

CHARACTERIZATION OF VARNISH / NYLON FIBRE ADHESION

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ABSTRACT

The adhesion of varnish on different type of materials has caught significant attentions in the past few years. Indeed, varnish is used in many domains medical, textile, mechanical, electronic or electric...

To characterize the tribological behaviour of varnish on any type of surface, a scratch test is used.

The scratch process test is defined as mechanical deformation process where a controlled force or displacement is exerted on a hard-spherical tip to indent onto a substrate and move across its surface at a prescribed speed.

There are mainly two main types of damage found in materials: ductile damage (e.g., shear yielding and ironing) and brittle damage (e.g., crazing and cracking); their occurrence depends on the material characteristics and applied stress state and magnitude [1;2]

To characterize the adhesion between varnish and a mono fiber of nylon, a series of scratch tests on coated fibers with different type of varnish were performed.

The scratch damage features were characterized by optical microscope. Brittle damages were identified for the majority of samples. Studying the effect of this manipulation shows that the magnitude and the shape of the cracks depend on the load applied to the fiber surface.

A comparison between the different prints was discussed to characterize the effect of varnish type on the scratch resistance.

Fig.1 A scratch test on mono fiber of nylon coated with varnish



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