Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

SYNTHETIC FIBERS

AP-42 Section 5.19
Reference Number
16

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

November 8, 1978

Mr. E. L. Bechstein
Senior Process Engineer
Pullman-Kellogg Division
Pullman Corporation
16200 Park Row-Industrial Park 10
Houston, Texas 77084

Dear Mr. Bechstein:

In response to your letter of October 26, 1978, we have attempted to obtain the additional information which you have requested. We would like to remind you at the outset that you have already been given information which we consider Company Confidential and for which you have signed an agreement with Du Pont to maintain it in a secure fashion. Some of the following information we also consider to be "Confidential", even though it may not warrant the total security given to our production figures. Where confidentiality is required, we will so indicate.

We have reviewed the information transmitted to you in our meeting of October 17, 1978, and while we are hesitant to classify any of this information as "Non-Confidential", we trust that it will not be indiscriminately revealed to persons not requiring the information in the discharge of their assignments.

Attached hereto are the air emissions data for the three additional nylon 66 plants - Chattanooga, Spruance, and Camden. Once again, I would like to emphasize that the emissions from the nylon producing plants are not volatile organic carbons (VOC's), but rather are particulates. As such they may not be of interest to you in your EPA study.

In accordance with your recommendation, we have reviewed your understanding of what constitutes an "emission control system" and based upon your recommended definition, have verified that we have identified the control systems in a manner that is compatible with your definition.

The additional information which you required under the nylon 66 resin/fiber processes are discussed below, in accordance with your paragraph numbering.

A1 The "air conditioning units" mentioned in the exhaust control at the Martinsville plant are conventional central air conditioning units with the circulated air being conveyed through conventional air washers. These are in fact conventional air conditioning units and are not in any sense process emission control devices.

A2 The vapor pressures of oil base finishes utilized in nylon fiber processing are extremely low. Ingredients such as #50 mineral oil has a vapor pressure at 90°F and 760mm of Hg pressure of 0.0001mm of Hg. The handbook goes on to say that one can anticipate that 50% of a batch of such mineral oil will be distilled over at 360°C and 760mm Hg. It is obvious we are not dealing with a volatile material.

A3 The split in annual production at the Seaford plant between staple tow and yarn and between batch and CP polymer must be considered as Confidential Information. In as much as you are now in possession of the annual production rate at that site, we have included that information under the separate cover containing Confidential Information.

A4 We have attempted to arrive at the air flow rate for the exhaust from the spinning, the draw crimp and dryer operations at the Seaford plant. They are:

Spinning - 58.8×10^3 SCF/1000 # Product

Draw/Crimp - 5.4×10^3 SCF/1000 # Product

Dryer - 3.2×10^3 SCF/1000 # Product

B1 The polyester annual fiber production for each of the polyester plants is Confidential Information and is found in the Confidential Enclosure.

B2 We have selected Kinston as the typical plant for illustrating the annual methanol production as a consequence of polyester polymerization. Approximately 22.5MM gallons of methanol are produced annually. On the site there are five methanol storage tanks -

two with 160M gallon capacity each and three with 30M gallon capacity each. The tanks are vertical, cylindrical, carbon steel tanks on grade and painted with aluminum paint. The two large tanks have a common refrigeration condenser to reduce organic emissions by 90%. The three smaller tanks have no emission control.

B3 The non-condensable flow rate for the ester exchanger condenser vent is approximately 7 cubic feet/hour for each CP line. The temperature is essentially ambient temperature and the inert gas is that incident to the blanketing of the process vessels.

B4 The jet hotwell non-condensable flow will vary from 20-40 pounds/hour with the temperature ranging from 70-80°C.

B5 The vapor pressure of typical finish oils used in polyester spinning is in the range of 0.1 to 0.01mm Hg at 20°C and 760mm Hg pressure.

You expressed an interest in the fraction of the total spinning machine exhaust emissions originating from machines having no control devices such as demisters or catalytic oxidation units. None of the polyester spinning machines producing staple yarns are equipped with demisters or catalytic oxidation units because there are no finish mists from these machines requiring control. Downstream when the yarn is processed as tow or staple yarn, the bundle is subjected to elevated temperatures in a relaxer. All of the machines producing staple yarn are equipped with relaxers. However, you will recall that the emissions from these relaxers are extremely low and can hardly be classified as VOC's. Of the polyester spinning machines producing textile denier yarns, 46% have no finish mist emissions because of the nature of the process and, therefore, have no control devices. Twenty-one percent of the textile yarn machines, representing approximately 6% of the total textile denier polyester yarn produced, have no exhaust emission control devices.

If you have any further questions, please advise.

Very truly yours,

RB Hayden

R. B. Hayden
Senior Staff Engineer
Environmental Control
Engineering Division

RBH/rlm
Enclosures

cc: J. I. Reilly/D. W. Smith
E. I. du Pont de Nemours & Company
Administration
Wilmington, Delaware 19898