

Situation Analysis

Paper and Packaging Business

Business Definition

The PCP Paper and Packaging Business Unit provides fluorochemical sizing agents to two broad industry categories: the Packaging Industry and the Paper Industry. The fluorochemical sizing agents impart grease, oil, and water resistance to paper and paperboard substrates, which are used for a number of end use applications that include:

- * Flexible or lightweight papers primarily for bags, wraps and micro flute containers.
- * Board made from recycled fiber used for folding cartons.
- * Solid bleached board for folding cartons.
- * Molded pulp products for plates and food containers.
- * Formulators that blend FC's with other agents, such as varnishes and lacquers, and sell to the converting industry.
- * Business and specialty papers for carbonless forms and masking papers.

Product Portfolio

The product portfolio includes products regulated for direct food contact (under CFR 176.170) and non-food contact products.

Food Contact Products (Regulated for direct food contact)

PP-1

Grease and oil repellent

Ammonium bis(N-ethyl-2-perfluoroalkylsulfonamido ethyl) phosphates

PP-2

Grease, oil and water repellent

Perfluoroalkyl acrylate copolymer of ethanaminium, N,N,N-trimethyl-2-[(2-methyl-1-oxo-2-propenyl)-oxo]-, chloride; 2-propenoic acid, 2 methyl-, oxiranylmethyl ester; 2-propenoic acid, 2-ethoxyethyl ester; and 2-propenoic acid, 2[[heptadecafluoro-octyl)sulfonyl] methyl amino] ethyl ester.

Non-Food Contact Product

PP-3

Water and solvent repellent

Perfluoroalkyl acrylate copolymer of 2-propenoic acid, 2 methyl-, polyoxyethylene (3350) diester; and 2-propenoic acid, 2[[heptadecafluoro-octyl)sulfonyl] methyl amino] ethyl ester.

Market Definition

The Paper and Packaging business unit defines its markets by the following segments:

- Lightweight papers
- Recycled paperboard (CCN)
- Bleached paperboard (SBS)
- Unbleached paperboard (SUS)
- Formulators (Coatings)
- Business papers (carbonless forms)
- Molded pulp (paper plates)

Fluorochemicals are sold into each of these market segments.

Customer Definition

The Paper and Packaging sales channel includes paper mills, converters, end users, and formulators. The definition of each customer within the channel is:

- A. Paper mills – use fluorochemicals to treat paper fibers during the paper or paperboard manufacturing process.
- B. Converters – convert fluorochemically treated paper and/or paperboard into wraps, bags, cartons, etc., for desired end use.
- C. End users – specify or use fluorochemically treated paper or paperboard for use in their paper or package requirements.
- D. Formulators – blend fluorochemicals with other agents, such as varnishes and lacquers, and market coatings that can be applied to paper and paperboard during the converting process.

Fluorochemical Application Methods

Fluorochemicals can be applied to paper and paperboard substrates during the manufacturing process or converting operation, using different application methods:

Paper Mill

The application points for the fluorochemical at the paper mill can include:

- Wet end of the paper machine
- Size press
- Calender stack
- Clay coating

Converter or Off-Machine Coating Operation

Fluorochemical can be applied using various types of coating or printing equipment.

Approximately 95% of the fluorochemicals used in the paper and packaging industry are applied during the papermaking process at the paper mill. It is estimated that 73% of the fluorochemical used by US paper mills is applied via the size press.