Slip Op 06 - 184

UNITED STATES COURT OF INTERNATIONAL TRADE

AVECIA, INC.	:	
Plaintiff,	:	
v.	:	Before: **MUSGRAVE, Judge**
	:	Consol. Court No. 05-00183
UNITED STATES OF AMERICA,	:	
Defendant.	:	

[On classification of ink-jet inks imported from Scotland and subjected in the United States to reverse osmosis and inclusion of additives, products are correctly classified as "printing inks" of heading 3215 of the Harmonized Tariff Schedule of the United States; judgment for the plaintiff.]

Decided: December 19, 2006

Buchanan Ingersoll PC (*Steven E. Bizar*, *Jill W. Rogers*); *Crowell & Moring LLP* (*Alexander Schaefer*), for the plaintiff.

Peter D. Keisler, Assistant Attorney General, *Barbara S. Williams*, Attorney in Charge, International Trade Field Office, Commercial Litigation Branch, Civil Division, United States Department of Justice (*Saul Davis*); Office of Assistant Chief Counsel, International Trade Litigation, U.S. Customs and Border Protection (*Beth C. Brotman*), of counsel, for the defendant.

OPINION

Following a bench trial on whether imported ink-jet ink concentrates consisting of chromophores in deionized water should be classified for customs duty purposes under the Harmonized Tariff Schedule of the United States ("HTSUS") as "synthetic organic coloring material," specifically "dyes," of heading 3204, or "printing inks" of heading 3215, the Court concludes that the products are correctly classifiable under heading 3215.

Procedural Background

This proceeding resolves a lengthy dispute between the plaintiff Avecia, Inc.[1] and the defendant United States involving the defendant's agency, U.S. Customs and Border Protection or its predecessor(s) ("Customs"), over the proper tariff classification of Avecia's ink-jet ink liquids. As with other ink-jet ink classifications that Avecia has been protesting, the matter of this dispute was imported from Avecia's related manufacturing facility at Grangemouth, Scotland in 2003. *See* Pretrial Order, Schedule C ("POSC") at ¶ 15.

Previously, in 1998, Avecia submitted to Customs protest number 1101-98-100179 on the proper classification of "Pro-Jet Fast Yellow 2" ("FY2"). Avecia argued that FY2 should be classified as a printing ink of heading 3215, HTSUS, and not as a dye (*i.e.*, synthetic organic coloring material) of heading 3204, HTSUS. *See id*. at ¶ 5 (April 28, 2006). In the spring of 2000, Customs approved the protest and memorialized the approval in HQ 962365,[2] reclassifying Pro-Jet Fast Yellow 2 under heading 3215. *See id*. at ¶ 6; Pl.'s Ex. 22 at 14. After that approval, Avecia sought to apply Customs's analysis to other ink-jet inks by filing protests on entries that Customs had classified as dyes. Customs denied the protests, and Avecia timely contested the protest denials in two actions before this court, USCIT Nos. 03-00001 and 03-00197, filed in December 2002 and April 2003, respectively. *Id*. at ¶ 9; Compl. & Answer I ¶ 24; Compl. & Answer II ¶ 24.

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[1] Unless the context otherwise indicates, reference to Avecia includes reference to Avecia's predecessors, whose current successor is FujiFilm Imaging Colorants.

[2] This Headquarters Ruling was not available in a recent search of the Customs Rulings Online Search System (CROSS) (http://rulings.cbp.gov) but it is available as a matter of public record.

During that period, on January 2, 2003, Customs published and invited comment on its "Proposed Revocation of Ruling Letters and Treatment Relating to Tariff Classification of an Ink[-] Jet Color Preparation." POSC at ¶ 10. The literal terms of 19 U.S.C. § 1625(c) meant that the period for submitting comments thereon was open until February 3, 2003, after which Customs was required to "take action" on any "decision to modify or revoke" the previous ruling favoring Avecia within 30 days after the close of the comment period. 19 U.S.C. § 1625(c). *Cf*. Harmon Dep. Tr. 80:15-82:8. Customs did not publish its general notice of revocation and ruling number HQ 966063 relating to the tariff classification of FY2 in the Customs Bulletin until June 25, 2003. *See* POSC at ¶ 11. The notice and ruling concluded that FY2 is classified under subheading 3204.14.30. *Id*.

In July 2003, Avecia, through counsel, sent a letter to Customs asserting that Customs's notice of revocation, which had been sent to Avecia's counsel on June 13, 2003, was "ineffective." *Id*. at ¶ 12. Some five months later, on February 25, 2004, the parties resolved Avecia's first judicial challenges, USCIT Nos. 03-00001 and 03-00197, by entering into two stipulated judgments on agreed statements of facts. *See id*. at ¶ 14 (Customs noting its position that the stipulations were solely procedural and not substantive).

Avecia then sought to contest other year 2003 entries including the ink-jet inks at issue. Customs had classified the liquids under heading 3204 "synthetic organic coloring matter . . . dyes" under the HTSUS. Avecia tendered the duties claimed by Customs on the subject matter at the time of entry, and Customs liquidated the entries from November 14, 2003 through August 20, 2004, as entered. *Id*. at ¶ 18. Avecia timely protested the classifications, again arguing that the merchandise should be classified as "printing inks" under heading 3215. *Id*. at ¶ 19. During June and October

2004, Customs denied each of Avecia's protests as to the subject products. *Id*. at ¶ 20. Plaintiff then filed a summons on September 27, 2004 and initiated case No. 04-00489, and a summons on March 1, 2005 covering the other protests involved in this action. *Id*. at ¶ 21.

The protests cover entries of "Pro-Jet Cyan 1 Stage RO Feed," "Pro-Jet Cyan 1 Special Liquid Feed," "Pro-Jet Black 287 Liquid Feed," "Pro-Jet Yellow 1 Liquid Feed," "Pro-Jet Cyan 854 Liquid Feed," "Pro-Jet Black 661 Liquid Feed," and "Pro-Jet Black HS Stage." *Id*. at ¶ 15. With the exception of Pro-Jet Black HS Stage, Customs considered the liquids "direct dyes" and classified them either under heading 3204.14.30 ("other . . . products described in additional U.S. note 3 to section VI"), which bore a duty rate of 7.4% *ad valorem*, or under heading 3204.14.50 ("other . . . other"), which bore a duty rate of 7.8% *ad valorem*. Customs considered Pro-Jet Black HS Stage, covered by entry number 916-1076747-6, a "reactive dye" and classified the liquid under heading 3204.16.30 ("other . . . products described in additional U.S. note 3 to section VI"), which bore a duty rate of 7.4% *ad valorem*. *See id*. at ¶ 16; Ans. at ¶ 32. The parties do not dispute the value of the merchandise declared on the subject entries as set forth in the relevant protests. POSC at ¶ 17.

The parties severed for stipulation certain entries having dates of entry prior to August 24, 2003, when the FY2 ruling was belatedly revoked. *See* Order of 4/28/06 (granting motion to sever). The parties agreed that products entered before August 24, 2003 are classifiable under heading 3215.19.0060 or under heading 3215.11.0060 at a duty rate of 1.8% *ad valorem* pursuant to Customs's April 2000 ruling approving Avecia's protest as to the classification of its FY2 product. Def.'s Supp. Resp. to Interrogs. ¶ 10. Ten 2003 entries continue to be contested. *See* Pl.'s Exs. 21 & 22; *see also* Compl. & Answer I ¶ 36; Compl. & Answer II ¶ 37.

Jurisdiction

28 U.S.C. § 1581(a) confers exclusive jurisdiction in this Court on the denial of a customs classification protest.

Findings

Introduction

Avecia traces its direct roots back to Imperial Chemical Industries PLC, a U.K. dye manufacturer formed in 1926. *See* R 259:8-11, 260:21-22. Its witnesses therefore testified to familiarity with both dye and ink-jet ink development and manufacture. The advent of ink-jet ink printing technology prompted Avecia to concentrate on ink-jet manufacture, and the relative newness of this technology appears to have precipitated this dispute over the classification of its imports.

To discuss its products at trial, Avecia introduced the testimony of Mr. Craig Johnston, Avecia's process technology and toll manufacturing manager, Dr. Ilesh Bidd, Avecia's research and technology director and corporate representative, Prof. Peter Gregory, whose working life was devoted to the research department of Avecia and is now retired, and Dr. Harold Freeman, a professor of dye chemistry at North Carolina State University and Avecia's expert witness. Their collective testimony, together with Avecia's exhibits, addressed distinctions between Avecia's products, dyes, inks, ink-jet inks, and Avecia's role in the evolution of the latter. Dr. Bidd also demonstrated that the products are capable of printing in their condition as imported, using an Epson C62 printer and standard Epson photo paper, and he opined that the print "looks great." The Court determined the success of the demonstration R 326:15-343:9, 343:24-25. *See* Pl.'s Ex. 95. The government asked for and received a sample of the product used in the demonstration, and, after

testing same, confirmed that it was identical to the products here in dispute and did not contain additives. R 828:20-829:10.

The government introduced the testimony of Harvey Kuperstein, who is the National Import Specialist responsible for, *inter alia*, the classification of imported dyes under heading 3204. R 766:6-767:24, 790:23-791:2, 794:24-795:3. Although Mr. Kuperstein is not responsible for the classification of inks under heading 3215, he stated he is familiar with heading 3215 classification and represented that he has "a layman's ability to fathom this kind of technology." R 799:3-7.

The parties also introduced various exhibits at times throughout the trial. In addition, the parties introduced the deposition testimony of Deborah Walsh, the National Import Specialist responsible for heading 3215 during the relevant period of importation, Myles Harmon, the director of the Commercial and Trade Facilitation Division of Customs and Customs's corporate representative as to procedural issues related to classification, Mr. Kuperstein, and Dr. Bidd, all of which the Court admitted. R 763:17-764:8, 764:18-20.

Pigment- and Dye-Based Inks; Ink-Jet Printing; Description of the Imports

All inks contain a colorant. The two organic types of colorants are pigments and dyes. R 487:3-488:22. Pigments are insoluble; in this matter, dyes refer to the dyes that are soluble in an organic solvent such as water. R 43:5-18, 276:13-25, 452:2-24, 487:3-488:22, 695:7-17.

Traditional printing inks consist of a dispersion of a pigment, such as lamp-black, in a solution containing a binder which acts to adhere the pigment component to a substrate normally comprised of a hydrophilic cellulose-based material (*i.e.* paper). *See generally* R.229:9-18, 499:3-5, 598:19-24, 277:2-23, 299:23-302-7, 479:21-480:7, 695:18-696:2. Avecia's expert witness, Dr.

Freeman, explained that pigments have no affinity for a substrate and cannot penetrate the cellulosic surface of paper; accordingly, they require a binder or glue to affix them to the substrate in order to stay in place. He further explained that dyes–particularly dyes designed with ink-jet printing in mind–have built into them all of the salient properties essential for fixation to the substrate. R 487:3-488:22.

Ink-jet printing differs from traditional printing in that the ink is squirted or dropped directly onto the substrate without the involvement of, *e.g.*, photoconductors or ribbons. R 271:9-272:5, R 496:6-21, 689:13-690:24. This involves precise and controlled ejection of a liquid colorant through an ink-jet printer's fine nozzles onto a substrate; consequently, "inks formulated for jet printing must be very fluid, stable, and free of any particles that could cause clogging of the jet nozzles, and be capable of depositing and adhering to a substrate with a minimum of character fogging." *Kirk-Othmer Concise Encyclopedia of Chemical Technology* 1138 (4th ed. 1999) ("*Kirk-Othmer*").

For ink-jet printing, soluble dyes offered certain advantages over pigments. Pigments, being insolvent particulates, have a propensity towards kogation, resulting in clogged ink-jet print heads. *See* R 697:9-24. Water was also determined to be an ideal solvent for ink-jet ink development. *See* R 277:24-20, 697:25-698-13. The development of aqueous dye-based ink therefore appeared obvious to original equipment manufacturers ("OEMs") contemplating the development of ink-jet printing technologies. To meet their needs, Avecia began to research, develop, and manufacture ink-jet inks by purifying and processing water-soluble colorant molecules, or chromophores, including colorants that were commercially available at the inception of modern ink-jet printing as well as new colorants designed by or for Avecia. The qualities of each of Avecia's ink-jet ink generations to date

is a function of both the structure of the molecule and the manufacture of the ink. After investments in the late 1980s and early 1990s on ink-jet ink development, in the late 1990s Avecia sold its textile dyes business, concentrated its remaining Grangemouth facilities for ink-jet ink manufacture, and invested a substantial amount of money, especially since 1997, to anticipate growth in the ink-jet ink market. R 47:20-48:8, 51:7-53:21, 67:6-16. *See* Pl.'s Ex. 92; *see also* Pl.'s Ex. 40 at 34.

