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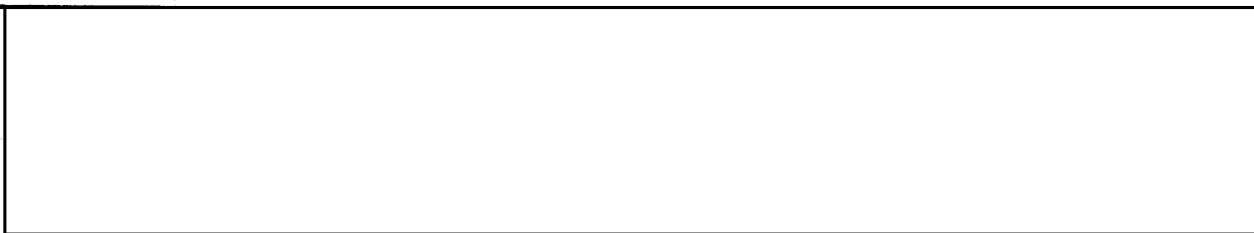
INFORMATION REPORT

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COUNTRY	Czechoslovakia	REPORT	[REDACTED]
SUBJECT	Experimental Production of Silon String and Artificial Horsehair	DATE DISTR.	26 March 1953
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- 25X1 1. Trial production of silon strings and artificial horsehair has been set up at the Institute for Chemical Research on Polyamides (Ustav pro chemicky vyzkum polyamidu) in Gottwaldov.
- 25X1 2. Laboratory work on production of silon string and artificial horsehair was begun under the direction of Eng. (fnu) Moravec in 1949. Small-scale trial production with one polymerization chamber in operation started in 1951. Caprolactam, the raw material for silon production, was prepared in the same manner as for production of silon fiber. Production equipment /Shown in Encls. A and B/ consisted of the following items: a polymerization chamber, a spinning machine, an ageing chamber, and a device for stretching the material, called a stretching stand (protahovaci stolice).
- 25X1 3. The polymerization chamber [REDACTED] was similar to that used in silon fiber production, but its aluminum inner part, measuring 2.135 mm. in length, was two times longer. This inner part had a capacity of 50 liters. For production of artificial horsehair the nozzle [REDACTED] was a 75 mm. long pipe with a 0.8 mm. wide opening and final diameter of 0.35 to 0.45 mm. For the production of string the pipe had a 3.5 mm. wide opening and final diameter of 1.4 to 1.7 mm. The chamber consumed 3.5 - 4 kw. of electric power per hour.
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638

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-2-

4. The horsehair, or string, which had a temperature of 260°C (500°F), fell out of the nozzle by gravity into a vessel filled with warm water [redacted] where it was cooled and spun. The distance between the nozzle and the water level was 50 to 75 mm. The vessel was a hollow cylinder with an outer diameter of 1,000 mm. and an inner diameter of 600 mm. and was fixed to a revolving shaft [redacted] 25X1 which was driven by a motor [redacted] through [redacted] gear box of the German type "PIV" [redacted] and worm gear [redacted]. The revolving speed of the vessel was small [redacted] about one revolution per minute - to prevent the material from being fatigued during spinning. The spinning machine as a whole was mounted on wheels so that it could be rolled off from below the polymerization chamber for removal of the spun rings of material, and so that another machine could be substituted.
5. The spun rings [redacted] were put in the ageing chamber [redacted] to be aged over night. The material was subsequently processed on the stretching stand [redacted] 25X1. This procedure resembled the stretching of a wire. The strings were put in a vessel [redacted] similar to the cooling and spinning vessel. This vessel was also filled with water and could revolve freely. The end of the string, or horsehair, was threaded through a calibrated drawing eye [redacted] 25X1. Then the material was led over a set of two cylinders, one of which [redacted] provided with a left-turning groove, was fixed to the protruding end of the gearbox [redacted] 25X1. The other cylinder, located close to the first one, could revolve freely. Both cylinders rotated in such a manner that the material had a speed of about 75 m. per minute before, and of about 300 m. per minute behind, the eye, whereby the string (horsehair) was stretched to fourfold its original length. Further on its way, the material passed a meter recorder [redacted] and was subsequently wound on to a drum [redacted] which received friction drive [redacted] from the gear box so that the string could be wound on under constant tension. The stretched string showed a marked tendency to return to its original length. To avoid this the drum was made elastic by means of six spring blades which allowed a safe shrinkage of the material of up to five per cent of the final length.
6. The strings wound on to drums were unwound at the warehouse to the length wanted, then rewound into rings of about 50 to 70 mm. diameter, and finally wrapped up in transparent bags.
7. According to a decision taken by the Ministry of Chemical Industry in May 1952, trial production of silon strings and artificial horsehair was to be transferred together with the entire production equipment, from Gottwaldov to the Silon National Enterprise at Plana nad Luznici /4921N-1442E/. Nothing, however, had been moved as of the end of June 1952. By 15 June 1952 the Silon plant had worked out in rough lines designs for the entire equipment for larger-scale pilot production of silon strings and horsehair. The designs were based on the experience acquired at Gottwaldov. The Silon plant will be able to maintain a continuous production process, whereas the polymerization chamber at Gottwaldov was working intermittently.
8. In the Spring of 1952 Ing. MORAVEC completed his research work on silon and expressed his conviction that no further improvement could be achieved in matters of silon. Of silon products, the Institute for Chemical Research on Polyamides has retained only trial production of silon strings and artificial horsehair.
9. Silon strings and artificial horsehair were also produced on a trial basis at Zilina /4913N-1844E/. There the material was not stretched by means of a drawing eye, but between cylinders on the spinning machine. However, the quality of the string produced at Gottwaldov was far better.

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