their Joint Motion for Summary Judgment, ECF No. 443.

which the Defendants Millennium and Kronos, DuPont, Huntsman, and Tronox took business away from a competitor by outbidding, undercutting a price, matching a competitive bid, approving a price reduction, or delaying or refunding a price increase. *See generally* Defs.’ App. B.

The Defendants pay particular attention to their conduct in the aftermath of Hurricane Katrina, when DuPont’s plant in DeLisle, Mississippi was forced to shut down. *See* Ex. C-1, DUPTIO20629072. As a result of the plant’s closure, DuPont was unable to serve some of its customers, and its share fell to 23 percent, a record low during the Class Period. *See* Defs.’ Ex. A-13, Willig Report 19 fig. 1. DuPont lost a substantial amount of its business to Millennium and Kronos during this time. For example, Millennium expressed to its employees the following goals for the third quarter of 2005: “accessing [DuPont] outage volume opportunities for Millennium”; “[t]aking on additional volume that we believe is strategic to us long-term”; and “[t]aking on short term opportunistic volume to fill up our plants.” Defs.’ Ex. C-2, MIC03651712. Likewise, Kronos instructed its sales force to “take this opportunity to contact all [of Kronos’s] accounts and target accounts to identify additional business potentials” and “to figure out a way to lock up some of the Katrina windfall business long term.” Defs.’ Exs. C-3, KROWW00114535 & C-4, KROWW00100671. The Defendants insist that these internal documents suggest competitive, not collusive, activity.

Moreover, the Defendants emphasize that the efforts of Millennium and Kronos to take business away from DuPont succeeded, resulting in fluctuations in market share at the customer level that lasted long after DuPont’s DeLisle plant reopened. *See, e.g.*, Defs.’ Exs.

A-13 ¶¶ 37 & 174, tbl. A-2A; C-6, DUPTIO20579821; C-7, DUPTIO20579823; C-8, DUPTIO20248460. The Defendants admit, however, that DuPont eventually recovered its overall share to “pre-Katrina levels.” Joint Mot. Summ. J. 12.

## 2. Overall Changes in Market Shares and Shares at the Customer Level

The Defendants contend that their shares of sales to individual customers and to all United States customers fluctuated throughout the Class Period, demonstrating vigorous competition among the Defendants. *See* Ex. D-78, Lamb Mar. 5, 2013 Dep. 174-79. For example, the Defendants point to Sherwin Williams, the top purchaser of titanium dioxide from the Defendants in 2010. DuPont’s share of Sherwin Williams sales increased from 36 percent in 2005 to 46 percent in 2007, and then fell to 39 percent in 2008 when Millennium and Tronox took some of DuPont’s share. Defs.’ Ex. A-2, Hamilton Oct. Report Attach. 2. Later, however, DuPont won back the share it lost. *See* Defs.’ Ex. A-9, Murphy Report ¶ 121; Defs.’ Ex. 12. Likewise, DuPont’s share of sales to another high-volume purchaser, AkzoNobel, fell from 74 percent in 2005 to an extremely low 4 percent in 2010. *Id.* In that year, Millennium and Tronox became AkzoNobel’s primary suppliers of titanium dioxide. *Id.* Beyond those two examples, the Defendants’ expert economist Professor Robert Willig identified other instances when “customers shifted a substantial portion of their purchases between the firms from year to year.” Defs.’ Ex. A-13, Willig Report ¶ 33 & figs. A-1A to A-1C.

The conflicting evidence creates a dispute of fact, which must await resolution at trial. While the Plaintiffs argue that there was overall market share stability during the Class Period, the Defendants emphasize the customer-specific price competition. More

importantly, the parties engage in a battle of the experts to prove whether the pigment producers' overall market share remained stable during the Class Period. The Defendants' expert Dr. Willig finds significant fluctuation in market share during the Class Period. For example, the Defendants argue that "DuPont's share of all U.S. TiO<sub>2</sub> sales swung between 28% and 33% during the Class Period; Millennium's between 20% and 22%; Tronox's between 18% and 23%; Kronos's between 16% and 20%; and Huntsman's between 8% and 10%." Joint Mot. Summ. J. 15 (citing Defs.' Ex. A-13, Willig Report 17 tbl. 1). The Plaintiffs, on the other hand, rely on the analysis of Dr. Lamb, who applied a "coefficient of variation" test and observed "little variance in market share among the cartel members during the Class Period." Pls.' Resp. in Opp. 100 (citing Lamb Rebuttal Report ¶¶ 125-26 & tbl. 7). Even assuming the Defendants' expert was correct, the Plaintiffs argue, the overall market share remained relatively stable, with DuPont's share hovering around 30 percent, Huntsman's around 10 percent, Kronos's between 16 and 20 percent, and Millennium's around 20 percent.

### 3. Lack of Punishment

The Defendants maintain that the Plaintiffs can show no proof of a punishment mechanism. Punishment, the Defendants aver, would usually occur in a price-fixing conspiracy when members of the conspiracy undercut their competitors and shift shares at the customer level, as in this case. As the Plaintiffs' expert Dr. Hamilton acknowledges, "a credible punishment mechanism" to penalize cheaters is an important component of a cartel. Ex. A-3, Hamilton Feb. Report ¶ 41. However, while the Defendants' expert Professor Murphy finds no instances of punishment, the Plaintiffs' expert Dr. Hamilton does identify

documents suggesting the use of a punishment mechanism, or at least an awareness that such a mechanism was available, before and during the Class Period. *See id.* ¶¶ 54, 57-59.

#### 4. Lower Margins During the Class Period

The Defendants contend that they earned significantly lower margins during the Class Period as compared to the years prior to the Class Period. Reduced profit margins, they argue, are additional evidence of the vigorous competition among the top five titanium dioxide producers. The Defendants assert that the average gross profit margins of DuPont's titanium dioxide business plummeted from 43.34 percent prior to the Class Period to 27.59 percent during the Class Period. *See* Defs.' Ex. A-13, Willig Report ¶ 83 & tbl. 4A. Likewise, Kronos's margins fell from 15.13 percent to 7.93 percent, and Millennium's margins fell from 17.32 percent to 14.53 percent. *Id.* The operating margins of DuPont, Kronos, and Huntsman also declined, in some cases precipitously. *Id.* ¶ 61 & tbl. 4B.

According to the Defendants, these decreases in margins during the Class Period contradict the Plaintiffs' theory that the Defendants created a cartel to increase prices and profit margins in the wake of an industry crisis and a particularly catastrophic year in 2001. The Plaintiffs respond, however, that the evidence in the record shows that the Defendants were able to raise prices during the Class Period, which resulted in increased profit margins. They rely on the expert opinion of Dr. Lamb, who found that the Defendants' price increases resulted in aggregate overcharges of between \$2.1 and \$2.7 billion. *See* Lamb Rebuttal Report ¶¶ 9, 12. Accordingly, this fact is genuinely disputed by the parties.