As mentioned, each of the Avecia products at issue consists of water-soluble coloring matter in water. R 233:4-14, 318:17-320:2, 608:20-24, 719:11-721:10. More precisely, they are chromophores in a solution of approximately 90~95% deionized water which is maintained at a precise pH equilibrium. *See* R 157:2-167:14. The imported Cyan 1 also has an added biocide to prevent bacterial growth. R 127:17-129:8. The products are "novel" in the sense that they consist of new or existing molecules that have been purified to an extreme state through a series of elaborate steps at the Grangemouth facility undertaken to enhance their "printing" characteristics. Some, such as Pro-Jet Fast Black, are also constructed using novel intermediates to produce the desired end-result. *E.g.*, R 713:4-716:20; Bidd Dep. Tr. at 13. Each of the imported products is designed and/or purified to achieve a particular target of color strength, purity, solubility, environmental safety, and substrate affinity including minimum wetfastness, light fastness, and ozone fastness characteristics.[3] *See* R 483:21-494:21; *see also* R 302:13-306:17, 507:9-508:4, 705:16-706:12, 706:15-707:19; Pl.'s Ex. 40 at 7-14. Each of the imported products is also designed to penetrate a substrate and "bind"

[3] For example, one of the key discoveries Avecia made during the long development process of dye-based ink-jet inks took advantage of the principles of differential solubility and volatile cations, *e.g.*, the pH sensitivity of a carboxylic acid group ($–CO_2H$) in the presence of a sulfonic acid group ($–SO_3H$) that is characteristic of certain substrates, to vastly improve wetfastness. The discovery opened further avenues of research into enhancing colorants' light- and ozone-fastness qualities. *See* R 302:13-306:17, 507:9-508:4, 705:16-706:12, 706:15-707:19; Pl.'s Ex. 40 at 7-14.

through the evaporation of the "ink vehicle," which in this case is water. R 352:5-21. Consequently, in contrast to pigment-based inks, the imported products do not have an added binder.

The two most crucial considerations for developing an ink-jet ink are its color and its "fastness" including substrate affinity. R 134:11-135:10, 239:15-240:15. The "active" part of the chromophore imparts color, and those properties are determined by the molecule's propensity to absorb or reflect specific light waves of the visible (human) spectrum. *See* R 155:4; Bidd Dep. Tr., Def.'s Ex. A , at 73-74. Color may be precisely determined using so-called "LAB" values. *See* Pl.'s Ex. 91. These describe color coordinates on the Commission Internationale de l'Eclairage (CIE) L*a*b grid, a "full" color map on horizontal and vertical axes. Luminance takes values between 0 and 100, and the other coordinates take values between -100 and 100. The a and b coordinates measure positions on the green/red and blue/yellow axes respectively. Lab values are critical specifications and are used as standard color nomenclature in the manufacture of colorants to describe the intensity of each color and exact shade of each color (*i.e.*, how green/red or blue/yellow the color appears).[4] R 134:12-21, 291:9-20, 288:7-17, 385:16-22. Further, it is possible to (re)create about 80 to 85% of the 16.7 million colors on the color map by mixing yellow, magenta, cyan, and black into various combinations. R 709:3-8. Ideals of these four colors are therefore the targets of ink-jet ink manufacture. R 290:3-24. *Cf.* Pl.'s Ex. 91.

In addition to color, the chromophores have undergone several generations of development seeking to enhance their fastness capabilities, *i.e.*, substrate affinity and resistance to degradation

[4] Avecia's averred that its laboratories rely on LAB values every day. R 134:12-21, 291:9-20. The calculations involve complex physics equations, and the standards permit identification of every single observable color by a numerical value. R 291:9-20. *See* Pl.'s Ex. 91.

from light and ozone. *See*, *e.g.*, R 302:13-306:17, 456:20-457:4, 507:9-508:4, 518:19-519:15, 520:10-521:6, 700:10-17, 703:2-705:3, 704:19-705:3, 705:16-706:12, 706:15-707:19, 709:9-710:11; Pl.'s Ex. 40 at 7-14. *Cf.* 456:20-459:24, 533:12-16, 564:2-10, 566:16-574:13, 580:11-25; Pl.'s Exs. 66-72. These key chemical traits, which have been built into the molecules at Grangemouth, are reflected in the colors of the colorants as specified by the LAB coordinates of the inks on paper. R 133:23-134:10, 239:15-240:15. In other words, the color and color strength that the molecules display on paper is a direct reflection of the design effort that has gone into them. R 510:7-515:21; Pl.'s Ex. 55.

It was undisputed that the products at issue are designed for use in ink-jet printers. Upon importation into the United States, however, the liquids are not sold or used as ink-jet printing inks in their condition as imported but must undergo a finishing process involving reverse osmosis to remove certain inorganic molecules like chlorides and calcium, sulfate ions, and cations such as iron. *See* R 321:11-12. The processing requires the addition of new deionized water and incidental displacement of some of the imported water. The liquids are also further processed with additives, as required,[5] for Avecia's OEM customers. R 169:7-173:6, 198:22-199:10.

Differences Between the Manufacture of Ink-Jet Printing Inks and the Manufacture of Textile Dyes

The testimony of Avecia's witnesses described various differences between the manufacture of ink-jet inks and the manufacture of traditional or textile dyes, including design and customer

[5] For one OEM customer, Avecia performs toll manufacture, specifically a blending of materials, according to the OEM's recipe(s), however it is unclear from the record whether such further processing applied to any of the specific product types at issue. *See* R 170:6-14.

input, raw materials, manufacturing processes, quality control, staffing differences, and management of change in addition to other dissimilarities. *See* Pl.'s Ex. 40 at 37-39; Pl.'s Ex. 93.

Design and Customer Input. Ink-jet inks are designed and manufactured as ink-jet inks to be printed on a substrate. R 483:21-21; 713:19-714:5. *See* Kuperstein Deposition Transcript ("Dep. Tr.") 48:1-49:16; *see also* R 820:10-823:10; Pl.'s Ex. 93. By contrast, commercial dyes are designed to dye a particular substrate. R 528:21-529:15. *See* Pl.'s Ex. 93. In contrast to dye manufacture, the ink-jet ink business requires close collaboration with OEMs, from both a scientific and technological perspective, in order to meet specific targets and minimum standards. R 265:25-267:10. *See* Pl.'s Ex. 93. In order to meet the specific targets of OEMs, Avecia must build specific properties into the colorant molecules within the ink system. R 268:6-269:25. Dyes for textiles, by contrast, do not have the same strict color requirements as ink-jet inks: the textile dyes business involves very little interaction with the customers. R 267:11-269:25, 386:15-387:24. *See* Pl.'s Ex. 93. Avecia's textile dye experience had been that specifications or targets were not provided by customers but were decided by the company's internal technical marketing group. *Id*. In contrast to ink-jet printer OEMs, textile dye customers tend to buy their requirements off-the-shelf and subject to commercial availability. *See id*.

Raw Materials. Significantly higher standards are required of the raw materials used in the manufacture of ink-jet ink than of those used in dye manufacture. R 59:4-12. *See* Pl.'s Ex. 40 at 38; Pl.'s Ex. 93. Raw materials used for ink-jet ink manufacture must in some instances be pharmaceutical grade material, whereas textile dye raw materials tend to have been commoditized. R 83:5-23. *See* Pl.'s Ex. 40 at 38; Pl.'s Ex. 93. Ink-jet ink raw materials are often more expensive

and require more stringent storage controls than raw materials for bulk textile-dye manufacture. R 62:8-63:12, 92:14:93:2, 521:14-522:11. *See* Pl.'s Ex. 40 at 39. The choice of raw material effects the quality of the overall ink in terms of its environmental fastness and color. Ink-jet ink manufacture therefore requires raw materials that are of a much higher quality and with lower impurities than the raw materials used in dye making. R 101:16-103:15. *See* Pl.'s Ex. 93.

Manufacturing Processes. Ink-jet ink manufacture requires more steps, temperature control, pH control, and in-process testing, than are required for textile-dye manufacture. R 55:20-59:3, 59:13-23, 71:22-72:19. *See* Pl.'s Ex. 40 at 37-38; Pl.'s Ex. 93. In ink-jet ink manufacture, there are specifications for the temperatures, reaction time and impurities that must be met at set stages during the processing, and there is also intensive quality control and batch review at the end stage. R 59:24-61:16. *See* Pl.'s Ex. 40 at 37. The in-process testing is designed to optimize the processes for purposes of ensuring purity and avoiding kogation. R 96:13-97:7. Avoiding kogation is key to the design and manufacture of ink-jet inks, as kogation would potentially mean the recall of millions of cartridges for the impacted OEM customer. R 69:21-71:7. Batches that do not meet specifications sometimes require discard. R 61:17-62:7. *See* Pl.'s Ex. 40 at 37. In contrast, Avecia's prior experience in textile dye manufacture had been that the concept of batch review was unnecessary; rather, there would be application testing at the end, and batches would be blended and shaded in order to eliminate any perturbations. R 61:17-62:7. *See* Pl.'s Ex. 40 at 37; Pl.'s Ex. 93.

Quality Control. In Avecia's ink-jet ink manufacture, each batch is the final product, so blending is not performed in the way that it had been traditionally for textile dye manufacture, where standardizing tanks had been used to blend batches to ensure that they met target specifications. R

51:25-52:19, 79:19-81:18, 107:11-108:5. *See* Pl.'s Ex. 40 at 37; Pl.'s Ex. 93. In the manufacture of an ink-jet ink batch, if there are any deviations from normality at any point, a batch review is conducted which involves the quality assurance manager and the manufacturing personnel, who review all of the data, possibly gather additional data, and determine whether the material can go into the supply chain or needs to be quarantined and subjected to additional testing. R 103:16-104:8. *See* Pl.'s Ex. 40 at 38; Pl.'s Ex. 93. If ultimately it is determined that the material cannot be released into the supply chain, it is discarded and written off rather than reworked. R 105:14-25. *See* Pl.'s Ex. 93. With textile-dye manufacture, unless there has been a major abnormal operation, batches are capable of being reworked through blending to achieve specifications. They are not quarantined or written off. R 106:10-107:10. *See* Pl.'s Ex. 93.

Staffing Differences. For ink-jet ink manufacture, the manufacturing technicians are multi-skilled. In addition to responsibilities for process operations, they also maintain the plant and perform their own analyses of chemical purity and the chemical species present. R 90:4-23. *See* Pl.'s Ex. 40 at 39; Pl.'s Ex. 93. Avecia's process technology team for ink-jet ink manufacture employs 36 individuals permanently at Grangemouth and 9 of them are Ph.D-qualified while the rest are degree-level qualified. R 90:24-91:8. *See* Pl.'s Ex. 93. The process-technology team exercises a higher level of supervision over the entire process of ink-jet ink manufacture than had been the case for dye manufacture and provides 24-hour support to ink-jet ink manufacture. R 92:3-13. *See* Pl.'s Ex. 40 at 39. When the facility had previously been manufacturing textile dyes, there had been about 10 permanent employees who oversaw a much higher average volume of products. R 91:9-23. *See* Pl.'s Ex. 40 at 39; Pl.'s Ex. 93.

