1 Available Literature and Submitted Data for HFPO Dimer Acid Ammonium Salt (CAS# 62037-80-3) and HFPO Dimer Acid (CAS# 13252-13-6)

1.1 Industry Submitted Data

DuPont-17751-723: E.I. du Pont de Nemours and Company (2009). H-28548: Inhalation Acute Exposure with Anatomic Pathology Evaluation in Rats. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: May 11, 2009), Newark, Delaware.

DuPont-17751-1026: E.I. du Pont de Nemours and Company (2009). A 90-Day Oral (Gavage) Toxicity Study of H-28548 in Rats with a 28-Day Recovery. OECD Guideline 408. Study conducted by WIL Research Laboratories, LLC (Study Completion Date: October 5, 2009), Ashland, Ohio.

DuPont-17751-1579 RV1: E.I. du Pont de Nemours and Company (2009). Cross-Species Comparison of FRD-902 Plasma Pharmacokinetics in the Rat and Primate Following Intravenous Dosing. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: December 8, 2008; Report Revision 1 Completed: February 2, 2009), Newark, Delaware.

DuPont-18405-841: E.I. du Pont de Nemours and Company (2010). An Oral (Gavage) Prenatal Developmental Toxicity Study of H-28548 in Rats. US EPA OPPTS 850.3700; OECD Guideline 414. Study conducted by WIL Research Laboratories, LLC (Study Completion Date: July 2, 2010), Ashland, Ohio.

DuPont-18405-849 RV1: E.I. du Pont de Nemours and Company (2011). H-28548: Toxicokinetic Study in Pregnant Rats. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: March 29, 2011; Report Revision 1 Completed: April 11, 2011), Newark, Delaware.

DuPont-18405-1017 RV1: E.I. du Pont de Nemours and Company (2011). H-28548: Absorption, Distribution, Metabolism, and Elimination in the Rat. US EPA OPPTS 870.7485. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: November 3, 2010; Report Revision 1 Completed: April 21, 2011), Newark, Delaware and Wilmington, Delaware.

DuPont-18405-1037: E.I. du Pont de Nemours and Company (2010). An Oral (Gavage) Reproduction/Developmental Toxicity Screening Study of H-28548 in Mice. US EPA OPPTS 870.3550; OECD Guideline 421. Study conducted by WIL Research Laboratories, LLC (Study Completion Date: December 29, 2010), Ashland, Ohio

DuPont-18405-1238 (13 Volumes contained in 10 separate PDF files): E.I. du Pont de Nemours and Company (2010). H-28548: Combined Chronic Toxicity/Oncogenicity Study 2-Year Oral Gavage Study in Rats. US EPA OPPTS 870.4300; OECD Guideline 453. Study conducted by MPI Research, Inc. (Study Completion Date: March 28, 2013), Mattawan, Michigan

DuPont-18405-1307: E.I. du Pont de Nemours and Company (2010). H-28548: Subchronic Toxicity 90-Day Gavage Study in Mice. OECD Guideline 408. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: February 19, 2010), Newark, Delaware.

DuPont-18647-1017 RV1: E.I. du Pont de Nemours and Company (2011). H-28548: Absorption, Distribution, Metabolism, and Elimination in the Mouse. US EPA OPPTS 870.7485. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: November 3, 2010; Report Revision 1 Completed: April 21, 2011), Newark, Delaware and Wilmington, Delaware.

DuPont-19713 RV1: E.I. du Pont de Nemours and Company (2008). H-27529: Bacterial Reverse Mutation Test. US EPA OPPTS 870.5100; OECD Guideline 471. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: May 31, 2006; Report Revision 1 Completed: February 22, 2008), Newark, Delaware.

DuPont-19714 RV1: E.I. du Pont de Nemours and Company (2008). H-27529: In Vitro Mammalian Chromosome Aberration Test in Chinese Hamster Ovary Cells. US EPA OPPTS 870.5375; OECD Guideline 473. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: June 27, 2006; Report Revision 1 Completed: February 25, 2008), Newark, Delaware.

DuPont-19897: E.I. du Pont de Nemours and Company (2006). H-27529: Local Lymph Node Assay (LLNA) in Mice. US EPA OPPTS 870.2600; OECD Guideline 429. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: June 9, 2006), Newark, Delaware. **Note EPA has added a cover sheet for this study*

DuPont-22616 RV1: E.I. du Pont de Nemours and Company (2007). H-28072: Local Lymph Node Assay (LLNA) in Mice. US EPA OPPTS 870.2600; OECD Guideline 429. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: July 2, 2007; Report Revision 1 Completed: October 1, 2007), Newark, Delaware.

DuPont-22620 RV1: E.I. du Pont de Nemours and Company (2009). H-28072: In Vitro Mammalian Chromosome Aberration Test in Chinese Hamster Ovary Cells. US EPA OPPTS 870.5375; OECD Guideline 473. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: July 25, 2007; Report Revision 1 Completed: September 23, 2009), Newark, Delaware.