5. Evidence that the Plaintiffs Allegedly Misconstrue

Finally, the Defendants jointly point out some evidence that they believe the Plaintiffs have misconstrued. They contend, for example, that the Class Period saw increases in demand until the economic recession in 2009. *See* Joint Mot. Summ. J. 31-32. They further noted that Dr. Lamb ignored increases in global (as opposed to United States) demand, resulting in his underestimating the level of demand for titanium dioxide during the relevant time period. *Id.* at 32-33. Lastly, the Defendants pointed out at the motions hearing on June 25, 2013, that Plaintiffs' Appendix A records countless instances in which the pigment producers attended meetings, conferences, and the like. However, those alleged opportunities to conspire should be discounted, the Defendants argue, because the employees of the firms who had pricing authority for North America's titanium dioxide market seldom were in attendance.

6. Millennium's Three Changes in Ownership During the Class Period

In Millennium's individual Motion for Summary Judgment (ECF No. 439), the party reasserts many of the facts included in the Defendants' Joint Motion for Summary Judgment. However, Millennium also points out that during the decade-long Class Period, Millennium experienced three changes in ownership and operated under numerous management teams. *See, e.g.*, Defs.' Ex. 3-1, Cianfichi Dep. 175; Murrer Dep. 106; Ex. 2-8; Ex. 3-2, Vercollone Dep. 26; Ex. 3-4, De Jong Dep. 26-27; Ex. 3-5, Verrett Dep. 147. Considering that the greater the number of people involved in a cartel, the more likely the cartel is to be detected, Millennium suggests that these leadership changes render the Plaintiffs' conspiracy allegations implausible.



7. Kronos's Surcharges, Joint Venture, Operating Capacity, and Involvement with Jim Fisher

In addition to the facts cited by the Defendants in their Joint Motion for Summary Judgment, Kronos highlights in its individual Motion (ECF No. 432) four additional facts. First, Kronos argues that, unlike the other four largest pigment producers, Kronos levied energy surcharges on its customers twice in 2008. *See* Pls.' App. B at effective dates 6/15/2008 & 7/1/2008. Kronos suggests that its decision to announce these additional increases, independent of the other pigment producers and with full knowledge that Kronos could lose business as a result, cuts against the Plaintiffs' theory of carefully coordinated behavior on the part of the Defendants Millennium and Kronos, DuPont, Huntsman, and Tronox.

Second, Kronos points out that it entered a joint venture, the Louisiana Pigment Company, with Huntsman ten years before the alleged price-fixing began. Kronos asserts that it did so for legitimate, procompetitive business reasons. Third, Kronos contends that the Defendants Millennium and Kronos, DuPont, and Huntsman all operated their plants at capacity throughout the Class Period. Kronos Ex. 2, Willig Report ¶ 80, fig. 4C, tbl. 3B (“[C]apacity utilization in North America for all [original Defendants] was well over 90% for most of the class period.”). This fact, Kronos contends, contradicts the Plaintiffs' assertion that the Defendants purposely curtailed production to influence market price. Finally, Kronos stresses that it never hired Jim Fisher during the Class Period, a fact casting doubt on the Plaintiffs' theory that Jim Fisher acted as a conduit for the cartel. *See* Kronos Ex. 58, IBMA-FISHER001189; Ex. 39, Wigdor Dep. 253:8-255:22.

STANDARD OF REVIEW

Because the correct standard of review was heavily debated both in the briefing and during the motions hearing on June 25, 2013, this Court sets out in greater detail than usual the legal standard by which to determine whether a genuine issue of material fact exists. When a Sherman Act claim is made against firms of a highly concentrated industry, as in this case, certain economic antitrust principles play a role in the summary judgment standard. As this Court describes in greater detail herein, it is rational for firms in a highly concentrated market to take into account the actions of their competitors and to follow those actions, assuming no external market factors dissuade them from doing so. This phenomenon, which is called conscious parallelism, is not in itself illegal. Thus, allegations of parallel conduct alone cannot survive summary judgment, and plaintiffs must bring forward evidence showing the existence of certain “plus factors,” the most important of which is non-economic evidence of an agreement not to compete.

A. Evidence that Tends to Exclude the Possibility of Independent Action

Summary judgment is appropriate when “there is no genuine dispute as to any material fact” such that “the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). Where the moving party has presented a properly supported motion for summary judgment, the non-moving party must present significant probative evidence to establish that genuine issues of material fact exist. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247 (1986). For a dispute to be genuine, the non-moving party “must do more than simply show that there is some metaphysical doubt as to the material facts,” but instead must “come forward

with specific facts showing that there is *a genuine issue for trial.*” *Matsushita Electric Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587-88 (1986) (emphasis in original).

The Plaintiffs in this case allege that the Defendants, with co-conspirators DuPont, Huntsman, and Tronox, violated Section 1 of the Sherman Act by engaging in a horizontal price-fixing conspiracy to raise the price of titanium dioxide in the United States to supracompetitive levels. To prove the existence of a horizontal price-fixing conspiracy, a plaintiff must demonstrate the following: “(1) the existence of an agreement, combination, or conspiracy, (2) among actual competitors, (3) with the purpose or effect of ‘raising, depressing, fixing, pegging, or stabilizing the price of a commodity,’ (4) in interstate or foreign commerce.” *In re Med. X-Ray Film Antitrust Litig.*, 946 F. Supp. 209, 215-16 (E.D.N.Y. 1996) (quoting *United States v. Socony-Vacuum Oil Co.*, 310 U.S. 150, 223-24 (1940)).

An antitrust plaintiff must present “direct or circumstantial evidence that reasonably tends to prove that the [alleged conspirators] had a conscious commitment to a common scheme designed to achieve an unlawful objective.” *Monsanto Co. v. Spray-Rite Serv. Corp.*, 465 U.S. 752, 768 (1984). In *Monsanto*, the issue was whether the plaintiff had presented sufficient evidence to survive a motion for directed verdict on its claim that its distributorship was terminated pursuant to a price-fixing agreement by the defendant and other wholesalers. *Id.* at 759. The Supreme Court held that the United States Court of Appeals for the Seventh Circuit had applied an incorrect standard when it relied on mere evidence that the plaintiff’s distributorship was terminated following complaints by other distributors that plaintiff was cutting prices. *Id.* at 759, 768. In rejecting that standard, the Supreme Court recognized that allowing too broad a range of inferences from “highly

ambiguous” evidence increased the potential for antitrust lawsuits to “deter or penalize perfectly legitimate conduct.” *Id.* at 763-64. Thus, the Court concluded that the nonmoving party had to present “evidence that tends to exclude the possibility of independent action.” *Id.* at 768.