Other Dissimilarities. Other dissimilarities between ink-jet ink and textile dye manufacture include the following. (1) There are vast differences between the volumes of product manufactured: on an equivalent-manufacturing-unit basis, Avecia's production capacity was far greater for dyes than it is for ink-jet inks. R 52:4-24, 58:16-59:3, 68:20-69:9. *See* Pl.'s Ex. 40 at 37; Pl.'s Ex. 93. (2) In contrast to textile dye manufacture, any change in ink-jet ink manufacture processes, such as introducing new starter materials or changing a chemical process, requires more rigorous management of the change including substantial laboratory testing possibly customer agreement in advance. R 77:2-23. *See* Pl.'s Ex. 40 at 38; Pl.'s Ex. 93. For example, changing a single raw material may take a year to process. *Id*. (3) Reconfiguring a unit line to produce a different color is a much more laborious undertaking for ink-jet ink manufacture than for textile dye manufacture. For example, in either instance the production unit must be cleaned out, but the clean-out regime for ink-jet ink manufacture is much more difficult and time consuming. R 67:20-68:17. *See* Pl.'s Ex. 40 at 37. (4) There are three laboratories at Grangemouth for ink-jet ink, whereas there had been only one full and one partial laboratory at Grangemouth to support dye manufacture. R 100:8-14. (5) On a per-unit basis, Avecia's manufacture of ink-jet inks is approximately ten times more expensive than had been the case for dye manufacture. R 93:3-15. *See* Pl.'s Ex. 40 at 39; Pl.'s Ex. 93. (6) In ink-jet printing, nearly all of the product is used on the substrate and none is wasted. By contrast, most of the dye of a textile dyeing operation remains in the dye bath as waste and only a small portion of the product actually dyes the substrate. R 272:6-275:11, 498:2-499:2. *See* Pl.'s Ex. 93.

Avecia's Expert Testimony

Avecia's expert, Dr. Harold Freeman, concluded that the subject products are properly designated as printing inks. R 479:14-20, 483:5-20, 608:10-610:2. The experiments performed by Dr. Freeman were intended to determine whether the Avecia liquid feed products–namely, Pro-Jet Cyan 1 Special Liquid Feed, Pro-Jet Cyan 854 Liquid Feed, Pro-Jet Yellow 1 Liquid Feed, Pro-Jet Black 287 Liquid Feed, Pro-Jet Black 661 Liquid Feed, and Pro-Jet Cyan 1 RO Liquid Feed–are ink-jet printing inks or direct dyes at the time of their manufacture in Grangemouth. *See*, *e.g.*, R 479:14-20, 483:5-20. Dr. Freeman's first experiment tested the properties of the products when used as ink-jet inks; his second experiment tested the properties of the products when used as textile dyes. Dr. Freeman's first experiment demonstrated that the Avecia-Grangemouth liquid feed products can be readily printed onto paper using water as the sole non-colorant component in the ink. Dr. Freeman determined that the Avecia-Grangemouth liquid feed products can be applied to paper without any further additives by using a standard Epson printer and also that they meet the end-use requirements of printing inks. R 483:21-24, 484:22-485:20.

To make those determinations, Dr. Freeman performed an experiment employing two sets of samples: (1) products generated in the standard manufacturing processes at Avecia-Grangemouth prior to being sent to Avecia's outfit at New Castle, Delaware, as feed stock (liquid feeds) for commercialization, and (2) products obtained after representative further processing operations at New Castle. R 525:3-527:4. *See* Pl.'s Ex. 65. Dr. Freeman tested both the Avecia-Grangemouth sample and the Avecia-New Castle sample for each of the following products: Pro-Jet Cyan 1 Special Liquid Feed, Pro-Jet Cyan 854 Liquid Feed, Pro-Jet Yellow 1 Liquid Feed, Pro-Jet Black

287 Liquid Feed, and Pro-Jet Black 661 Liquid Feed.[6] *Id*. There was no New Castle sample available for Pro-Jet Cyan 1 RO Liquid Feed, so Dr. Freeman tested only the Grangemouth sample. *Id*. Dr. Freeman further testified that this fact should have no bearing on the validity of his conclusions. *Id*.

Samples of liquid feeds (ex- Grangemouth, Scotland) and samples of final products (ex-New Castle, Delaware) were shipped to Manchester, England for Dr. Freeman's experiments. R 525:3-527:4. He evaluated the two sets of samples based on the following qualities: (a) printability, (b) water fastness (a/k/a wetfastness), (c) ozone fastness, (d) light fastness, and (e) color assessment. *See* R 456:20-457:4, 564:2-10. His experiment for testing the properties of the subject products when used as inks corresponded to the same tests that Avecia would use in evaluating its products for printability and fastness. R 457:5-25. Dr. Freeman looked for standard test methods published by organizations such as the American Association of Textile Chemists and Colorists and the American Society for Testing and Materials but could find no such tests. R 458:13-459:4. He testified that, to his knowledge, there are no standardized methods agreed upon by all of the OEMs for the assessment of inks and their properties. R 531:17-3. Accordingly, he relied upon his experience, the feedback from Avecia as to what kinds of tests have been designated in the past by the OEMs with which they have been affiliated, and similar tests used for the evaluation of fastness properties of dyes on textiles, in order to determine appropriate test methodology. R 457:5-459:24.

Dr. Freeman first ran the sample products through an Epson C 62 printer and printed them onto "HP" plain paper and Epson photographic paper. R 533:20-534:21. He printed multiple pages

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[6] The New Castle sample of Pro-Jet Black 287 is designated as Pro-Jet Black 2 Final Product. *Id*. Dr. Freeman also tested Pro-Jet Black HS Stage, but that is no longer at issue here.

of line diagrams that demonstrated the printed ink at three depths of color: 100%, 70%, and 50%. *Id*. The evaluations demonstrated that the subject products could, indeed, be printed readily from a standard ink-jet printer, and that there were no significant visible differences between the image created by the Grangemouth sample and the New Castle sample for each product. R 535:10-536:3, 543:5-10, 561:21-563:17; Pl.'s Exs. 58-60.

The colors of the printed inks were measured at various points. Dr. Freeman testified that he used standard equipment to measure the LAB values, the percent reflected optical density, the chroma, and the hue angle of the printed samples. R 564:2-566:13. These measurements were made (1) after printing each substrate, (2) after light fastness exposures, and (3) after ozone exposures. R 566:16-567:24; Pl.'s Exs. 66-72. He testified that: (a) color values recorded after printing and drying showed insignificant differences between the pairs of yellow, cyan, and black inks, and (b), similarly, insignificant differences in color values were observed following light and ozone exposures of commercial ink-jet paper printed with the same pairs of inks. R 567:25-574:13. *See* Pl.'s Exs. 66-72.

Dr. Freeman tested water fastness by having one-half millimeter of water applied to the samples of Avecia's products printed on plain HP paper with the substrate placed at an angle of 45 degrees. R 574:22-575:11. These tests demonstrated that the sample from Grangemouth and the sample from New Castle for each product run to the same degree and, therefore, have similar water fastness. R 575:16-579:24, 582:24-584:3. *See* Pl.'s Exs. 61-62, 73.

Dr. Freeman tested light fastness, using an Atlas weatherometer to expose the printed samples to the equivalent of 225 kilojoules of energy over 50 hours, which is two and a half times

the exposure used for typical evaluations of dyes on textiles. R 531:17-533:11. The samples exposed had been printed on plain HP paper and on photographic paper. R 580:11-25.

Dr. Freeman tested ozone fastness using a standard machine, the Hamden 903 ozone test unit, and exposing the printed samples to 1 part per million ozone, which is a typical exposure level. R 533:12-16. According to him, these tests demonstrated that the light fastness properties and the ozone fastness properties were not significantly different between the samples from Grangemouth and the samples from New Castle, with the exception of Pro-Jet Black 287 which showed a slight difference in the fading. R 580:14-581:19, 582:24-584:3; Pl.'s Exs. 63, 73. Overall, he opined that the further processing in New Castle did not affect the fastness properties of the yellow, cyan, and black inks other than the Black 287, and his test results may be summarized as follows:

a. The two data sets' results for light, ozone, and water (wet) fastness testing of printed papers reflect good consistency.

b. Results from the 2 yellow inks and 5 cyan inks indicate that comparable light, ozone and water fastness values were obtained.

c. In the lone case of the Black 287 / Black 2 pairing, better light and ozone fastness was obtained from the ink derived from the New Castle sample. However, water fastness was the same for the two products.

d. Pro-Jet Black 661 gave comparable fastness properties before and after New Castle processing.

See id.; *see also* Pl.'s Exs. 61-63, 73. Dr. Freeman reiterated that his experiments clearly demonstrated very good consistency of the products from Grangemouth to New Castle, and that this consistency in fastness properties results from the fact that the performance properties are built into the molecule structures. R 584:10-585:5.

Dr. Freeman then testified that in order to designate the subject products as dyes, they should be able to dye something. First, he attempted to determine the most appropriate substrate to use for the experiment. R 457:5-458:12. According to Dr. Freeman, one can determine whether a dye is suitable for wood or paper or leather or plastic or nylon or wool or acrylic, *etc.*, based upon the chemical structure of the dye. R 528:21-529:15. For example, acid dyes are used to dye substrates such as nylon, wool and silk because they are ionic and those substrates are cationic. R 489:18-490:3. *See* Pl.'s Ex. 49. Dispersed dyes are hydrophobic and are used to dye hydrophobic substrates such as polyester. R 490:4-16. *See* Pl.'s Ex. 49. Based upon the molecular structure of the Avecia-Grangemouth samples, Dr. Freeman testified that in his opinion, they would only be appropriately designated as direct dyes. R 528:21-529:15. Dr. Freeman testified that, by definition, direct dyes have an affinity for cellulosic fibers; when they are used commercially, 99% of the time they are used to dye cotton. R 486:5-8. *See* Pl.'s Ex. 49. He further testified that he was not aware of any direct dyes that would not be suitable for dyeing cotton. R 597:19-23. Accordingly, he constructed an experiment to determine whether the Avecia-Grangemouth liquid feed products possessed sufficient direct dye properties for dying cotton. R 483:21-24, 485:21-486:12.

For this experiment, Dr. Freeman compared samples of the Avecia-Grangemouth products to three commonly-available examples of direct dyes that he determined would be good models to use: Direct Black 22, Direct Yellow 44, and Direct Blue 218. R 527:20-20. He stated that he used standard methods for applying dyes recommended by dye manufacturers and used in North Carolina State University laboratories, the industry, and dye houses. R 459:25-460:13. He further testified

that all of the methods he used in this experiment were based on the methods commonly used and recommended by dye manufacturers, as well as his 24 years of experience in the industry. *Id*.

Dr. Freeman prepared dye baths containing inks from Grangemouth and dyes that he believed to be of the same general type in terms of their structural makeup. R 585:13-24. He carried out the dye experiments under the traditional conditions associated with direct dye: he used a salt to cover up the negative charges on the textile fibers so that the dyes could enter the fiber if they are behaving as direct dyes, and he conducted the dyeing at 90 degrees to ensure the swelling of the cellulose so that the dyes would have access to the amorphous regions of the fiber. R 587:23-589:5. He also used two dyeing machines that are widely used in the industry: a Gibbs dyeing machine that allows dyeing at atmospheric pressure, and a pressurized dyeing machine to accelerate the penetration of the dye in the bath, which allowed him to shorten the dye cycle. R 589:6-17. The results of his dye studies demonstrated that the cyan and the black Avecia products have no significant affinity for cotton at all. R 589:18-592:25; Pl.'s Exs. 64, 74. With the possible exception of the Yellow 1, Liquid Feed, which is one of the inks derived from off-the shelf dyes, the shade depths typical of direct dyes were not obtained using the Avecia inks. *Id*. Dr. Freeman testified that the conclusion was especially evident when the black inks were employed in the dyeing process, because the pastel gray shades observed on cotton that was dyed with the Avecia products contrasted starkly with the deep black shade produced from the dye Direct Black 22. *See* Pl.'s Ex. 64.

The results Dr. Freeman reflected in a table summarizing the absorbence values and corresponding percent exhaustion values for the various inks and direct dyes that were used. R 606:5-608:7; Pl.'s Ex. 74. The values demonstrate Avecia's cyan and black products had

significantly lower percentage of exhaustion dye uptake than the traditional dyes, and that Avecia's yellow product, although not as low, still had a lower percentage than the corresponding traditional yellow direct dye. *Id.* Dr. Freeman testified that this result was to be expected because Avecia's products were engineered with paper and ink-jet printing in mind. R 589:18-590:2. Accordingly, Dr. Freeman concluded that Avecia's products are not direct dyes suitable for dyeing cotton. R 485:21-486:12. Mr. Kuperstein agreed with Dr. Freeman's conclusion that the subject products are not direct dyes. R 815:7-11.