DuPont-22734 RV1: E.I. du Pont de Nemours and Company (2008). H-28072: Bacterial Reverse Mutation Test. US EPA OPPTS 870.5100; OECD Guideline 471. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: July 26, 2007; Report Revision 1 Completed: August 13, 2008), Newark, Delaware.

DuPont-22932: E.I. du Pont de Nemours and Company (2007). H-28072: Acute Oral Toxicity Study in Rats – Up-and-Down Procedure. US EPA OPPTS 870.1100; OECD Guideline 425. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: July 25, 2007), Newark, Delaware.

DuPont-23219: E.I. du Pont de Nemours and Company (2007). H-28072: Unscheduled DNA Synthesis (USD) Test with Mammalian Cells In Vivo. OECD Guideline 486. Study conducted by BioReliance (Study Completion Date: August 14, 2007), Rockville, Maryland.

DuPont-23220: E.I. du Pont de Nemours and Company (2007). H-28072: In Vivo Micronucleus and Chromosome Aberration Assay in Mouse Bone Marrow Cells. US EPA OPPTS Guideline 870.5395; OECD Guideline 474 and 475. Study conducted by BioReliance (Study Completion Date: October 10, 2007), Rockville, Maryland.

DuPont-23460: Haskell Laboratory Discovery Toxicology Group (2007). In Vitro Rat Hepatocyte Screen. Test Guideline Not Identified. Study Completion Date: June 12, 2007. Testing laboratory location not identified.

DuPont-24009: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Repeated Dose Oral Toxicity 7-Day Gavage Study in Rats. Test Guideline Not Identified. Report Issue Date: February 14, 2008. Testing laboratory location not identified.

DuPont-24010: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Repeated Dose Oral Toxicity 7-Day Gavage Study in Mice. Test Guideline Not Identified. Report Issue Date: February 14, 2087. Testing laboratory location not identified.

DuPont-24019: E.I. du Pont de Nemours and Company (2007). FRD-903: Corrositex® In Vitro Test. Test Guideline Not Identified. Study conducted by E.I du Pont de Nemours and Company (Study Completion Date: September 25, 2007), Newark, Delaware.

DuPont-24030: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Dermal Irritation Study in Rabbits. US EPA OPPTS 870.2500; OECD Guideline 404. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: November 21, 2007), Newark, Delaware.

DuPont-24113: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Dermal Toxicity Study in Rats. US EPA OPPTS 870.1200; OECD Guideline 402. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: November 28, 2007), Newark, Delaware.

DuPont-24114: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Eye Irritation Study in Rabbits. US EPA OPPTS 870.2400; OECD Guideline 405. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: December 14, 2007), Newark, Delaware.

DuPont-24116: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Repeated Dose Oral Toxicity 7-Day Gavage Study in Rats. Test Guideline Not Identified. Report Issue Date: February 14, 2008. Testing laboratory location not identified.

DuPont-24126: E.I. du Pont de Nemours and Company (2007). FRD-902: Acute Oral Toxicity Study in Mice – Up-and-Down Procedure. OPPTS 870.1100; OECD Guideline 425. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: November 29, 2007), Newark, Delaware.

DuPont-24281: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Biopersistence and Pharmacokinetic Screen in the Rat. Test Guideline Not Identified. Report Issue Date: February 13, 2008. Testing laboratory location not identified.

DuPont-24286: Dupont Haskell Global Centers for Health and Environmental (2008). Biopersistence and Pharmacokinetic Screen in the Rat. Test Guideline Not Identified. Study conducted by Critical Path Services Sciences (Study Completion Date: October 10, 2007), Testing laboratory location not identified.

DuPont-24447 (4 Volumes contained in 4 separate PDF files): E.I. du Pont de Nemours and Company (2008). A 28-Day Oral (Gavage) Toxicity Study of H-28397 in Rats with a 28-Day Recovery. OECD Guideline 407. Study conducted by WIL Research Laboratories, LLC (Study Completion Date: August 22, 2008), Ashland, Ohio.

DuPont-24459 (4 Volumes contained in 4 separate PDF files): E.I. du Pont de Nemours and Company (2008). A 28-Day Oral (Gavage) Toxicity Study of H-28397 in Mice with a 28-Day Recovery. OECD Guideline 407. Study conducted by WIL Research Laboratories, LLC (Study Completion Date: August 29, 2008), Ashland, Ohio.

DuPont-25281: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Repeated Dose Oral Toxicity 7-Day Gavage Study in Male Mice. Test Guideline Not Identified. Report Issue Date: February 14, 2008. Testing laboratory location not identified.

DuPont-25292: E.I. du Pont de Nemours and Company (2008). Determination of a Permeability Coefficient (Kp) for H-28308 using Human and Rat Skin Mounted in an In Vitro Static Diffusion Cell. Test Guideline Not Identified. Testing Laboratory and Location Not Identified (Study Completion Date: February 27, 2008).