In *Matsushita*, 475 U.S. 574 (1986), the Supreme Court applied the *Monsanto* standard in the summary judgment context. Because a plaintiff must show evidence tending to exclude the possibility of independent action, the Court determined that “conduct that is as consistent with competition as with an illegal conspiracy does not, standing alone, support an inference of an antitrust conspiracy.” *Id.* at 588 (citing *Monsanto*, 465 U.S. at 764). The plaintiffs in *Matsushita* were American television manufacturers that brought suit against Japanese television companies, alleging that they had conspired for more than two decades to drive down the price of televisions in the United States and force the plaintiffs out of the market. *Id.* at 577-78. The Supreme Court reasoned that the alleged “predatory pricing” conspiracy—a twenty-year scheme to depress prices at a significant loss to the defendants, so that they might one day recoup their losses by making monopoly profits in a cartelized American market—was implausible, meaning it made no economic sense. *Id.* at 588-94. Against the backdrop of extremely implausible conspiracy allegations, the Court found no evidence “that is sufficiently unambiguous to permit a trier of fact to find that [the defendants] conspired.” *Id.* at 597.

Importantly, the Supreme Court in *Matsushita* held that “antitrust law limits the range of permissible inferences from ambiguous evidence in a § 1 case.” *Id.* at 588. In other words, plaintiffs “must show that the inference of conspiracy is reasonable in light of the

competing inferences of independent action.” *Id.* This standard articulated in *Matsushita* has been consistently applied in cases concerning allegations of price-fixing. See *In re Publ’n Paper Antitrust Litig.*, 690 F.3d 51 (2d Cir. 2012); *In re Flat Glass Antitrust Litig.*, 385 F.3d 350 (3d Cir. 2004); *In re High Fructose Corn Syrup Antitrust Litig.*, 295 F.3d 651 (7th Cir. 2002); *In re Citric Acid Litig.*, 191 F.3d 1090 (9th Cir. 1999).<sup>16</sup>

Although it is clear that the *Matsushita* standard governs whether granting summary judgment is proper, it is equally clear that the particular facts of each case determine how high a burden that standard imposes. See, e.g., *Publ’n Paper*, 690 F.3d at 63 (“[T]he range of inferences that may be drawn from [ambiguous] evidence depends on the plausibility of the plaintiff’s theory.”); *High Fructose Corn Syrup*, 295 F.3d at 661 (“More evidence is required the less plausible the charge of collusive conduct.”). Indeed, the Supreme Court in *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451, 468 (1992), explained that *Matsushita*’s requirement “that the plaintiffs’ claims make economic sense did not introduce a special burden on plaintiffs facing summary judgment in antitrust cases.” The Court emphasized that a moving party is not entitled to summary judgment simply because it “enunciates *any* economic theory supporting its behavior, regardless of its accuracy in reflecting the actual market.” *Id.* (emphasis in original). Rather, “*Matsushita* demands only that the nonmoving party’s inferences be reasonable in order to reach the jury, a requirement that was not invented, but merely articulated, in that decision.” *Id.*

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<sup>16</sup> The *Matsushita* standard has likewise been applied in cases alleging illegal restraints of trade other than price-fixing, such as the alleged agreement to boycott at issue in *Mervk-Medco Managed Care, LLC v. Rite Aid Corp.*, 201 F.3d 436 (4th Cir. 1999) (unpublished table decision).

Plaintiffs alleging an implausible conspiracy face a high burden to show evidence that tends to exclude inferences of legitimate competitive behavior. By contrast, where plaintiffs allege a plausible conspiracy—one that makes economic sense—a lower “tends to exclude” standard applies. *Publ’n Paper*, 690 F.3d at 63. Accordingly, when a plausible conspiracy has been alleged, a plaintiff need not “disprove all nonconspiratorial explanations for the defendants’ conduct” to prevail at summary judgment. *Id.* (quoting Phillip E. Areeda & Herbert Hovenkamp, *Antitrust Law* § 14.03b, at 14-25 (4th ed. 2011)). Especially relevant to this case, the United States Court of Appeals for the Second Circuit has held that where “a plaintiff relies on ambiguous evidence to prove its claim, the existence of a conspiracy must be a reasonable inference that the jury could draw from that evidence; it need not be the *sole* inference.” *Id.* (emphasis in original). When determining whether a jury could reasonably infer that there was a conspiracy, this Court must view the totality of the evidence. *See High Fructose Corn Syrup*, 295 F.3d at 655-56 (cautioning against the supposition that “if no single item of evidence presented by the plaintiff points unequivocally to conspiracy, the evidence as a whole cannot defeat summary judgment”).

B. Evidence Beyond Mere Parallel Conduct in a Case Involving an Oligopoly

Even when the alleged conspiracy is a plausible one, courts “have been cautious in accepting inferences from circumstantial evidence” if the alleged anticompetitive conduct can plausibly be explained by the rational, procompetitive conduct of businesses in an oligopoly. *See Flat Glass*, 385 F.3d at 358-59 (quoting Areeda & Hovenkamp § 1429, at 207). Because this case involves a market dominated by a few firms, making it highly concentrated, “any single firm’s ‘price and output decisions will have a noticeable impact on the market

and on its rivals.” *Id.* For this reason, “when a firm in a concentrated market (*i.e.*, an ‘oligopolist’) is deciding on a course of action, ‘any rational decision must take into account the anticipated reaction of the other [] firms.” *Id.* This phenomenon, known as interdependence or “conscious parallelism,” is not in itself illegal, but may evidence price-fixing. *In re Ethylene Propylene Diene Monomer (EPDM) Antitrust Litig.*, 681 F. Supp. 2d 141, 167 (D. Conn. 2009) (finding “six lockstep price increases” to be strong circumstantial evidence of a price-fixing agreement, despite the fact that conscious parallelism is not itself unlawful).

Evidence of parallel conduct in an oligopoly, without more, is insufficient to withstand a motion for summary judgment. *Flat Glass*, 385 F.3d at 360. This is consistent with the statement in *Matsushita* that “conduct as consistent with permissible competition as with illegal conspiracy does not, *standing alone*, support an inference of antitrust conspiracy.” 475 U.S. at 588 (citing *Monsanto*, 465 U.S. at 764) (emphasis added). Instead, plaintiffs must demonstrate, in addition to merely parallel conduct, the existence of certain “plus factors” that are indicative of a conspiracy. *Flat Glass*, 385 F.3d at 360.

There are three kinds of “plus factors” on which courts most often rely to determine whether an inference of conspiracy is permissible: (1) “evidence that the defendant had a motive to enter into a price fixing conspiracy,” (2) “evidence that the defendant acted contrary to its interests,” and (3) “evidence implying a traditional conspiracy,” such as “non-economic evidence that there was an actual manifest agreement not to compete.” *Id.* at 360-61. The first plus factor, whether defendants had a “motive to enter a price fixing conspiracy,” refers to “evidence that the industry is conducive to oligopolistic price fixing, either independently or through a more express form of collusion.” *Id.* at 360. Indicators

that a market is conducive to collusion include the homogeneous and highly standardized, or commodity-like nature, of the product; a concentrated market dominated by a few sellers; high barriers to new players' entry, such as high investment or fixed costs; and excess production capacity. *Publ'n Paper*, 690 F.3d at 65; *Flat Glass*, 385 F.3d at 361; *High Fructose Corn Syrup*, 295 F.3d at 656-57.

