

# ALIEN PROPERTY CUSTODIAN

## THREADS OF HIGH BENDING STRENGTH

Herbert Berg, Martin Doriat and Wolfgang Gruber, Burghausen, Germany; vested in the Allen Property Custodian

No Drawing. Application filed October 23, 1940

According to the Patent Application, S. N. 326,536 pipes, plates, rods and the like may be produced out of polyvinyl chloride by processes for spinning or spattering, whereby the polyvinyl chloride is plastified with a great deal of softeners, formed and treated with solvents which solve the used softeners. Thus, hard and strong products may be obtained.

Now it has been found that threads of small cross section which are manufactured out of polyvinyl chloride plastified by a great deal of softeners, and extracted with liquids solving completely or partially the used softeners but not substantially solving the polyvinyl chloride, yield filaments being not hard but surprisingly flexible. These threads, therefore, may be used for textile filaments, whereby their resistance against air, sun, aging and chemical agents of most different nature is advantageous.

Threads out of highest molecular polyvinyl chloride the manufacture of which is shown in the Patent Application S. N. 203,674, and according to the method of invention are especially advantageous. They do not only have the known excellent properties in regard to mechanical and chemical resistance but they also have an excellent resistance to tearing and bending strength that is properties being specially important for the intended use.

Otherwise, the threads out of polyvinyl chloride according to the invention are surprisingly resistant to heat in contrast to the threads known until now; They may even be treated with boiling water. Therefore they give the basis not only for textile fabrics for special uses but also for fabrics which may be generally used.

A further advantage of the new method lies in the fact that an unusually high speed of spinning may be applied in spinning processes especially if highest molecular polyvinyl chloride with high addition of softeners are used.

### Example

100 parts by weight of powdery high molecular polyvinyl chloride according to the Patent Application S. N. 203,674 are mixed well with 200 parts by weight of trikresyl-phosphate and 4 parts by weight of stearic acid. The powder is heated up to 100° C until the softener is completely absorbed and the powder feels dry. Then it is extruded in a spattering machine through a nozzle of 0.5 mm width, whereby the corresponding temperatures of the endless screw, of the head and of the nozzle are 120°, 150° resp. 220°. The thread leaving the nozzle in a nearly fluid state is reeled upon a drum with a speed of spinning of 700 m per minute. The softeners of the obtained thread are extracted by acetone whereby the threads keep their satisfying flexibility, their resistance to tearing and knotting and their excellent surface-qualities.

Their mechanical properties may further be improved by methods of stretching whereby all the known modifications are applicable. The stretching may be applied in the acetone-bath or subsequently if necessary at high temperature. The threads may further be improved by a thermal after-treatment if necessary in a dry state, whereby they may be heated up nearly to the flow limit.

These threads out of very high molecular polyvinyl chloride are suitable for all goods where rubber must be used until now, because they have favorable mechanical properties and show a constant high elasticity. Otherwise they do not age. For instance braces, garters, corsets, elastic bandages and the like may be produced. Threads out of polyvinyl chloride being not so high molecular, cannot be applied for such uses because they are too plastic.

HERBERT BERG.  
MARTIN DORIAT.  
WOLFGANG GRUBER.