Dr. Freeman testified that even though the chemical structure of Avecia's products would only admit possible classification of the products as direct dyes, the products are not properly classified as direct dyes because they were not designed to be direct dyes, *e.g.*, they have no affinity for cotton, which is a characteristic of direct dyes. R 483:21-24, 485:21-486:12, 528:3-16, 528:21-529:19. He opined that the Avecia ink-jet inks have systematically evolved away from textile dye utility, to the extent that the resultant products–the products at issue here–have poor affinity for textiles but good properties as inks. R 483:21-24, 486:13-20.

The results of Dr. Freeman's first experiment demonstrated that the products at issue can be applied to paper using water as the sole non-colorant constituent (*i.e.*, without any additives) by using a standard printer. The resultant printouts appear sharp and crisp to the Court's eye, and the printouts produce both text and block type prints apparently suitable for the reproduction of photographs. It was submitted that the printouts possess the degree of water fastness, light fastness, and ozone fastness that one would expect and that Avecia's OEM customers demand. R 484:22-485:20.

The results of Dr. Freeman's second experiment demonstrated that the products at issue are not direct dyes suitable for dyeing cotton. R 485:21-486:12. These test results formed the basis for Dr. Freeman's expert opinion that products at issue in this case–Pro-Jet Cyan 1 Special Liquid Feed, Pro-Jet Cyan 854 Liquid Feed, Pro-Jet Yellow 1 Liquid Feed, Pro-Jet Black 287 Liquid Feed, Pro-Jet Black 661 Liquid Feed, and Pro-Jet Cyan 1 RO Liquid Feed–are all "inks" following their manufacture at Grangemouth and prior to further processing, and that the further processing in New Castle, Delaware is unnecessary to their being designated as printing inks. R 483:10-20.

The Information at Customs's Disposal for Classifying The Imported Merchandise

Avecia avers that Customs had all the information it required to classify the subject products as printing inks under heading 3215. Ms. Deborah Walsh, the National Import Specialist responsible for classification of merchandise under heading 3215 during the relevant time period, asserted at her deposition that if a product performs as an ink when printed, it is a printing ink under heading 3215, and that Customs does not have a list of required components that allow a product to be classified as a printing ink under 3215. Walsh Dep. Tr. at 126:10-127:9, 128:21-129:11, 129:21-130:15. Ms. Walsh also testified at her deposition that Customs does not require any particular additive in order to classify a product as a printing ink under heading 3215, nor does Customs require a product to work in more than one piece of equipment to be classified under heading 3215. Walsh Dep. Tr. 134:16-135:7, 210:3-211:15, 212:7-213:6, 214:17-216:4, 216:13-21.

According to Mr. Kuperstein, Customs had samples of some of Avecia's products at importation but did not conduct any tests comparing the binding function of Avecia's products to the binding qualities associated with dyestuffs, nor did Customs conduct any tests comparing the

subject products as manufactured at Grangemouth with the same products after leaving Avecia's facility in New Castle. Kuperstein Dep. Tr. 55:3-16, 56:18-57:9.

Discussion

I

As an initial matter, the government contests the Court's jurisdiction over entry numbers 916-1076548-8, 916-1076920-9 and 916-1076747-6. The first two were entered at the Port of Newark, New Jersey and the third was entered at the Port of Baltimore, Maryland. The protest encompassing these and other entries, Protest No. 1101-04-100239, was filed at the Port of Philadelphia, Pennsylvania. The government argues that because 19 C.F.R. § 174.12(d) requires protests to be filed with the port director whose decision on entry is being protested, and because the three entries were protested at the wrong port, their protest was not "in accordance with regulations prescribed by the Secretary." *See* 19 U.S.C. § 1514(c)(1). The government therefore argues that their liquidation became final by operation of 19 U.S.C. § 1514(a). *See* Def.'s Br. at 7-8 (referencing *Po-Chien, Inc. v. United States*, 3 CIT 17, 18 (1982) (liquidation final and conclusive against the importer since it had not timely filed a valid protest with the proper Customs district) and *Grover Piston Ring Co. v. United States*, 752 F.2d 626, 627 (Fed. Cir. 1985) (failure to include entry numbers as part of the content of the protest caused the protest to be invalid with respect to those entry numbers)). Avecia responds that the issue is only being raised for the first time in post-trial briefing and was therefore waived, or else the protest was valid. Pl.'s Reply at 2-7.

Generally speaking, the terms of the government's consent to be sued in a particular court define the court's jurisdiction to entertain the suit, must be strictly observed, and are not subject to

implied exceptions. *NEC Corp. v. United States*, 806 F.2d 247, 249 (Fed. Cir. 1986) (citations omitted). "[S]ubject-matter jurisdiction, because it involves the court's power to hear a case, can never be forfeited or waived." *United States v. Cotton*, 535 U.S. 625, 630, 122 S.Ct. 1781, 1785 (2002). Therefore, courts have an independent obligation to "police" their own subject-matter jurisdiction, even in the absence of a challenge from a party. *Ruhrgas AG v. Marathon Oil Co.*, 526 U.S. 574, 583-84, 119 S.Ct. 1563, 1570 (1999) (citations omitted). Under 28 U.S.C. § 1581(a), this court possesses exclusive jurisdiction over any civil action commenced to contest the denial of a protest under 19 U.S.C. § 1515, which provides for the review of protests filed in accordance with 19 U.S.C. § 1514 concerning decisions of the U.S. Customs and Border Protection and its predecessor organization(s). The terms of section 1581(a) "limit[ ] the jurisdiction of the Court of International Trade to appeals from denials of valid protests. Thus, the court lacks jurisdiction over protests that do not satisfy the requirements of 19 U.S.C. § 1514(c)(1) and 19 C.F.R. 174.13(a)." *Koike Aronson, Inc. v. United States*, 165 F.3d 906, 908 (Fed. Cir. 1999). Further, the burden of establishing jurisdiction lies with the party seeking to invoke the court's jurisdiction. *E.g. Takashima U.S.A., Inc. v. United States,* 19 CIT 673, 677, 886 F. Supp. 858, 861 (1995); *Old Republic Insurance Co. v. United States*, 14 CIT 377, 379, 741 F. Supp. 1570, 1573 (1990).

Thus, the government is correct, again generally speaking, that compliance with formality is required in order to perfect a valid protest. *Cf.* 19 U.S.C. § 1514(c)(1) ("in accordance with regulations prescribed by the Secretary"); *Noury Chemical Corp. v. United States*, 4 CIT 68 (1982) (jurisdiction lacking because protest letter not filed with the proper party, the district director at Buffalo, New York); *Po-Chien*, *supra*, 3 CIT at 18 (jurisdiction lacking because protest addressed

only to "U.S. Customs Service" and not to the office of the district director whose decision was being protested). But, compliance is a question of fact, *see*, *e.g.*, *W.R. Grace & Co. v. United States*, 15 Cust. Ct. 105, C.D. 953 (1945), and

> [i]t is always within the discretion of . . . an administrative agency to relax or modify its procedural rules adopted for the orderly transaction of business before it when in a given case the ends of justice require it. The action of either in such a case is not reviewable except upon a showing of substantial prejudice to the complaining party.

American Farm Lines v. Black Ball Freight Service, 397 U.S. 532, 539, 90 S.Ct. 1288, 1292 (1970) (citation omitted). *Cf. Pam S.p.A. v. United States*, 463 F.3d 1345, 1348 (Fed. Cir. 2006) (inquiry into substantial prejudice). In this matter, the government's concern that Avecia did not comply with required formality to protest the three entries at their respective ports of entry is obscured by the fact that the customs officer acting on behalf of the port director did not reject consideration of those entries on that ground but rather "denied in full" the protest at issue, number 1101-04-100239 "per HQ 967005 [dated] 5/18/04." Nothing in the statutes indicates that *only* the district directors of Newark and Baltimore had authority to consider the protest. *Cf.* 19 U.S.C. § 1514(a) ("decision *of the Customs Service* . . . shall be final and conclusive . . . unless a protest is filed in accordance with this section") (italics added). Customs having asserted jurisdiction over the protest's entirety, and the improper inclusion of the three entries not having been part of the rationale for denial at least as to those three, the Court will not substitute *post-hoc* rationale to deny it. Avecia's invocation of jurisdiction here over the subject matter at issue is therefore proper.

II

On another preliminary matter, Avecia challenges Customs's published General Notice of Revocation as well as HQ 966063 relating to the tariff classification of FY2, which concluded that FY2 is classifiable under subheading 3204.14.30. *See* POSC at ¶ 11. 19 U.S.C. § 1625(c) requires the Secretary of Customs to publish in the Customs Bulletin a final ruling or decision on a proposed interpretive ruling or decision that would "have the effect of modifying the treatment previously accorded by the Customs Service to substantially identical transactions" within 30 days after the close of the comment period. Avecia argues Customs did not issue HQ 966063 (revoking HQ 964191, 962365 and 962918) within 30 days of the close of the comment period and therefore did not conform with the requirements of 19 U.S.C. § 1625(c) for revoking a binding ruling. Avecia thus argues that the revocation ruling was ineffective, that HQ 964191, 962365 and 962918 remain binding on Customs, and that the subject imports are therefore properly classified as printing inks based on these earlier rulings. *See* Pl.'s Br. at 22-23.

According to the first *Diamond Match* case, the purpose of section 1625(c) is notice, and as such does not "restrain the doing of the act after the time limit or state any consequences if action is delayed" and is therefore directory, a point with which the appellate court agreed, "particularly where . . . the party in interest has been in no way prejudiced" by the inaction or delay. *Diamond Match Co. v. United States*, 44 Cust. Ct. 67, 68, C.D. 2154, 181 F. Supp. 952, 959 (1960), *aff'd*, 49 CCPA 52, C.A.D. 796 (1962). *See also Dixon Ticonderoga Co. v. United States*, 468 F.3d 1353 (Fed. Cir. 2006) (failure of agency to follow procedural requirement does not void subsequent agency action); *Intercargo Insurance Co. v. United States*, 83 F.3d 391 (Fed. Cir 1996) (failure of

notice from agency was harmless error). That is the apparent circumstance here, and Avecia's procedural challenge to the revocation ruling therefore does not invalidate it.

III

Although the plaintiff has the burden of establishing that the government's classification of the product was incorrect, it does not bear the burden of establishing the correct tariff classification. *Jarvis Clark Co. v. United States*, 733 F.2d 873, 878 (Fed. Cir. 1984). Pursuant to 28 U.S.C. § 2639(a)(1), a statutory presumption of correctness is afforded to Customs's classification decisions concerning the facts of a classification. Such presumption does not extend to questions of law. *See Universal Electronics, Inc. v. United States*, 112 F.3d 488, 492 (Fed. Cir. 1997).

Our appellate court deems the determination of the correct tariff classification a two-step process: properly construe the relevant classification headings, and determine which one properly applies to the merchandise. *See*, *e.g.*, *Bausch & Lomb, Inc. v. United States*, 148 F.3d 1363, 1364-65 (Fed. Cir. 1998). Regardless of the number of steps involved,[7] several legal principles have been invoked to support end results. Interpreting the meaning of a tariff provision involves statutory construction and is therefore a question of law. *See*, *e.g.*, *Boen Hardwood Flooring, Inc. v. United States*, 357 F.3d 1262, 1264 (Fed. Cir. 2004); *Carl Zeiss, Inc. v. United States*, 195 F.3d 1375, 1378 (Fed. Cir. 1999). Determining the "nature" of merchandise to be classified is a question of fact. *See*, *e.g.*, *Boen Hardwood*; 357 F.3d at 1264; *Bausch*, 148 F.3d at 1365-66. Determining whether merchandise to be classified "comes within" a properly construed tariff provision, an apparently penultimate issue, is also said to be a question of fact. *See*, *e.g. Rollerblade, Inc. v. United States*,

[7] *Cf.*, *e.g.*, *Bausch & Lomb, Inc. v. United States*, 21 CIT 166, 168-169, 957 F. Supp. 281, 283-84 (1997) (discussing *Daw Industries, Inc. v. United States*, 714 F.2d 1140 (1983)).

112 F.3d 481, 483 (Fed. Cir. 1997) (referencing *Totes, Inc. v. United States*, 69 F.3d 495, 498 (Fed. Cir.1995)); *National Advanced Systems v. United States*, 26 F.3d 1107, 1109 (Fed. Cir. 1994). But, determining which tariff provision imported merchandise is properly classified under, which is the ultimate issue, is a question of law. *See*, *e.g.*, *Sports Graphics, Inc. v. United States*, 24 F.3d 1390, 1391 (Fed. Cir.1994); *National Advanced Systems*, 26 F.3d at 1109.