The second plus factor, evidence that defendants acted contrary to economic self-interest, means actions that are inconsistent with competition in the industry. *Flat Glass*, 385 F.3d at 361. Price increases that are not correlated with principles of supply and demand may be especially probative of behavior contrary to self-interest. *Id.* at 358 (“[A]bsent increases in marginal cost or demand, raising prices generally does not approximate—and cannot be mistaken as—competitive conduct.”); *High Fructose Corn Syrup*, 295 F.3d at 659 (deeming anticompetitive an across-the-board price increase based on sweetness of product, where the price based on cost would have been lower). Another example of conduct that is inconsistent with competition is when a seller that has excess production capacity buys product from a competitor, thereby maintaining consistent relative market share, rather than expanding production to meet demand. *High Fructose Corn Syrup*, 295 F.3d at 695.

While the presence of these first two “economic” plus factors—motive and conduct against economic interest—may be suggestive of collusion, “care must be taken with the first two types of evidence, each of which may indicate simply that the defendants operate in an oligopolistic market, that is, may simply restate the (legally insufficient) fact that market behavior is interdependent and characterized by conscious parallelism.” *In re Ins. Brokerage Antitrust Litig.*, 618 F.3d 300, 322 (3d Cir. 2010) (citing *Flat Glass*, 385 F.3d at 360-61; Areeda



& Hovenkamp § 1434c1). Accordingly, the first two plus factors are neither sufficient nor necessary to prove the existence of a conspiracy. See *Flat Glass*, 385 F.3d at 362 (“All of the above indicates that the price increases were collusive, but not whether the collusion was merely interdependent or the result of an actual agreement.”); *High Fructose Corn Syrup*, 295 F.3d at 655 (“Neither form of economic evidence is strictly necessary.”).

Because the first two plus factors may largely restate the phenomenon of conscious parallelism, the most important plus factor is “non-economic evidence ‘that there was an actual, manifest agreement not to compete.’” *Flat Glass*, 385 F.3d at 361 (quoting *High Fructose Corn Syrup*, 295 F.3d at 661). Sufficient non-economic evidence may be “proof that the defendants got together and exchanged assurances of common action or otherwise adopted a common plan even though no meetings, conversations, or exchanged documents are shown.” *Id.* (quoting *Areeda & Hovenkamp* § 1434b).

#### ANALYSIS

The Defendants move for summary judgment, contending that there is no basis in the record on which a jury could infer that the Defendants conspired to fix the price of titanium dioxide. They argue that the conspiracy alleged by the Plaintiffs is highly implausible and that the record is replete with evidence of fierce competition. Further, the Defendants emphasize—and the Plaintiffs do not contest—that this case rests entirely on circumstantial evidence, and “antitrust law limits the range of permissible inferences from ambiguous evidence in a § 1 case.” *Matsushita*, 475 U.S. at 588. Most importantly, the Defendants maintain that the evidence before this Court is equally consistent with competition as with collusion. Thus they argue that the Plaintiffs fail to meet their burden

of producing evidence tending to exclude the possibility that the Defendants were acting independently. *See Matsushita*, 475 U.S. at 588.

On all points the Defendants' argument fails, as there are genuine issues of material fact to be resolved at the trial of this case. First, while the record contains some evidence of competition, that portion of the record must be weighed against the substantial portion on which a jury could permissibly infer a conspiracy. The record contains ample evidence for concluding that the Defendants agreed to raise prices and shared commercially sensitive information—by way of industry consultants, face-to-face meetings, and the Titanium Dioxide Manufacturers Association's Global Statistics Program—to facilitate their conspiracy. While the Defendants' argument in this regard is certainly suitable for trial, it does not advance their position at summary judgment. *See High Fructose Corn Syrup*, 295 F.3d at 655.

Second, that this case depends wholly on circumstantial evidence holds no sway. As the Fourth Circuit has explained, “[d]irect evidence is extremely rare in antitrust cases.” *Am. Chiropractic Ass’n v. Trigon Healthcare, Inc.*, 367 F.3d 212, 226 (4th Cir. 2004). A case relying on direct evidence would of course be stronger for proving a price-fixing conspiracy, but echoing the finding of the Seventh Circuit, “most cases are constructed out of a tissue of [ambiguous] statements and other circumstantial evidence, since an outright confession will ordinarily obviate the need for a trial.” *High Fructose Corn Syrup*, 295 F.3d at 662. More importantly, the interpretation and weighing of conflicting circumstantial evidence is a role assigned to the jury at trial. As the United States Court of Appeals for the Ninth Circuit has aptly explained, “[t]o read *Matsushita* as requiring judges to ask whether the circumstantial

evidence is more ‘consistent’ with the defendants’ theory . . . would essentially convert the judge into the thirteenth juror.” *In re Petroleum Prods. Antitrust Litig.*, 906 F.2d 432, 438 (9th Cir. 1990); *see also Publ’n Paper*, 690 F.3d at 65 (denying summary judgment despite the fact that the plaintiffs’ evidence “admits of alternative interpretations,” because “it is the province of the jury to determine how much weight to accord” that evidence); *cf. Eastman Kodak*, 504 U.S. at 468 (“*Matsushita* . . . did not introduce a special burden on plaintiffs facing summary judgment in antitrust cases.”).

The Defendants suggest that the evidence is susceptible to an inference of independent action, and that fact alone should secure them summary judgment in their favor. This Court, however, finds that the Plaintiffs present sufficient evidence to show “that the inference of conspiracy is reasonable” in light of the Defendants’ competing inference of independent action. *Matsushita*, 475 U.S. at 588; *see also Publ’n Paper*, 690 F.3d at 63 (holding that a reasonable inference need not be the sole possible inference). This Court addresses the evidence defeating summary judgment—not only the evidence of parallel conduct but also the presence of three plus factors indicative of collusion: (1) “evidence that the defendant had a motive to enter into a price fixing conspiracy,” (2) “evidence that the defendant acted contrary to its interests,” and, most relevant, (3) the non-economic evidence “implying a traditional conspiracy.” *Flat Glass*, 385 F.3d at 361. Though “antitrust law limits the range of permissible inferences from ambiguous evidence in a § 1 case,” *Matsushita*, 475 U.S. at 588, this Court finds that the Plaintiffs have met their burden at the summary judgment stage because a jury, viewing the evidence in the totality, could reasonably infer a price-fixing conspiracy by the Defendants.