DuPont-25300: Dupont Haskell Global Centers for Health and Environmental Sciences (2008). Biopersistence and Pharmacokinetic Screen in the Mouse. Test Guideline Not Identified. Report Issue Date: July 31, 2008. Testing laboratory location not identified.

DuPont-25438 RV1: E.I. du Pont de Nemours and Company (2008). H-28308: Acute Oral Toxicity Study in Rats – Up-and-Down Procedure. US EPA OPPTS 870.1100; OECD Guideline 425. Study conducted by E.I. du Pont de Nemours and Company (Original Report Completed: May 28, 2008; Report Revision 1 Completed: July 23, 2008), Newark, Delaware.

DuPont-25875: E.I. du Pont de Nemours and Company (2008). FRD-903: Acute Oral Toxicity Study in Rats – Up-and-Down Procedure. US EPA OPPTS 870.1100; OECD Guideline 425. Study conducted by E.I du Pont de Nemours and Company (Study Completion Date: October 13, 2008), Newark, Delaware.

DuPont-26129: E.I. du Pont de Nemours and Company (2008). H-28548: In Vitro Mammalian Cell Gene Mutation Test (L5178Y/TK+/- Mouse Lymphoma Assay). US EPA OPPTS 870.5300; OECD Guideline 476. Study conducted by BioReliance (Study Completion Date: June 25, 2008), Rockville, Maryland.

HL-770-95: E.I. du Pont de Nemours and Company (1996). Approximate Lethal Dose (ALD) of H-21216 in Rats. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: February 26, 1996), Newark, Delaware.

HL-839-95: E.I. du Pont de Nemours and Company (1996). Approximate Lethal Dose (ALD) by Skin Absorption of H-21216 in Rabbits. Test Guideline Not Identified. Study conducted by E.I. du Pont de Nemours and Company (Study Completion Date: April 1, 1996), Newark, Delaware.

HLR 2-63: E.I. du Pont de Nemours and Company (1963). Acute Oral Test. Test Guideline Not Identified. Study conducted by Haskell Laboratory for Toxicology and Industrial Medicine (Study Completion Date: January 3, 1963), Testing laboratory location not identified.

1.2 Publicly Available Peer-Reviewed Publications and Other Material

Beekman, M; Zweers, P; Muller, A; de Vries, W; Janssen, P; Zeilmaker, M. (2016). Evaluation of substances used in the GenX technology by Chemours, Dordrecht. (RIVM Letter report 2016-0174). National Institute for Public Health and the Environment Ministry of Health, Welfare and Sport.

Caverly Rae, JM; Craig, L; Slone, TW; Frame, SR; Buxton, LW; Kennedy, GL. (2015). Evaluation of chronic toxicity and carcinogenicity of ammonium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)-/propanoate in Sprague-Dawley rats. Toxicology Reports 2: 939-949. http://dx.doi.org/10.1016/j.toxrep.2015.06.001

ECHA. (2017). Registration dossier: Ammonium 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate: Physical & chemical properties: Endpoint summary. CAS number: 62037-80-3. Helsinki, Finland. https://echa.europa.eu/registration-dossier/-/registered-dossier/2679/4/1

Gannon, SA; Fasano, WJ; Mawn, MP; Nabb, DL; Buck, RC; Buxton, LW; Jepson, GW; Frame, SR. (2016). Absorption, distribution, metabolism, excretion, and kinetics of 2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoic acid ammonium salt following a single dose in rat, mouse, and cynomolgus monkey. Toxicology 340: 1-9. http://dx.doi.org/10.1016/j.tox.2015.12.006

Rushing, B; Hu, Q; Franklin, J; McMahen, R; Dagnio, Sonia; Higgins, Christopher; Strynar, M; DeWitt, J. (2017). Evaluation of the Immunomodulatory Effects of 2,3,3,3-Tetrafluoro-2-(Heptafluoropropoxy)-Propanoate in C57BL/6 Mice. Toxicological Sciences 156: 179-189. https://doi.org/10.1093/toxsci/kfw251

Sajid, M; Ilyas, M. (2017). PTFE-coated non-stick cookware and toxicity concerns: a perspective. Environ Sci Pollut Res 24: 23436-23440. http://dx.doi.org/10.1007/s11356-017-0095-y

Sheng, N; Cui, R; Wang, J; Guo, Y; Wang, J; Dai, J. (2018). Cytotoxicity of novel fluorinated alternatives to long-chain perfluoroalkyl substances to human liver cell line and their binding capacity to human liver fatty acid binding protein. Arch Toxicol 92: 359-369. http://dx.doi.org/10.1007/s00204-017-2055-1

Wang, J; Wang, X; Sheng, N; Zhou, X, Cui, R; Zhang, H; Dai, J. (2016). RNA-sequencing analysis reveals the hepatotoxic mechanism of perfluoroalkyl alternatives, HFPO2 and HFPO4, following exposure in mice. Journal of Applied Toxicology 37: 436-444. https://doi.org/10.1002/jat.3376