In addition to the chapter headings and relevant notes, classification of merchandise is undertaken by applying the General Rules of Interpretation to the HTSUS ("GRIs"). *See*, *e.g.*, *Boen Hardwood*, 357 F.3d at 1264; *North American Processing Co. v. United States*, 236 F.3d 695, 698 (Fed. Cir. 2001). GRI 1 provides that classification is to be determined according to the terms of the headings and any relevant section or chapter notes. GRIs 2 through 4 then apply, "provided such headings or notes do not otherwise require." The section and chapter notes "are not optional interpretive rules, but are statutory law, codified at 19 U.S.C. § 1202." *Park B. Smith, Ltd. v. United States*, 347 F.3d 922, 926 (Fed. Cir. 2004). Thus, the first step to analyzing a classification issue is to determine the applicable heading by looking to the terms of the headings and section or chapter notes. *See* GRI 1. *See e.g.*, *Orlando Food Corp. v. United States*, 140 F.3d 1437, 1440 (Fed. Cir.1998). If the merchandise is classifiable under more than one heading, "[t]he heading which provides the most specific description shall be preferred to headings providing a more general description." GRI 3(a), HTSUS. *See*, *e.g.*, *Orlando Food*, 140 F.3d at 1440. Once an imported product is determined to be classifiable under a particular heading, a court must then look to the subheadings to find the correct classification of the merchandise in question. *Id*.

Further, absent contrary definitions in the HTSUS or legislative history, the terms used in the headings and subheadings are to be construed according to their "common and popular meaning," which may be drawn from a court's own understanding of dictionaries and other reliable sources including scientific authorities. *See*, *e.g.*, *Russell Stadelman & Co. v. United States*, 242 F.3d 1044, 1048 (Fed. Cir. 2001); *Carl Zeiss*, *supra*, 195 F.3d at 1379; *Medline Industries, Inc. v. United States*, 62 F.3d 1407, 1409 (Fed. Cir. 1995). Additionally, the Harmonized Commodity Description and Coding System Explanatory Notes ("Explanatory Notes") may be used "to clarify the scope of HTSUS subheadings and to offer guidance in interpreting subheadings." *Mita Copystar America v. United States*, 21 F.3d 1079, 1082 (Fed. Cir. 1994). They are "indicative of proper interpretation" of the HTSUS but are "not legally binding[.]" *Lynteq, Inc. v. United States*, 976 F.2d 693, 699 (Fed. Cir. 1992) (quoting H.R. Conf. Rep. No. 100-576, 100th Cong., 2d Sess. 549 (1988), reprinted in 1988 U.S.C.C.A.N. 1547, 1582) (internal quotation marks omitted).

A

In its post-trial brief, the government raised the argument that the products at issue are actually separate chemically defined compounds of Chapter 29, HTSUS, and that Avecia's proposed classification under heading 3215 is in conflict with *Ciba-Geigy Corp. v. United States*, 223 F.3d 1367 (Fed. Cir. 2000). Def.'s Br. at 14. In *Ciba-Geigy*, the appellate court held that classification of a chemical powder under heading 3215 was precluded by operation of Chapter Note 1(a) to Chapter 32, which excludes, *inter alia*, "separate chemically defined elements or compounds (except those of heading . . . 3204[])." 223 F.3d at 1372-1373. In other words, heading 3215 is not mentioned "as a specific exception to the general rule that 'separate chemically defined compounds'

are not classifiable in Chapter 32." *Id*. at 1373. The government here also points to Notes 1(d) and (f) to Chapter 29, which explain that a solution of "separate chemically defined organic compounds" in water and/or with added stabilizers is nonetheless covered by Chapter 29, to argue that "the imported colorants themselves, without taking into account the water and the biocide (for the Cyan 1 RO feed), are 'separate chemically defined compounds.'" Def.'s Br. at 15. Further, the government argues that if the record does not contain sufficient information for the Court to make that determination, the matter should be remanded to Customs to permit Avecia and Customs to develop the facts further. *Id*. at 14.

Avecia takes umbrage at this eleventh-hour defense. *See* Pl.'s Reply at 11. On the other hand, noting that the Court must "reach a correct decision in every case" (*see Jarvis Clark*, *supra*, 733 F.2d at 878), Avecia argues that *Ciba-Geigy* turned on the fact that the parties thereto had *agreed* that its imported products were described by Chapter 29, *i.e.*, were essentially "separate chemically defined compounds." *Id*. *Cf*. 223 F.3d at 1370 ("[b]oth parties agree that [the imported products] generally fall within the definition of 'organic chemicals'"). Avecia does not agree that the imported products at issue can be characterized as such. *Id*. Avecia contends there is sufficient evidence from the trial record to make such a determination, but if not, then the fault is that of the government: if the issue had been timely raised, Avecia argues, it would have afforded the opportunity to introduce evidence to show that ink-jet ink chromophores are always a mixture of individual compounds in equilibrium rather than a single mappable compound. *Id*. at 12.

In support of this contention, Avecia requests consideration of the declaration of Dr. Bidd attached to its reply brief rather than a remand of the matter to Customs or a reopening of the record

for what it considers would amount to a superfluous evidentiary hearing. *Id*. (referencing Attachment A to Pl.'s Reply ("Declaration of Ilesh Bidd")). Alternatively, Avecia reiterates that each of the imports at issue is a *mixture* (solution) of water and soluble colorant, and it stresses that Note 1(a) to Chapter 32, HTSUS, is clear in excluding from Chapter 32 classification only "separate chemically defined elements or compounds," not "mixtures" or "solutions" of those. *Id*. at 7-11. *Cf.*, *e.g.*, HTSUS, ch. 28, notes 1 & 1(a) (stating that the headings of Chapter 28 apply only to separate chemical elements and separate chemically defined compounds "[e]xcept where the context otherwise requires"). Avecia stresses that "water" in the context of the products at issue *is* a "separate chemically defined compound[,]" that water and colorant form the ink-jet ink system, and that "[w]ithout the water, the system doesn't work." *Id*. (quoting *inter alia* R 720:11-16).

"Separate chemically defined elements or compounds" appears in both Chapters 28 and 29, HTSUS, in addition to Chapter 32. The Explanatory Notes to Chapters 28 and 29 each include the following definition:

> A separate chemically defined compound is a substance which consists of *one molecular species* (*i.e.*, covalent or ionic) whose composition is defined by a constant ratio of elements and can be represented by a definitive structural diagram. In a crystal lattice, the molecular species corresponds to the repeating unit cell.

See 1 Explanatory Notes 260, 371 (3d ed. 2002) (italics added).

A mixture of various "separate chemically defined compounds" is not itself a "separate chemically defined compound." *Metchem, Inc. v. United States*, 30 CIT ___, 441 F. Supp. 2d 1269 (2006), *reh'g denied* (USCIT Nov. 3, 2006). *See USR Optonix, Inc. v. United States*, 29 CIT __, 362 F. Supp. 2d 1365, 1370 n.3 (2005) (construing "chemical compound" in the HTSUS term "separate

chemically defined compound" as "a substance composed chemically of two or more elements in definite proportions (as opposed to a *mixture*)") (quoting 3 *Oxford* 629; *Oxford*'s emphasis). Further, the Explanatory Notes to Chapters 28 and 29 indicate that those Chapters cover "separate chemically defined elements or compounds" that have been dissolved in water or dissolved in solvents other than water *provided that* "the solution constitutes a normal and necessary method of putting up these products adopted solely for reasons of safety or for transport (in which case the solvent must not render the product particularly suitable for some types of use rather than for general use)." *Cf.* 1 Explanatory Notes 261 *with id.* at 371 (applying "[t]he provisions in the General Explanatory Note to [c]hapter 28 concerning the addition of stabilisers . . . *mutatis mutandis*, to the chemical compounds of" Chapter 28) (bolding omitted). Implicitly, then, the water of a solution of a separate chemically defined compound must function for reasons of safety or transport, and it must not render such product "particularly suitable" for some types of use rather than for the general chemical use of the separate chemically defined compound. The Court is thus persuaded that Avecia is correct that water itself may be considered a "separate chemically defined compound" when acting as the "ink vehicle" of an ink-jet ink: in such a context, water performs the integral functions of *delivery* of the colorant to the substrate to which it must bind if it is to print, *penetration* (to some degree) of the colorant into the cellulosic fiber surface of the substrate, and the resultant *binding* of the colorants to the substrate upon its evaporation. In such a context, water accomplishes more than "mere" preservation or stabilization for transportation.

However, that is not so with respect to the water in which the subject ink-jet inks have been imported into the United States: the products are imported in concentrate form, and upon importation

deionized water is added through reverse osmosis which also displaces some of the imported water. Thus, the water employed for transport of Avecia's ink-jet inks is not necessarily the same water that is subsequently used for printing; rather, the primary function of the water at the time of importation is to act not as the ink vehicle but to provide stabilization or preservation and to protect the products' integrity. *See infra* Pl.'s Reply, Attachment A ¶ 4. *Cf.* R 376:17-24 (product "has to remain totally intact from this point onwards"); *Mita Copystar*, *supra*, 21 F.3d at 1082 ("[i]t is well settled law that merchandise is classified according to its condition when imported") (citation omitted). Thus, the primary function of the water with which the products are imported does not obviate classification of the products as "separate chemically defined organic compounds" of Chapter 29.

Nonetheless, the Court finds sufficient evidence to conclude that each of the imported ink-jet inks, in their condition as imported, does not in fact consist of a single "separate chemically defined compound" as required for classification under Chapter 29. For that purpose, the Court accepts the declaration of Dr. Bidd attached as an appendix to Avecia's reply brief. *Cf.* 28 U.S.C. § 2643(b) (adjudicative procedure "as the court considers necessary to enable it to reach the correct decision"). The declaration clarifies other evidence to the effect that the imported products at issue do not each consist of a single "separate chemically defined compound." It reads in part as follows:

> 2. The products at issue in the instant case always include at least the chromophore and the water, and the chromophore itself is composed of more than one chemical compound.
>
> 3. Unlike table salt (NaCl)–which can be dissolved in water and then precipitated out from the water without changing the chemical composition–the compounds at issue in the present case are mixed with water and a base (*e.g.*, sodium hydroxide) to affect the pH level and if the water is removed, the equilibrium of the chromophore salt forms changes.

> 4. The products at issue are never shipped dry – even when they are shipped as a press paste, there is water in the product. This is because the water is not just a simple carrier but an essential part of the product that has a role in maintaining the complex equilibrium of salt forms and free acids at the right pH. A shift in the pH of the solution causes the molecules to change, which affects the ratio of salt forms and free acids.
>
> 5. The chromophores are always a mixture of compounds with distinct and different chemical identities rather than a single mappable compound.
>
> 6. As discussed during the trial, the water and the chromophore that together compose the ink render each solution particularly suitable to bind to the substrate based on the molecules involved.
>
> 7. To discuss the chemical compositions of the products in further detail, it will be necessary to discuss each Pro-Jet product in turn. For example, Pro-Jet Cyan 1 is made up of a ratio of sulphonic acids and sulphonamide groups rather than a single molecular structure. This composition is described in Plaintiff's Exhibit 57 using the shorthand that is common practice in the chemical field: "$(SO_3H)1.5$" and "$(SO_2NH_2)1.5$"
>
> [figure omitted.]
>
> That notion describes a ratio of approximately 1.5 sulphonic acid molecules to every 1.5 sulphonamide groups. These ratios describe a well-controlled mixture of chemical compounds rather than a single, distinct molecule.
>
> 8. I did not specifically discuss the chemistry relevant to this issue in my testimony because it was not relevant to the arguments being made by Customs before and during trial.

Pl.'s Reply, Attachment A.