### **I. Evidence Tending to Exclude the Possibility of Independent Action**

An antitrust plaintiff must present “evidence that tends to exclude the possibility of independent action.” *Monsanto*, 465 U.S. at 768. Moreover, the Supreme Court has found that “conduct that is as consistent with competition as with an illegal conspiracy does not, standing alone, support an inference of an antitrust conspiracy.” *Matsushita*, 475 U.S. at 588 (citing *Monsanto*, 465 U.S. at 764).

This case involves allegations of horizontal price-fixing among oligopolists. Whereas the conspiracy alleged in *Matsushita* made no economic sense, the Plaintiffs in this case allege a plausible theory of conspiracy. Indeed, an agreement among the five largest producers of titanium dioxide “to fix prices at a supracompetitive level . . . makes perfect economic sense.” *Flat Glass*, 385 F.3d at 358. Yet even where a plaintiff’s theory is plausible, courts are “cautious in accepting inferences from circumstantial evidence” concerning pricing decisions by oligopolists. *Id.* This is because oligopolists in a highly concentrated market take into account the reactions of other firms when making decisions regarding, for example, pricing. *See id.* at 359 (quoting *Areeda & Hovenkamp* ¶ 1429, at 207). This phenomenon, called interdependence or conscious parallelism, can appear coordinated on its face, yet in fact reflect wholly independent action. *Id.* In *In re Flat Glass Antitrust Litigation*, the Third Circuit describes the phenomenon of conscious parallelism as follows:

[F]irm Beta might announce its decision to raise its price to X effective immediately, or in several days, or next season. The other [oligopolist] firms may each choose to follow Beta’s lead; if they do not increase their prices to Beta’s level, Beta may be forced to reduce its price to their level. Because each of the other firms knows this, each will consider whether it is better off when all are charging the old price or price X. They will obviously choose X when they believe that it will maximize industry profits.

*Id.* (quoting *Areeda & Hovenkamp* § 1429, at 207-08). Because the behavior of firms in an oligopoly may be mistaken as collusion, courts generally require a plaintiff to show more than mere parallel conduct. The plaintiff must also prove the existence of certain plus factors that indicate an environment conducive to price-fixing and conditions that make price-fixing, rather than competition, attractive. *See High Fructose Corn Syrup*, 295 F.3d at 657. In this case, the Plaintiffs present sufficient evidence of parallel conduct coupled with the three most commonly analyzed plus factors.

#### A. Parallel Conduct

The Plaintiffs' case cannot stand alone on parallel conduct for the reasons articulated above. The parallel price increases in this case are nonetheless noteworthy, because they were so pervasive. From 2002 through 2010, Millennium, Kronos, DuPont, Huntsman, and Tronox participated in twenty-five parallel price increase announcements. *See generally* Pls.' App. B. By contrast, during the prior eight-year period from 1994 through 2001, Millennium's predecessor SCM, Kronos, DuPont, Huntsman, and Tronox engaged in just one parallel price increase. *See* PX 92. Moreover, price increases during the Class Period occurred seemingly in lockstep, with little deliberation by the competitor firms. In one particularly significant instance in September 2005, Tronox and Kronos matched a price increase announcement by DuPont within hours, and the other producers followed suit the next day. *See id.* at effective date 10/1/2005.

The sheer number of parallel price increases, when coupled with the other evidence in this case, could lead a jury to reasonably infer a conspiracy. Indeed, courts have denied summary judgment where a case relied on far fewer instances of parallel conduct. *See Publ'n*

*Paper*, 690 F.3d 51 (denying summary judgment where, among other evidence, plaintiffs relied on three parallel price increases over the course of one year); *Flat Glass*, 385 F.3d at 355 n.5 (finding a genuine dispute of material facts where the evidence included seven parallel price increases, “by the same amount and within very close time frames,” across a period of five years); *EPDM*, 681 F. Supp. 2d at 168 (denying summary judgment where plaintiffs alleged six lockstep price increases).

The Defendants suggest that this parallel conduct is nothing more than perfectly lawful conscious parallelism. To be sure, one characteristic of conscious parallelism is the “follow-the-leader” pricing behavior described by the Third Circuit in *Flat Glass*. 385 F.3d at 358 (quoting *Areeda & Hovenkamp* § 1429, at 207-08). However, that theory contemplates the possibility that a price leader would be forced to rescind its increase because competitors decided not follow it. *Id.* In this case, no producer rescinded a price increase during the Class Period. *See* Pls.’ App. B. Instead, over a period of nine years, the top five pigment producers in the world participated in twenty-five parallel price increases, close in time and nearly always identical in amount,<sup>17</sup> and not once did the price leader back down.<sup>18</sup>

The Defendants also emphasize that their contracts with customers were individually negotiated. Thus, the prices actually paid were the result of individual bargaining, and no customer paid the price listed in the price increase announcements. This argument is quickly dispatched. Fixing the list price is itself a Sherman Act violation, regardless of whether the

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<sup>17</sup> *See generally* Pls.’ App. B. Twenty of the twenty-five parallel price increases involved identical amounts. In five sets of increases, one or two of the pigment producers announced a price increase that differed by \$0.01 or \$0.02 cents per pound. *Id.*

<sup>18</sup> Comparing the Class Period to the prior eight years, it is noteworthy that Kronos rescinded a price increase in September 1994. *See* PX 92.

actual purchases were at a lower price. *High Fructose Corn Syrup*, 295 F.3d at 656. Moreover, a higher list price artificially raises the starting point for negotiations, guiding actual prices higher. The Defendants would not raise list prices if they thought it would have no effect on sale prices. *Id.* In short, whether sellers were ultimately successful in making sales at the higher prices is irrelevant—“a horizontal agreement to fix prices need not succeed for sellers to be liable under the Sherman Act.” *Flat Glass*, 385 F.3d at 361-62 (citing *High Fructose Corn Syrup*, 295 F.3d at 656, and *Socony-Vacuum Oil Co.*, 310 U.S. at 224 nn.59).

In the end a jury could find, as the Defendants urge, that the twenty-five parallel price increase announcements in this case can be explained by conscious parallelism. Viewing the evidence in the totality, however, this Court finds that the Plaintiffs’ massive record tends to exclude the possibility of independent action. *See Publ’n Paper*, 690 F.3d at 63 (reasoning that a plaintiff need not “disprove all nonconspiratorial explanations for the defendants’ conduct” to prevail at summary judgment (quoting *Areeda & Hovenkamp* § 14.03b)). Considering the parallel price increases in combination with the other evidence discussed below, the determination whether these price increases are the result of independent or collusive behavior is a decision for the jury. Now this Court turns to an analysis of the three plus factors indicative of a conspiracy.

#### B. Motive

The first plus factor is “evidence that the defendant had a motive to enter into a price fixing conspiracy,” that is, “evidence that the industry is conducive to oligopolistic price fixing, either independently or through a more express form of collusion.” *Flat Glass*, 385 F.3d at 360. In this case, the first plus factor is satisfied. The structure of the United States

titanium dioxide market is conducive to price-fixing, based on multiple factors. First, the titanium dioxide market is highly concentrated, meaning the “market is controlled by a limited number of sellers.” *Publ’n Paper*, 690 F.3d at 65. The Defendants Millennium and Kronos admit that they, DuPont, Huntsman, and Tronox dominated the market during the Class Period. *See* Lamb Report §§ 21-28, ECF No. 410-9.

Second, titanium dioxide is a standardized, commodity-like product. *See Publ’n Paper*, 603 F.3d at 65 (finding an industry conducive to collusion where the product had “few substitutes”). The Plaintiffs’ economic expert Dr. Lamb found that while certain grades of titanium dioxide are considered specialty pigments, the majority of grades and almost all of the production are commodity pigments. Lamb Report ¶¶ 29-36. Further buttressing this conclusion is the fact that the Defendants frequently purchased titanium dioxide from the other pigment producers and sold them as their own products. *See generally* Pls.’ App. H. Ultimately, price was the most important factor for titanium dioxide customers, since there are few qualitative differences in the products sold by the Defendants. Based on this evidence, the Plaintiffs have proven titanium dioxide to be a commodity-like product.

Third, the large capital investment necessary to open a titanium dioxide plant created a high barrier to entry by new sellers. High barriers to entry make a market more susceptible to collusion. *Publ’n Paper*, 690 F.3d at 65; *EPDM*, 681 F. Supp. 2d at 169. Dr. Lamb found barriers to entry in the market making it “difficult or impossible for new suppliers to enter the market and undercut” the Defendants’ allegedly coordinated pricing. Lamb Report ¶¶ 42-50.



Fourth, the Plaintiffs allege facts showing that Defendants maintained excess capacity. Excess capacity “makes price competition more than usually risky and collusion more than usually attractive.” *High Fructose Corn Syrup*, 295 F.3d at 657. The Plaintiffs present a substantial amount of evidence indicating that the Defendants were aware of excess capacity in the industry. *See, e.g.*, Pls.’ App. K, ECF No. 451-26, at entries 05/01/2002 (“Capacity utilization in 2001 was lower than it had been in over a decade (below 85%). Expect to get to about 89% this year.”) & 10/17/2005 (quoting a Millennium presentation stating that “[t]here exists enough latent capacity such that the industry operating rate is expected to oscillate around its historical average of about 88% . . . . Over 500 kmt of latent capacity has been identified across the industry”). The Defendants contest this fact, arguing that “capacity utilization remained at high levels until the great recession” and criticizing Dr. Lamb’s estimation of global excess capacity as overinclusive. *See* Joint Mot. Summ. J. 33. Because the parties dispute whether the Defendants had excess capacity, and both have evidence supporting their positions, this issue of material fact is genuinely disputed and therefore resists resolution at this stage.

Finally, the Plaintiffs offer adequate evidence to suggest that in the decade before the Class Period and especially in 2001, the Defendants suffered substantial declines in consumption and price of titanium dioxide. Kronos and Millennium both acknowledged this crisis in the industry. *See* Pls.’ App. M at entries 02/01/2002 (Kronos’s Joe Maas distributing a chart showing that “TiO<sub>2</sub> prices declined 13% in the USA from January 2001 to January 2002”) & 10/21/2002 (Millennium’s Gary Cianfichi quoted as saying that “in 2001, capacity utilization was lower than at any point in the 1990s . . . [t]he poor demand,

utilization, and operating rates pushed prices down by about 15%”). Reduced demand is a market condition “that favor[s] price cuts, rather than price increases.” *Flat Glass*, 385 F.3d at 361. These market conditions therefore made “price competition more than usually risky and collusion more than usually attractive.” *High Fructose Corn Syrup*, 295 F.3d at 657.

In sum, the Plaintiffs adequately show the titanium dioxide market to be “a text book example of an industry susceptible to efforts to maintain supracompetitive prices.” *Flat Glass*, 385 F.3d at 361 (citing Richard A. Posner, *Antitrust Law* 69-79 (2d ed. 2001)).

### C. Actions Against Self-Interest

The second plus factor is evidence that defendants acted contrary to their economic self-interest. *Id.* at 361. In the antitrust context, behavior contrary to self-interest means actions that are “inconsistent with competition in the industry.” *Id.* “[A]bsent increases in marginal cost or demand, raising prices generally does not approximate—and cannot be mistaken as—competitive conduct.” *Id.* at 358. Indeed, price increases that are not correlated with principles of supply and demand may be especially probative of behavior contrary to self-interest. *Id.* at 362 (noting that “no evidence suggests that the increase in list prices was correlated with any changes in costs or demand”). Additionally, a seller that buys product from a competitor when it has excess capacity acts against its competitive self-interest. *High Fructose Corn Syrup*, 295 F.3d at 659. If a firm has excess capacity, but insufficient inventory to meet demand, self-interest would dictate expanding production to meet the demand. *Id.* Buying from a competitor rather than expanding production, however, maintains relative market share and “preserves peace among the cartelists.” *Id.*

In this case, the Plaintiffs present sufficient evidence of the Defendants' actions against their self-interest. They specifically cite evidence that the Defendants, as well as DuPont, Huntsman, and Tronox, shared confidential and commercially sensitive information about their businesses, *see generally* Pls.' App. I, ECF No. 451-22; helped each other maintain relative market share, *see generally* Pls.' App. H, ECF No. 451-23; and engaged in some interfirm sales at low prices rather than competing, *see id.* Moreover, the Plaintiffs argued that the pigment producers increased prices despite declining demand. *See, e.g.*, PX 148 (DuPont's Ian Edwards writing that Millennium's and Huntsman's "reading of the CEFIC info like ours should give them confidence that [North America] price increases can be prosecuted despite the flat market in [North America] itself.").

The Defendants challenge these points on several grounds. They suggest that their sharing of information was procompetitive and that the Global Statistics Program is weak evidence, considering that the program did not involve the exchange of pricing information but only current sales, production, and inventory data. However, the oligopolistic structure of the titanium dioxide market may have made the direct exchange of price information unnecessary. *See High Fructose Corn Syrup*, 295 F.3d at 656 (finding that in a concentrated market, "elaborate communications, quick to be detected, would not have been necessary to enable pricing to be coordinated"). Frequent price increase announcements could have served as "signals," making further exchange of actual price information superfluous. At least one economist recognizes that knowledge of market share is the most important information to sustain a conspiracy. *See* George S. Stigler, *A Theory of Oligopoly*, 72 J. Pol. Econ. 46 (1964) ("Fixing market shares is probably the most efficient of all methods of

combating secret price reductions.”). The Plaintiffs present sufficient proof that the Defendants used the Global Statistics Program to determine relative market share, firm inventories, and capacity utilization. *See, e.g.*, PX 58 (e-mail of Huntsman employee Paul Bradley explaining one benefit of the Global Statistics Program—that they would be able to “derive” production information of competitor firms, information that under the old regime they could only estimate).