The Court considers it unnecessary to discuss the chemical compositions of each product in further detail in order to reach the correct decision. During trial, Mr. Johnston testified on direct examination, for example, that purification of each product essentially produces many chemical species, that Avecia's controls eliminate some of them, and that the remainder, for each purified product, amounts to more than one chemical species. R 57:13-58:15. On cross examination, he

testified that there are many pH adjustments at various points in the process that involve the addition of different chemical species. R 174:14-175:2. He also testified on direct that Avecia staff responsibilities include analyses of the chemical species produced by each purification step as well as chemical purity. R 90:19-23. Based on the evidence, the Court finds that the imported products at issue are not comprised of "one molecular species" and therefore are not "separate chemically defined compounds" requiring exclusion from classification under Chapter 32, HTSUS, pursuant to Note 1(a) thereto. *Cf. Metchem*, *supra* , 441 F. Supp. 2d at 1274 (a variable mixture of nickel carbonate, nickel hydroxide and water is not a "separate chemically defined compound"); *Diachem Industries Ltd. v. United States*, 22 CIT 889 (1998) (a mixture of anthraquinone and other ingredients not classifiable as a singular "separate chemically defined organic compound"); 1 Explanatory Notes 371 ("A separate chemically defined compound is a substance which consists of *one molecular species i.e.*, covalent or ionic, whose composition is defined by a constant ratio of elements and can be represented by a definitive structural diagram.") (Chapter Note 1) (italics added). In other words, the subject products are not classifiable in Chapter 29 and are not precluded from classification in Chapter 32 by operation of Note 1(a) thereto.

B

As mentioned, Avecia argues the products are appropriately classified as dye-based printing inks of heading 3215 and not dyes of heading 3204. *See* Pl.'s Br. at 9-20; Pl.'s Reply at 7-24. The government defends its classification as dyes of heading 3204. Def.'s Br. at 16-19. At several points in the proceeding, the government called attention to the fact that Avecia refers to its products as dyes internally and in marketing literature, *e.g.*, Def.'s Br. at 18, and while such evidence may have

some bearing, the name by which the importer refers to subject products is not dispositive of their classification. *See*, *e.g.*, *BASF Wyandotte v. United States*, 11 CIT 652, 655, 674 F. Supp. 1477, 1480 (1987) ("*BASF Wyandotte*") (court unpersuaded that imported products were dyes although manufacturer referred to products as dyes); Walsh Dep. Tr. 149:1-18 (Customs does not consider the name of the product as imported when determining under which heading it should be classified). Be that as it may, Chapter 32 indeed appears to be the relevant chapter of the HTSUS to the classification of the imported chromophores, since it covers, *inter alia*, "dying extracts" and the products are indisputably extracts of dyes. That being the case, in light of Dr. Freeman's testimony on the products' functionality the government now argues that if the products are not direct dyes they should be classified as "other" dyes of subheading 3204.19. *See* Def.'s Br. at 17. That provision covers "[o]ther, including mixtures of two or more of the subheadings 3204.11 to 3204.19: Solvent dyes and preparations based thereon" and goes on to list various commercially identifiable dyes such as "Solvent yellow 43, 44, 85, 172," which bear free duties, and "Solvent black 2, 3, 27, 28, 29, 34, 35," "Solvent blue 45, 49, 51 . . .," *etc.*, which bear duties of 6.5% for 2003 entries.

Since neither "ink" nor "printing" nor "dye" (*i.e.*, a "synthetic organic coloring matter") is defined in the HTSUS, an appropriate starting point is to define the relevant terms. The HTSUS "defines" a dye as "synthetic organic coloring matter," but the parties provided a definition of neither. Insofar as a synthetic organic coloring matter is a dye (which is the relevant inquiry according to the evidence presented), *The Oxford English Dictionary* (2d ed. 1989) ("*Oxford*") defines "dye" as "[c]olour or hue produced by, or as by, dyeing; tinge, hue[;] . . . [a] material or matter *used* for dyeing; *esp*. colouring matter in solution" and, as a verb, "[*t*]*o diffuse* a colour or tint

through; *to tinge* with a colour or hue; to colour, stain[;] . . . [*t*]*o impregnate* (any tissue or the like) with a colour, *to fix* a colour in the substance of, or *to change* the hue of *by a colouring matter*"). 5 *Oxford* 4 (italics added). *Webster's Third New International Dictionary* (1986) ("*Webster's*") defines "dye" as "color produced by dyeing[;] . . . a natural or esp. a synthetic coloring matter whether soluble or insoluble that is *used* to color materials (as textiles, paper, leather, or plastics) usu. from a solution or fine dispersion and sometimes with the aid of a mordant[;] . . . to color throughout : impart a new and often permanent color to esp. by impregnating with a dye[;] . . . to impart (a color) by dyeing (~ a blue over a yellow)[;] . . .to cause (a dye) to be applied[;] . . . to color or tinge in any way[.]" *Webster's* 706, 710 (italics added).[8]

Perhaps in accordance with such understanding, the parties argued under the assumption that heading 3204 is a so-called "use" provision. *See*, *e.g.*, Pl's Br. at 15 (referencing R 773:19-774-20, 785:25-786:11); Def.'s Br. at 16-17 (quoting Explanatory Notes to heading 3204). *Cf.* Heading 3204, HTSUS ("synthetic organic products of a kind *used* as fluorescent brightening agents or as luminophores") (italics added). A use provision "classif[ies] particular merchandise according to the ordinary use of such merchandise[,]" *Primal Lite, Inc. v. United States*, 182 F.3d 1362, 1364 (Fed. Cir.1999), and "describ[es] articles in the manner in which they are used as opposed to by name[.]'" *Len-Ron Manufacturing Co. v. United States*, 334 F.3d 1304, 1308 (Fed. Cir. 2003). *See also Clarendon Marketing, Inc. v. United States*, 144 F.3d 1464, 1467 (Fed. Cir. 1998) (a principal

[8] *Webster's* is especially helpful in providing a table of some of the various commercial dyes available, which it classifies "with respect to the properties that determine their use[,]" namely acid dyes, azoic coupling components, azoic diazo components, azoic compositions, developers, direct cotton dyes, disperse dyes, fiber-reactive dyes, fluorescent brighteners, food colors, ingrain dyes, mordant dyes, natural dyes, oxidation bases, organic pigments, solvent dyes, sulfur dyes, and vat dyes. *See Webster's* 706-710.

use provision "may function as a controlling legal label, in the sense that even if a particular import is proven to be actually used inconsistently with its principal use, the import is nevertheless classified according to its principal use"). A use provision is generally more specific than an *eo nomine* provision and is thus the more difficult classification to satisfy. *See*, *e.g.*, *Orlando Food*, *supra*, 140 F.3d at 1441-42. Examining heading 3204, the Court finds as a matter of law and in accordance with the parties' assumption that in order to be classifiable as a synthetic organic coloring matter, a heading 3204 dye must be primarily used to *impart* color to something. That cuts a wide swath, but heading 3204 does not include all synthetic organic coloring matter: Chapter Note 3 to Chapter 32 provides the caveat that heading 3204 does not apply to "other preparations of heading . . . 3215."

The parties agreed that "ink" is accurately described as "a dispersion of a pigment or a solution of a dye in a carrier vehicle, yielding a fluid, paste, or powder to be applied to and dried on a substrate." *McGraw-Hill Encyclopedia of Science & Technology* 201 (9th ed. 2002).[9] *See also Tomoegawa USA, Inc v. United States*, 12 CIT 112, 116-117, 681 F. Supp. 867, 870 (1988), *aff'd in relevant part and vacated in part*, 861 F.2d 1275 (Fed. Cir. 1988) (quoting same definition of ink in *McGraw-Hill Encyclopedia of Science & Technology* 159 (5th ed. 1982)). The parties also assumed an understanding of "printing." The *Oxford* dictionary defines a printing expansively as "an image or likeness of anything." 12 *Oxford* 501. *Webster's* describes it as "reproduction (as on paper or cloth) of an image from a printing surface made typically by contact impression that causes

[9] The origins of "ink" can be traced to the Latin "*encaustum*" and/or Greek "*enkauston*", which described the purple or dark red ink used by the Roman emperors to sign official documents and was originally a neutral adjectival form of "*enkaustos*" meaning "burned in" which was derived from the stem of "*enkaiein*" ("ἐγκαίειν") meaning "to burn in" (en- "in" + kaiein "to burn"). The word is cross-referenced with "caustic" or "encaustic" and originated from a Greek method of applying colored wax and fixing it with heat. *Cf.* 7 *Oxford* 982; *Webster's* 1164.

a transfer of ink[.]" *Webster's* 1803. In addition, Avecia submitted that the "common understanding" of "printing ink" is "a coloring matter dispersed or dissolved in a vehicle or carrier, which forms a fluid or paste which can be printed on a substrate and dried." Pl.'s Br. at 4-5 (referencing *inter alia Kirk-Othmer* 1136), and Customs admitted that *Kirk-Othmer*'s is an accurate definition of a printing ink. R 792:13-794:10. The Explanatory Notes to heading 3215 further state that "printing inks" (including inks for writing, drawing, copying, *etc.*) are "generally in the form of liquids or pastes, but they are also included in this heading when concentrated or solid (*i.e.*, powders, tablets, sticks, *etc.*) to be used as inks after simple dilution or dispersion." 2 Explanatory Notes 611.

As an initial matter, the parties dispute whether heading 3215 is *eo nomine* or a use provision. *Cf.*, *e.g.*, Pl.'s Br. at 1-2 *with* Def.'s Br. 17. If heading 3215 is *eo nomine*, then absent demonstrated legislative intent to the contrary it includes all forms of the named article. *See*, *e.g.*, *NEC America, Inc. v. United States*, 8 CIT 184, 186, 596 F. Supp. 466, 468 (1984), *aff'd*, 760 F.2d 1295 (Fed. Cir. 1985). Avecia argues heading 3215 must be *eo nomine* since it does not specify inks "for use in printing" but simply identifies "printing inks." *See* Pl.'s Reply at 18. However, the Court considers that the absence of "for use in" (or "as") in heading 3215 does not render the provision purely *eo nomine*. In *Orlando Food*, the appellate court reasoned that the inclusion of the term "preparation" in heading 2103, HTSUS ("sauces and preparations therefor") "clearly contemplate[d] that some of the products falling within the provision's reach will be *used* to make sauces." 140 F.3d at 1441 (italics added). For that reason, the court found heading 2103 to be a use provision "insofar as it provides for preparations for sauces." *Id*. To get to that point, the court relied upon the *Oxford*

definition of "preparation," to wit: "a substance specially prepared, or made up for its appropriate use or application[.]" *See id*. (quoting 12 *Oxford* 374).

The various definitions of "printing ink" here present a similar construct. The *Oxford* dictionary describes "printing ink" as "[t]he ink *used* in printing, printer's ink[.]" 12 *Oxford* 507 (italics added). *Webster's* definition, narrower than the more modern and expansive *Kirk-Othmer* definition, is no less useful: "ink *used* in printing and consisting of pigment or pigments of the required color mixed with oil or varnish; *esp* : a black ink made from carbon blacks and thick linseed oil or some similar oil often with rosin oil and rosin varnish added." *Id*. (italics added). *Webster's* also defines "printer's ink" as "ink *used* in printing; *esp* : one of the semi-solid quick-drying black inks ordinarily used in letterpress or offset printing." *Id*. (italics added). Similarly, the *Kirk-Othmer* definition of "printing ink" relies on the ultimate use to which the ink colorant is put: printing. From the foregoing, the Court concludes that heading 3215 is inherently a "use" provision and is to be construed as such. The Court thus finds as a matter of law that printing is a process of image reproduction, and that in order to be classifiable as a "printing ink" of heading 3215 an imported product must be used or intended for use in printing.

C

As mentioned, Note 3 to Chapter 32, HTSUS, precludes classification of printing inks of heading 3215 under heading 3204. *See* R 805:11-14. *Ciba-Geigy* also instructs that if merchandise is classifiable in both heading 3215 and heading 3204 it should properly be classified in heading 3215 as the more specific heading. 223 F.3d at 1372. *See* GRI 3(a) & (c).[10] Based on such rules,

[10] *Cf. also* GRI 3 & 3(a) ("[w]hen by application of rule 2(b) or for any other reason, goods (continued...)

Mr. Kuperstein agreed that if the products were properly classifiable under both heading 3204 and heading 3215, they would have to be classified under heading 3215. R 807:9-15. Therefore, it is appropriate first to determine whether the products at issue come within heading 3215. *Rollerblade*, *supra*, 112 F.3d at 483. If they do, then classification under heading 3204 is obviated. *See* R 807:9-15; *Ciba-Geigy*, 223 F.3d at 1372.