The Defendants also argue that interfirm sales were conducted for legitimate reasons. For example, the Defendants point out that some sales occurred because of plant failures or technological setbacks that necessitated purchasing product from another pigment producer. Moreover, they contend vigorously that price increases during the Class Period were justified by increasing costs, and that an analysis of global rather than United States demand would show that overall demand for titanium dioxide during the Class Period was not declining. These debates reflect genuine issues of material fact. While some evidence suggests that the Defendants’ actions are not easily explained without inferring collusion, other evidence presents possible pro-competitive business reasons for those actions. A jury must therefore decide whether the Plaintiffs’ interpretation of the evidence carries the day. *See, e.g., Publ’n Paper*, 690 F.3d at 65 (denying summary judgment despite the fact that the plaintiffs’ evidence “admits of alternative interpretations,” because “it is the province of the jury to determine how much weight to accord” that evidence).

#### D. Evidence Implying a Traditional Conspiracy

Because the first two plus factors may “largely restate the phenomenon” of conscious parallelism, the third plus factor—non-economic evidence that suggests a traditional

conspiracy—carries greater weight. *See, e.g., Flat Glass*, 385 F.3d at 360. This evidence includes “proof that the defendants got together and exchanged assurances of common action or otherwise adopted a common plan even though no meetings, conversations, or exchanged documents are shown.” *Id.* at 361.

Ambiguous statements by competitors, taken as a whole, may support the inference of a price-fixing conspiracy. In *In re High Fructose Corn Syrup Antitrust Litigation*, the court cited as traditional conspiracy evidence several statements by the defendants referring to “an understanding within the industry not to undercut each other’s prices” and “support” for efforts to limit pricing, as well as references to competitors as friends and customers as enemies. 295 F.3d at 662 (noting that such statements would “win no friends for capitalism”). The court also identified evidence of a conspiracy in a defendant’s statement that there was an “understanding between the companies . . . that causes us not to . . . make irrational decisions,” and a notation by another defendant reading “entry of new entrants (barriers) and will they play by the rules (discipline).” *Id.*

In this case, the Plaintiffs have marshaled substantial evidence of just this sort. A limited portion of these statements are recorded in the Background Section of this Memorandum Opinion. In sum, there are competitor statements regarding industry “discipline” and the sharing of industry information through the Global Statistics Program to support the Defendants’ “collective needs.” *See, e.g.,* PX 22 at MIC04080305; PX 45 at MIC05771277; PX 179. There are also statements suggesting that the cause of the twenty-five parallel price increases during the Class Period was collusive coordination, not conscious parallelism. *See, e.g.,* PX 25 (DuPont’s Dave Young expressing a preference for timing a

price increase such that competitors would have a chance “to announce ‘differently’”); PX 97 (Millennium e-mail suggesting a later announcement date in order to give “others [a] chance to get on their horses”); PX 101 (Millennium e-mail stating, “we have competition on board for the Oct 1 price increase announcement”); PX 219 (Kronos e-mail noting that it “appears we and our competitors are prepared to reduce production rather than chase phantom volume”).

In addition, the Plaintiffs highlight communications involving industry consultant Jim Fisher that support the Plaintiffs’ theory that he served as a conduit in the alleged price-fixing conspiracy. *See, e.g.*, PX 52 (Kronos employee asking Fisher to confirm a price increase from his “lofty position”); PX 79 (Millennium e-mail describing the firm’s interest in having Fisher “ascertain relative TiO<sub>2</sub> inventory levels” of key competitors—a “little job for [Millennium]”).

The Plaintiffs further identify statements suggesting that the Global Statistics Program was a means by which the Defendants shared sensitive information and coordinated price increases. *See, e.g.*, PX 148 (DuPont e-mail stating, in regard to price increases by Millennium and Huntsman, that “their reading of the CEFIC info like ours should give them confidence that [North America] price increases can be prosecuted despite the flat market”).

Finally, there are statements revealing the Defendants’ awareness of the potential appearance of collusion in the titanium dioxide industry. *See, e.g.*, PX 207 (Millennium manager editing a draft price increase announcement because the draft was “too much like DuPont’s”); PX 253 at MIC00117020 (Millennium discussing a set of price increase

announcements after the Complaint in this action was filed and acknowledging that “we have different dates and amounts from all 3 that have announced . . . [a] key learning from this is we should have waited to announce”).

Communications between competitors, followed by a price increase by multiple sellers, may indicate that prices rose pursuant to an agreement. *See Flat Glass*, 385 F.3d at 364-67 (considering interfirm communications leading up to three price increase announcements); *Publ'n Paper*, 690 F.3d at 57-59 (analyzing three parallel price increases in the context of private meetings and phone calls that occurred shortly before them). Included in the record in this case are hundreds of meetings, industry conferences, and informal contacts among the Defendants Millennium and Kronos, DuPont, Huntsman, Tronox, and industry consultants during the Class Period. *See generally* Pls.' Apps. A, F1-F3, H, & J. Moreover, the Plaintiffs show that 88 percent of the price increase announcements listed in Plaintiffs' Appendix B came within thirty days of a General Committee meeting of the TDMA, a fact suggesting that the Defendants may have used the TDMA to coordinate price increases. *See* Pls.' Apps. A & B. Evidence in the record also demonstrates that the pigment producers' interactions often involved the subjects of pricing, inventories, supply and demand, and capacity utilization. *See, e.g.*, PX 223 (Millennium presentation at an industry wide conference referring to possible industry “tightness” in the future); PX 69 (e-mail from Ian Edwards of DuPont noting that at an industry wide conference, he stressed “the need for the industry to get its' [sic] financial house in order”). The Defendants contend that the Plaintiffs cannot build a case on this evidence since there is no direct proof that the contacts listed in Plaintiffs' Appendix A were anything more than legitimate

meetings for procompetitive business purposes. These mere “opportunities to conspire,” the Defendants argue, are not proof of collusion. Joint Mot. Summ. J. 36-45. Yet the Plaintiffs have presented evidence, not only of the large number of contacts, but also of the content of these communications, that suggests cartel behavior. This is exactly the kind of circumstantial evidence that, when viewed in conjunction with the massive record in this case, could lead a jury to reasonably infer a conspiracy in restraint of trade. *See High Fructose Corn Syrup*, 295 F.3d at 655-56 (cautioning against the supposition that “if no single item of evidence presented by the plaintiff points unequivocally to conspiracy, the evidence as a whole cannot defeat summary judgment”).

\* \* \*

Having carefully considered the sheer number of parallel price increase announcements, the structure of the titanium dioxide industry, the industry crisis in the decade before the Class Period, the Defendants’ alleged acts against their self-interest, and the myriad non-economic evidence implying a conspiracy, this Court finds that the Plaintiffs put forward sufficient evidence tending to exclude the possibility of independent action. For this reason, the Motions for Summary Judgment filed by Kronos (ECF No. 432) and Millennium (ECF No. 439), as well as the Joint Motion for Summary Judgment (ECF No. 442) as it pertains to the remaining Defendants Kronos and Millennium, are DENIED.