As indicated, Dr. Freeman testified, and Customs admits, that the imported products were conceived, designed, developed, and manufactured exclusively for use in ink-jet printing applications. R 483:21-21. *See* Kuperstein Dep. Tr. 48:1-49:16; *see also* R 820:10-823:10. Mr. Johnston testified that the key chemical traits of the ink–the LAB coordinates specified by the OEMs–are built into the molecule at Grangemouth. R 133:23-134:10; 239:15-240:15. Dr. Bidd testified that in order to meet the specific targets that the OEMs require, Avecia must build specific properties into the molecules within the ink system. R 268:6-269:25. Dr. Freeman testified that the performance properties of the ink (light fastness, ozone fastness, water fastness, *etc.*) are built into the products' molecular structures. R 584:20-585:5. Prof. Gregory testified that the intended application of an ink-jet ink is of paramount importance in the design process, and that in order to make its ink-jet inks, Avecia must start with high quality intermediates, high quality processes, and high quality people to supervise those processes. R 713:19-714:25.

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[10] (...continued)
are, *prima facie*, classifiable under two or more headings," then "[t]he heading which provides the most specific description shall be preferred to headings providing a more general description") & GRI 3(c) (if goods cannot be classified based on specificity under GRI 3(a) or as a mixture under GRI 3(b), they "shall be classified under the heading which occurs last in numerical order among those which equally merit consideration").

The National Import Specialist responsible for heading 3215, Ms. Walsh, stated at her deposition that she would classify ink-jet inks as printing inks under heading 3215. R 791:3-792:7; Walsh Dep. Tr. 123:3-7. Mr. Kuperstein, testifying on behalf of Customs, agreed that ink-jet printing inks are to be classified as printing inks under heading 3215. R 791:25-792:7. At his deposition, Mr. Kuperstein also agreed that Avecia's products at importation meet significantly higher standards of light fastness, ozone fastness, and water fastness than traditional dyes, and he conceded that if the subject products as imported are pure enough to be printed through an ink-jet printer without purification or filtration, they are ink-jet inks. *See* Kuperstein Dep. Tr. 97:13-98:1, 112:7-113:12; *see also* R 823:22-825:2. Further, Mr. Kuperstein stated that "[i]f there were absolutely no binder needed in such a product and it could be used as an ink in a cartridge, commercially, I would have to say it was – it would act as an ink and be commercially known and sold as an ink." Kuperstein Dep. Tr. 53:5-11. *See* R 800:5-15.

At trial, representative samples of the Avecia products at issue, after being diluted with deionized water to a 3 percent concentration, were successfully printed on a substrate using a standard ink-jet ink printer in the courtroom. R 320:3-321:25, 323:17-329:21, 332:7-333:18, 334:10-343:25. *See* Pl.'s Ex. 95. Mr. Kuperstein acknowledged on cross examination that the printing demonstration of the subject products, in their condition as imported, through an ink-jet printer without purification or filtration, was "quite impressive." R 776:9-14, 824:21-825:2. He also acknowledged that Avecia's imported ink-jet products did not require a binder in order to adhere to a substrate. R 800:21-25. *See* R 352:5-356:20, 486:22-488:3; Pl.'s Ex. 40 at 43-44.

From the evidence, demonstration, and testimony presented at trial, it is clear that the imported ink-jet inks are capable of printing in their condition as imported even prior to a finishing processing that amounts to simple dilution. Some colorants become more concentrated as a result of the finishing processing, some less so. *See*, *e.g.* R 393:16-21. Regardless, the Court finds that Avecia's products exhibit their desirable printing properties (including light fastness, ozone fastness and wetfastness) when in conjunction with a substrate because they capitalize on the unique properties of specially selected and engineered colorants without the addition of a separate chemical binding agent to affect substrate affinity. *See* R 352:5-356:20, 486:22-488:3. The Court further finds that the subject products are in fact used exclusively in ink-jet printing applications and are traded for commercial use in ink-jet printing applications after the finishing processing in the United States. *See*, *e.g.*, Kuperstein Dep. Tr. 49:17-21; *see also* R 351:12-21, 823:11-21. The Court therefore finds that the subject products without the additives meet the *Kirk-Othmer* definition of a printing ink and the *McGraw-Hill* definition of an ink. Prof. Gregory also testified that in one of his publications before he retired, *Colouring Agents for Non-Impact Printing - A Survey*, 85 Surface Coatings Int'l Part B: Coating Transactions 9, 14 (2002), he described ink-jet inks similarly ("[t]he predominant ink[-]jet inks consist of water soluble dyes in an aqueous vehicle") and he also testified that this is an operable definition of an ink-jet ink, one that comports with the *McGraw-Hill* and *Kirk-Othmer* definitions of printing inks, and further that it is an accurate definition that does not include additives. R 756:19-758:14.

Customs would apparently concede classification of the products in heading 3215 but for the further processing that they undergo after importation. The government maintains that the imported

colorants do not meet the requirements for classification in heading 3215 because they are not used for printing in their condition as imported but are merely used to impart color to a "finished" ink. *See* Def's Br. at 17-24. Since the imported products undergo further processing after importation, *i.e.*, reverse osmosis and the addition of additives, the government argues they are not finished but unfinished inks classifiable under heading 3204. *Id*. at 19-21 (referencing *inter alia* HQ 966063 (June 25, 2003) and *Corporacion Sublistatica v. United States*, 1 CIT 120, 511 F. Supp. 805 (1981)). Thus, the government's argument is that a finished ink-jet ink properly classifiable under heading 3215 must include whatever OEM-specific additive is required for its retail sale. *Id*. at 23. *See* R 792:13-794:18. The Court is unpersuaded by such argumentation for several reasons.

First, although the imported products are not commercially used as printing inks in their condition as imported, the products are capable of printing in that condition. *Cf. BASF Wyandotte*, *supra*, 11 CIT at 656, 674 F. Supp. at 1480-81 (discussing *Sublistatica*). As with the products at issue in *BASF Wyandotte*, Avecia's products can be printed on ordinary paper following the addition of water and they function as a printing ink as imported.

Second, OEM-specific criteria differ as a result of OEMs' pursuit of divergent ink-jet printing technologies. R 801:11-19. The Explanatory Notes to heading 3215, which reference "a small quantity of additives to impart desired functional properties" in the ink vehicle, 2 Explanatory Notes 610, were written in an age when ink-jet inks had not yet been conceived. The Notes are descriptive, not prescriptive. Avecia's persuasive evidence was that the additives in the United States do not affect the functionality of the product, *see*, *e.g.*, 759:2-760:9, and mainly function to differentiate OEMs' printing inks for a variety of reasons including those related to the OEMs' intellectual

property strategies. *See* R 201:19-202:8, 349:16-351:9. Simply put, the government's evidence and argument does not address how OEM-specific additive variances impact the printing characteristics or functionality of an "ink system" that otherwise appears to be classifiable as a printing ink of heading 3215 by virtue of the fact that it is capable of printing in its condition as imported after simple dilution.

Third, it was established at trial (and as asserted by Customs) that products are classified in heading 3204 if they are used for the identified purpose, *i.e.*, to impart color to other goods or as ingredients in the manufacture of coloring preparations. R 773:19-774:20. The weight of the evidence at trial was that Avecia's products do not and cannot function as dyes. Dr. Freeman's testimony was that the ink-jet products do not possess basic performance characteristics required of direct dyes, which he opined were the only type of dye to which they might correspond. R 483:21-24, 485:21-486:12. In *BASF Wyandotte*, the court was similarly confronted with the government's argument that the products at issue were dyes. The court disagreed, pointing out that although it was theoretically possible to use the products at issue as dyes, "there was no testimony . . . that the resulting degree of color achieved by dyeing directly with [the products] or the color fastness achieved by such a process was commercially acceptable." 674 F. Supp. at 1480. The same is true in the instant case, as there was affirmative evidence put forth by Avecia that its products are unacceptable and cost-prohibitive as dyes and no evidence was put forth by the government to the contrary. R 483:21-24, 485:21-486:12, 521:14-522:11. Thus, the *BASF Wyandotte* holding does not support classification of Avecia's products as dyes but supports classification in heading 3215.

Fourth, *Sublistatica*, a seminal decision, considered a classification under the former Tariff Schedules of the United States (TSUS) of an imported powder consisting of a benzenoid dye and ethyl cellulose. Ethanol was added in the United States to liquify the powder and produce a gravure ink. Testimony established that gravure ink consisted of a colorant, a binder, and a solvent. Finding that the ethyl cellulose served as a binder to the imported merchandise, the court classified the imported substance not as a dye but as an "ink powder," a separate provision of the TSUS. The court rejected classification under TSUS item 474.26 as a finished ink, due to the lack of a liquid component, and concluded that the merchandise would be classifiable as an unfinished ink rather than a dye but for the availability of classification as an ink powder in item 405.10, TSUS. *See* 1 CIT at 124-125, 511 F. Supp. at 808. *Cf. BASF Wyandotte*, 11 CIT at 656, 674 F. Supp. at 1480-81 (discussing *Sublistatica*). Even if the products at issue are "unfinished inks," *Sublistatica* neither precludes their classification in heading 3215 nor compels their classification in heading 3204.

Fifth, the government relies for support upon the Explanatory Notes for heading 3204:

> *Synthetic organic colouring matter* may be soluble or insoluble in water. It has almost completely replaced natural organic colouring matter, particularly for dyeing or printing textiles, dyeing hides or skins, paper or wood. It is also *used* to *prepare* colour lakes (heading 3205), colours of heading 32.08 to 32.10, 32.12 and 32.13, *inks of heading 32.15*, and for colouring plastics, rubber, waxes, oils, photographic emulsions, *etc.*

2 Explanatory Notes 593 (government's italics). The relevant portion means that some inks of heading 3215 are derived from synthetic organic coloring matter: once again, this neither compels classification of the imported products in heading 3204 nor precludes classification in heading 3215. Rather, it begs the question whether the nature or essence of the products at issue falls within one heading or the other.

Sixth, the government's argument for classification under heading 3204 implicitly defines a finished printing ink of heading 3215 as the substance that is commercially sold, including whatever additives are supplied post-importation. "One who argues that a tariff term should not be given its common or dictionary meaning must prove that it has a different commercial meaning that is definite, uniform, and general throughout the trade." *Carl Zeiss*, *supra*, 195 F.3d at 1379 (citation omitted). From the government's implicit definition, it does not follow that a water-soluble "unfinished" ink is classifiable in heading 3204. *See* GRI 2(a). GRI 2(a) states that "[a]ny reference in a heading to an article shall be taken to include a reference to that article incomplete or unfinished, provided that, as entered, the incomplete or unfinished article has the essential character of the complete or finished article" and the government does not adequately address the application of GRI 2(a) in the context of this matter. The Explanatory Notes (which are not binding) to GRI 2(a) state that GRI 2(a) does not "normally" apply to products of Section VI of the Harmonized Tariff Schedule, which includes Chapter 32. 1 Explanatory Notes 2. Ms. Walsh, the Customs officer responsible for classification under heading 3215, conceded that this does not mean "not ever." Walsh Dep. Tr. 140:3-141:13. Her recollection was of a "shampoo before it[ ] had a color and the fragrance from the manufacturer" added, which was considered "an unfinished shampoo, but it had all the characteristics of a shampoo." *Id*. at 140:13-18. *Cf. Aceto Chemical Co., Inc. v. United States*, 59 CCPA 212, C.A.D. 1069 (1972) (holding that an imported unfinished shampoo mixture contained the essential elements that impart the function of shampoo even though water, perfume, and coloring agents were added after importation). Other courts have also apparently determined that chemical products may in certain instances be unfinished. *See*, *e.g.*, *BASF Corp. v. United*

States, 30 CIT ___, ___, 427 F. Supp. 2d 1200, 1208 (2006) (noting government's argument that product at issue "is classifiable in heading 3811 by operation of GRI 2(a) as 'an unfinished or incomplete form of a prepared additive for gasoline'"), *appeal docketed*, No. 06-1387 (Fed. Cir. May 4, 2006); *Drexel Chemical Co. v. United States*, USCIT Slip Op. 03-60 (2003) (finding substantial transformation from grinding of intermediate chemical product due to "chemical change as valance bonds are freed"). Thus, generally speaking, whether GRI 2(a) is applicable to a particular product is a function of the type of product, and many products of Section VI of the HTSUS are simply not susceptible to being "unfinished" products because in their unfinished condition they are fundamentally different goods. Specifically identified chemicals, when "unfinished," are typically identified as different chemicals or chemical compounds and must be classified accordingly. Avecia gives as an example the impossibility of either hydrogen and oxygen possessing the "essential character" of water. Such is not the case with ink-jet inks, however, which in their unfinished form may still possess the essential character of printing inks. Printing inks therefore are a type of product that may fall within the exception contemplated by the use of "normally" in the Explanatory Note to GRI 2(a), and, indeed, this court's precedent compels recognizing the application of GRI 2(a) in the context of an "unfinished ink." *Cf. BASF Wyandotte*, *supra*, 11 CIT 652, 674 F. Supp. 1477, *with Corporacion Sublistatica*, *supra*, 1 CIT 120, 511 F. Supp. 805. Those holdings are inapposite to Customs's argument that GRI 2(a) does not apply to inks. *Cf. also Ciba-Geigy*, *supra*, 223 F.3d at 1370 (claim of unfinished inks according to GRI 2(a), unaddressed).

Seventh, once Avecia demonstrated that samples of the imported articles are capable of printing and introduced testimony to the effect that its ink-jet inks have evolved to the point that they

no longer function as dyes, it demonstrated by a preponderance of the evidence that the imported articles do not possess the essential character of dyes of heading 3204 but do possess the essential character of printing inks in their condition as imported. *Cf. Cummins Inc. v. United States*, 454 F.3d 1361, 1366 (2006) (unfinished crankshaft with essential character of crankshaft and intended for use only in producing a finished crankshaft); *Structural Industries, Inc. v. United States*, 356 F.3d 1366 (Fed. Cir. 2004) (remanding for essential character determination on whether glass or masonite of clip frame conferred essential character on goods). At that point, Avecia had successfully overcome whatever "presumption"[11] of correctness was in favor of the government and the burden shifted to the government to prove or persuade otherwise. *See*, *e.g.*, *Universal Electronics*, *supra*, 112 F.3d at 492; *Corrigan Dispatch Co. v. United States*, 58 Cust. Ct. 110, C.D. 2899, 264 F. Supp. 897 (1967). However, except for arguing that the Court should find that the products impart color to finished ink-jet inks and are therefore products of heading 3204, the government did not adequately address the essential character inquiry in making its case or introduce evidence to support its "other dye" theory, to which no presumption of correctness attaches,[12] nor otherwise elaborate upon its reasoning. It therefore does not rebut the inference that the imported colorants do not possess the essential character of dyes but do possess the essential character of printing inks.

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[11] "[A] presumption imposes on the party against whom it is directed the burden of going forward with evidence to rebut or meet the presumption, but does not shift to such party the burden of proof in the sense of risk of nonpersuasion, which remains . . . upon the party on whom it was originally set." Fed. R. Evid. 301. *But cf. Universal Electronics*, *supra*, 112 F.3d at 492 n.2 (noting that the presumption of 28 U.S.C. § 2639(a)(1) appears to be an "assumption" rather than a true presumption).

[12] Arguing for classification as "other" dyes admits error in Customs's original classifications, and erroneous Customs decisions are not presumed correct. *See*, *e.g.*, *Tomoegawa*, *supra*, 12 CIT at 114, 681 F. Supp at 868-69.

Eighth, as mentioned, even if the imported products are *arguendo* classifiable as "other" dyes of heading 3204, Note 3 to Chapter 32, HTSUS, precludes classification of printing inks of heading 3215 under heading 3204. Specifically, Note 3 states that heading 3204 does not apply to "other preparations of heading . . . 3215." A "preparation", as mentioned above, is "a substance specially prepared, or made up for its appropriate use or application[.]" *See Orlando Food*, *supra*, 140 F.3d at 1441 (citation and internal quotation marks omitted). Even if the government's characterization of the imported colorants as merely imparting color to a finished ink is correct, the essence of the argument concedes that the imported products have reached the stage of being "preparations" for ink-jet printing inks. It was undisputed that the colorants are processed at Grangemouth specially for use in ink-jet printers, and that upon importation in the United States there is no further processing of the colorant molecules themselves, only a finishing process that includes the addition of OEM-specified additives associated with the long-term stability of the material in ink-jet cartridges, which does not change the printing capability of the products. *See*, *e.g.*, R 109:25-111:2, 133:23-138:3, 348:6-351:9, 483:21-24, 484:22-485:20; Pl.'s Ex. 32 at 1; Def.'s Ex. D at 1. All of the chemical reactions affecting the chromophores themselves take place at Grangemouth. *E.g.*, R 109:18-110:10. The testimony was to the effect that these processes are minor, and in the absence of evidence to the contrary, the Court finds that to be the case, especially as compared with the elaborate purification processes that the products undergo at Grangemouth. The Court therefore finds that the finishing processing the products undergo in New Castle is within the ambit of the "simple dilution" spirit of the Explanatory Notes to heading 3215 and does not obviate their

designation as printing inks. *Cf.* 2 Explanatory Notes 610-11 *with* Walsh Dep. Tr. 135:8-136:3; 210:3-211:15.

Ninth, to find that the products in their condition as imported merely impart color to (and are therefore precursors of) a "finished" ink in order to classify them as dyes of heading 3204 would be to find that they merely impart color to a small quantity of additives, which defies common sense and the evidence of record. *See* Pl.'s Reply at 16. Avecia pointed out that OEMs require different additives for different ink-jet printing technologies and for different substrates: some need no penetrants or surfactants, and some require significant amounts. R 758:7-759:16. With regard to dyes, "[t]he addition of small quantities of surface-active products to encourage penetration and fixation of the dye does not affect the classification of colouring matter." 2 Explanatory Notes 592. That logic applies to printing inks: additives that do not affect functionality do not define its classification. *See* R 759:17-23; *see also* 2 Explanatory Notes 610. Further, Ms. Walsh stated at her deposition that Customs does not require any particular additive in order to classify a product as a printing ink under heading 3215, nor does Customs require a product to work in more than one piece of equipment to be classified under heading 3215. Walsh Dep. Tr. 134:16-135:7, 210:3-211:15, 212:7-213:6, 214:17-216:4, 216:13-21. At trial, the government did not contest whether penetrants or surfactants affect printing functionality, and the uncontroverted testimony in this matter was that

> the two key components of any printing ink [are] the colorant, be it a pigment or a dye, and the vehicle. The vehicle . . . is the means of transporting the colorant from the . . . ink-jet printer cartridge to the final destination which is the paper or the substrate. [You] cannot remove either the colorant or the vehicle[;] otherwise the ink doesn't work. You can remove all the other additives and you still have an ink which functions . . ..

R 759:2-760:9 (testimony of Prof. Gregory).

Alternatively, the government argues for finding that the products are not classifiable as printing inks of heading 3215 because they merely impart color to the substrate. Def.'s Br. at 17 & n.2 (referencing *Tomoegawa*, *supra*, 12 CIT 112, 681 F. Supp. 867). This argument is similarly unpersuasive. From the evidence, it is clear that printing does not involve imparting color to, or is more than mere colorization of, a substrate: it involves precision over the ink color as it is bound to the substrate. The ink vehicle (water) of dye-based printing inks performs a binding function by interweaving the molecules of the water-soluble ink with the surface cellulosic fibers of the substrate prior to the ink vehicle's evaporation. The purpose of that process is not to impart color to or change the color of a substrate, it is to bind one or more color(s) to the substrate such that color itself predominates, for its own sake, over the underlying substrate, which is then relegated to a secondary consideration to the eye of the beholder. A color so bound may or may not be contrasted in relief against the color of the underlying substrate, as on a newspaper, but the process of printing ultimately emits the form of an image bound to the substrate. In short, these products perform more than mere dyeing (color impartation) functions. *Cf. Tomoegawa*, 12 CIT at 122, 681 F. Supp. at 874 (imported toner and developer used in electrostatic photocopying only "arguably" performed dye functions but were "more than" dyes and properly classifiable under the more specific provision "photographic chemicals" in the TSUS); *Lynteq Inc. v. United States*, 768 F. Supp. 350, 353, *rev'd on other grounds*, 976 F.2d 693 (Fed. Cir. 1992) ("there is a point in the development of a product which can transform the product into something else").

As discussed, a dye of heading 3204 must be used to impart color to a thing. *Cf.* R 457:5-458:12 (testimony of Dr. Freeman) *with* R 773:19-774:20 (testimony of H. Kuperstein). The

government maintains that the products are to be classified as "other" dyes that impart color to a finished ink or substrate. The Court concludes otherwise. Dyes that are properly classifiable in heading 3204 will not have the "essential character" of printing inks according to GRI 2(a), since they will not have been designed for use in printers, will not be capable of printing in standard printers, and will not have the properties required of printing inks. Conversely, only those dyes (and pigments) that have the essential character of printing inks are classifiable as such. *Cf. Ciba-Geigy*, *supra*, 223 F.3d at 1370 (claim of unfinished inks according to GRI 2(a), not addressed). At trial, a representative sample demonstrated that the imported products are capable of printing in their condition as imported. The government contended that Avecia's demonstration at trial "was not dispositive of the substance's printing capability, which requires repeated printing over a period of time, not just a single page[,]" Def.'s Br. at 20, but it offered no evidence or law as support. Based upon the available evidence, the imported chromophores are suitable only for use as printing inks in their condition as imported and have systematically evolved to the point where they no longer function as dyes. *See* R 483:21-24, 486:13-20. Avecia argued that the imported products evince all the characteristics of complete "printing ink" systems in and of themselves (*i.e.*, the chromophores and the ink vehicle, which is water) at the time of importation, but a finishing process is undertaken upon importation that involves addition of water and displacement of some of the water in which they products are imported. This condition is not fatal to classification in heading 3215, however, because the chromophores themselves are not "unfinished" (*i.e.*, incapable of printing) at the time of importation, and the Explanatory Notes admit simple dilution of the ink-vehicle. *See* 2 Explanatory Notes 611. *Cf. BASF Wyandotte*, *supra*, 11 CIT 652, 674 F. Supp. 1477. Given the

design, intended end use, and demonstrated performance characteristics of Avecia's imported ink-jet inks in their condition as imported, the Court finds that the imported products are not classifiable as dyes of heading 3204 because they do not possess the essential characteristics of dyes of heading 3204 but possess the essential character of printing inks of heading 3215. This finding is consistent with the *National Juice* decision, in which that court held that the addition of water, orange essences and oils to orange juice concentrate, and the pasteurization process, while making it suitable for retail sale, did not change the essential character of the product (orange juice concentrate). *See National Juice Products Association v. United* States, 10 CIT 48, 61-62, 628 F. Supp. 978, 991 (1986). In other words, apart from the vital role that the ink vehicle plays in the ink system, the essential character of "printing ink" of heading 3215 in this instance is evident in the colorants themselves.

Conclusion

The language of the HTSUS was intended to be interpreted flexibly to reflect changing industry standards and new products yet to be conceived when the pertinent provisions were drafted, which is the case here. *Cf.*, *e.g.*, *Corporacion Sublistatica, S.A. v. United States*, *supra*, 1 CIT at 126, 511 F. Supp. at 809 (the tariff statutes were enacted "not only for the present but also for the future, thereby embracing articles produced by technologies which may not have been employed or known to commerce at the time of the enactment"); *Simmon Omega, Inc. v. United States*, 83 Cust. Ct. 14, 36-7 (Cust. Ct. 1979) ("inconceivable that Congress would have intended to foreclose from classification . . . future innovations"), cited in HQ 965614; *Borneo Sumatra Trading Co., Inc. v. United States*, 311 F. Supp. 326, 338-39 (Cust. Ct. 1970) (tariff provisions are "written for the future"), cited in HQ 965614. Because each of Avecia's products as entered is coloring matter

dispersed or dissolved in a vehicle or carrier, which forms a fluid or paste that can be printed on a substrate and dried, and because they can be satisfactorily printed via an ink-jet printer prior to minor finishing processing in the United States, they are ink-jet printing inks and are to be classified accordingly as other printing inks of heading 3215. As there is no subheading for "ink-jet printing ink," the ink-jet printing inks are properly classified under subheading 3215.11.00.60 as "printing ink - black - other" or under subheading 3215.19.00.60 as "printing ink - other - other." The subject entries are to be reliquidated accordingly and excess duties refunded to Avecia, together with interest as provided by law.

/s/ R. Kenton Musgrave
R. KENTON MUSGRAVE, JUDGE

Dated: December 19, 2006
New York, New York