## **II. The Defendants’ Statute of Limitations Argument**

In the final pages of the Joint Motion for Summary Judgment, the Defendants argue that apart from the reasons for entering summary judgment against the Plaintiffs’ entire Sherman Act claim, their claim for damages reaching back to February 2003 also fails based



on the statute of limitations. Pursuant to the Clayton Act, 15 U.S.C. § 15b, a Sherman Act claim is barred “unless commenced within four years after the cause of action accrued.” A cause of action generally accrues “when a defendant commits an act that injures a plaintiff’s business.” *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 338 (1971). “Even when defendants continue to perform overt acts in furtherance of an antitrust conspiracy within the statutory period, plaintiffs’ injuries also must fall within the limitations period in order not to be time-barred.” *Pocahontas Supreme Coal Co. v. Bethlehem Steel Corp.*, 828 F.2d 211, 218 (4th Cir. 1987) (citation omitted).

In this case, the Plaintiffs’ original Complaint was filed on February 9, 2010. In order to allege a conspiracy beginning in 2002, the Plaintiffs must show that the limitations period should be tolled by fraudulent concealment. Otherwise, their claim for damages would be limited to the period four years prior to their filing of their Complaint—that is, the period starting February 9, 2006. To prove fraudulent concealment, the Plaintiffs must establish “that (1) the party pleading the statute [of limitations] fraudulently concealed facts which are the basis of a claim, and that (2) the claimant failed to discover those facts within the statutory period, despite (3) the exercise of due diligence. *Id.* (citing *Weinberger v. Retail Credit Co.*, 498 F.2d 552, 555 (4th Cir. 1974)). To satisfy the first element of the fraudulent concealment test, the Fourth Circuit’s test requires a plaintiff to provide “evidence of affirmative acts of concealment.” *Supermarket of Marlinton, Inc. v. Meadow Gold Dairies, Inc.*, 71 F.3d 119, 126 (4th Cir. 1995). That evidence “need not be separate and apart from the acts of concealment involved in the antitrust violation; rather, [the] proof may include acts of concealment involved in the alleged antitrust violation itself.” *Id.*

The Defendants maintain that the Plaintiffs cannot meet the three elements of the fraudulent concealment test. Essentially, they contend that the Plaintiffs had notice of the facts forming the basis of their claim since February 2003, when the Defendants Millennium and Kronos, DuPont, Huntsman, and Tronox began to publicly announce parallel price increases. They also contend that the Plaintiff did not exercise due diligence to discover the facts underlying this action. To bolster the Defendants' claim, they highlight Dr. Lamb's characterization of the price increase announcements as a "tell-tale sign of cartel behavior." Defs.' Ex. A-6, Lamb Oct. Report ¶ 84. They also point out Class Representative Mr. Haley's statement during his deposition that "there's always something in the back of my mind, that, yeah, if everything is going up and, economically, the country wasn't doing all that well, what's the reason." Defs.' Ex. D-2, Haley Dep. 209-11.

In further support of their argument, the Defendants point to the antitrust decision *GO Computer, Inc. v. Microsoft Corp.*, 508 F.3d 170 (4th Cir. 2007), in which the Fourth Circuit affirmed a decision to grant summary judgment on the basis of the Clayton Act's statute of limitations for an antitrust claim. In *GO Computer*, however, there was little question that the plaintiff had been on notice approximately fifteen years prior to filing suit, since the plaintiff was twice involved in the Federal Trade Commission's ("FTC") antitrust investigation of the defendant company Microsoft. *Id.* at 178. The first time, an FTC investigator remarked to the plaintiff that the case against the defendants looked "like a textbook case of abuse of monopoly power." *Id.* The second time, the plaintiff provided a declaration to the FTC, reporting specific conversations that provided proof of the antitrust violation. *Id.* In a book written by the plaintiff a few years later, the plaintiff reported more conversations that were

probative of the violation. *Id.* “What put [the plaintiff] so plainly on inquiry notice,” the Fourth Circuit explained, was “the multiplicity and specificity of information he had.” *Id.* at 179.

Unlike the case in *GO Computer*, this Court cannot say as a matter of law that the Plaintiffs were on notice of the facts underlying this action starting in February 2003, or should have been on notice had they exercised due diligence. The Plaintiffs have provided adequate evidence of fraudulent concealment to survive summary judgment on this ground. For example, they proffer numerous pieces of evidence suggesting that the Defendants attempted to minimize the appearance of collusion. *See, e.g.*, PX 193 (DuPont’s Peter O’Sullivan writing in advance of an industry conference that “[m]aking public announcements in close proximity to a large industry gathering requires heightened awareness to the inappropriateness of interactions with competitors . . . please be certain next week to refrain from any dialogue with any competitors”). The Defendants also kept secret the TDMA’s Global Statistics Program. *See, e.g.*, PX 76 (Millennium’s Gary Cianfichi stressing that the GSP was confidential and any references made to the public regarding market details should be described as “[Millennium] estimates and never as CEFIC data”); PX 105 (Kronos’s Henry Basson reminding colleagues that “[a]ny TDMA statistics that are shared with you or any specifics which you may share with your co-workers, should UNDER NO CIRCUMSTANCES BE DIVULGED TO ANY THIRD PARTIES”).

There is also evidence in the record indicating that the Defendants gave inaccurate information to customers in order to justify their price increases. For example, in a telephone conversation with a financial consulting firm, Jim Fisher explained that the

“published production capacities” of the pigment producers are “far below the real ones,” and that DuPont, Millennium, and Kerr-McGee had a total of “350,000 tons of unused capacity.” *See* PX 91 at IBMA-Fisher 006552, ECF No. 451-126. The notes reflect Fisher’s belief that those producers would “not want to talk about” their excess capacity, in order to be “able to tell their customers that they are tight and . . . demand a good price.” *Id.*

Based on this evidence, a reasonable jury could conclude that the Defendants fraudulently concealed evidence of collusion. For this reason, summary judgment as to the Plaintiffs’ claim for damages between February 2003 and February 2009 on the basis of the Clayton Act’s statute of limitations is DENIED.

#### CONCLUSION

For the reasons stated above, the Motion for Summary Judgment filed by Kronos Worldwide Inc. (ECF No. 432) and the Motion for Summary Judgment filed by Millennium Inorganic Chemicals (ECF No. 439) are DENIED. The Joint Motion for Summary Judgment (ECF No. 442), as it pertains to the remaining Defendants Kronos and Millennium, is likewise DENIED.

A separate Order follows.

Dated: August 14, 2013

/s/  
Richard D. Bennett  
United States District Judge