

ANALYSIS OF THE FORMATION OF TORQUE RESIDUE IN SPINNING YARN AND TECHNOLOGIES TO REDUCE IT

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Annotation. This article systematically analyzes the nature of the residual torsional moment in yarn, its formation through bending, twisting, and internal stretching (tension) of the fibers that constitute its components, and the influence of these factors on the stability and mechanical properties of the yarn. screwdriver torque residue reduce for usable various methods analysis These methods are advantages and disadvantages shown. More researchers theoretical and experimental to the results relied on without fiber tension property his/her the most important as you can see that Also, inter fibers migration and friction thread in the structure to the role importance focused on. Practical in terms of screwdriver torque residue reduce or balancing methods heat and chemical treatment, opposite directional twisting and forging like a twist methods seeing published. Article ringed spinning to the car fixed and threaded fake screw give the device current to grow through screwdriver torque residue reduce opportunities offer does. Proposal done approach thread quality improvement and weaving of products stability to increase focused.

Keywords. Twisting torque residue, spun yarn, false twisting device, low twist, fiber twisting, bending, tension.

Introduction. Spun thread working release in the process fibers each other garden stand for binder forces harvest to do screw to give through done is increased. With this together, twist one of time in the room on the rope residual torque or of the thread also creates imbalance Such a process as a result harvest to be screwdriver torque wrench stability and mechanical properties noticeable impact shows. Later cloth also affects the properties to do possible. Therefore, the one who pays of the fabric quality in providing, spun from threads effective use for screwdriver torque residue less or many thread preparation to the purpose is appropriate.

Theoretical analysis. On the thread screwdriver torque residue reduce for researchers by spun on the thread screwdriver torque residue essence studied. Platt, Klein and Hamburgers spinning of the thread in the formation twisting voltage quantitative theory working [1]. Here the twist voltage the body twist power or screwdriver torque residue under the influence to the surface arrival and its own read around to the cycle take coming disconnect voltage one shape that Elastic from theory used without spun on the thread screwdriver torque residue fiber elastic properties, fibers sizes and spun of the thread to the structure garden they



cooked on the threads the moment of the fiber bending, twisting and their combination that shows and yarn tension less to be to the goal compatibility determined.

By Hickey and Chaykin learned tension under of the thread twist from their experiences taken to the results because, not only fiber bending and twisting, maybe twisted on the thread torque in evaluation fiber taking into account the tension received without studied [2], in experiments on fiber tension attention if not given, then much to the truth close result to give [3]. Researcher fiber from tension come came out without of the thread driller at the moment share it from bending and twisting see much big that they found out, the fiber from twisting come output torque component insignificance determined.

Scientists power to the method based on theoretical and experimental analysis they passed and the thread moment thread inside fiber in the stretch voltage to spread connection [4]. They are on a rope harvest to be screwdriver torque residue level not only of the thread to spin, maybe twisting method also marked with fiber stretching voltage distribution also very connection those who have identified.

See you later. It is clear that inter fiber friction into account did not receive without, thread twisting during harvest was general of the thread screwdriver to the torque residue three component share added: fiber bending, fiber twist and fiber internal voltage, it as follows expression possible:

$$L=L_e+L_t+L_b \quad (1)$$

Here L is the length of the thread. general residual torque, L_e due to fiber tension come came out thread torque component, L_t fiber twist as a result harvest to be screwdriver torque component and L_b fiber bending because of of the thread screwdriver torque component.

The three components share fiber from tension come outgoing thread moment has to be fiber bending and twisting as a result harvest was power from the assembly line much big. That's why for, one instantaneous driller torque fiber from tension come outgoing general The torque of the screwdriver is as follows: calculation through done increase possible [3]:

$$L=\frac{\pi R^3 E_f e_y \tan \theta_s}{2} \quad (2)$$

Here L is the length of the thread. general screwdriver torque residual, R - thread radius, E_f - of the fiber modulus of elasticity, e_y - of the thread deformation and θ_s - thread from the spiral angle of the surface organization found.

On the thread screwdriver torque residue the essence further deeper understanding for inter fiber friction and thread formation in the process fibers migration thread moment the impact into account to take need.

The residual twisting moment of a yarn is a complex phenomenon resulting from many factors affecting the nature and degree of twisting motion of the yarn and depends on the types of fibers used in the yarn. The elongation, torsion and flexural modulus of the fiber, the tensile strength of the fiber, the twist and flexural ratio, and its mechanical properties have a significant effect on the residual twisting moment of the yarn. The yarn the torque of the screwdriver is also the fiber. friction size and date section to the shape related. Textile fibers high flexible is material. Time passing with in the fibers of boredom decrease of the thread driller residue moment to decrease take comes. So, the fiber to be bored reduce feature on the threads screwdriver to the torque residue known at the level impact does.



The thread is also the thread screwdriver to the torque residue noticeable impact shows. In the thread twists, its radius, in it of fibers location and fiber migration of the thread screwdriver to the torque residue related was main thread structure features are considered. Spun on the threads screw fibers together hold in standing and shaping structure known at the level to give density is necessary. To the threads screw when given, fibers thread in a spiral direction along It will be. On the line fiber internal tension and tension harvest It will be. The thread screwdriver torque residue theoretical analysis and experimental research this showed that it is known under the circumstance's screwdriver torque residue of the thread cooked increase with increases [3, 5, 6, 7]. The number of threads in the thread twists in its screwdriver torque residue increase and the thread entanglement tendency manager the most important from factors is one. In the thread of fibers location on the thread given twist and fiber tension in yarn to the distribution impact does, therefore for on the rope harvest to be screwdriver torque residue to the level impact large [8, 9, 10]. Fibers of the year distribution, in the thread location status as, mainly, fibers of the thread whole section along migration to do to the possibility related. Fiber migration thread inside inter fiber wrapping to friction impact does and that's it with on the thread screwdriver to torque residue impact Wu, Wang, F. and Wang, S.Y. Wool /PET composite of threads twisting property and torque residual decrease movements studied [11]. They are composite of threads special structures mainly high screwdriver torque residue brought release determined.

Different spinning technologies various geometric and physical to properties has the threads working releases. Circular, open tip and air-jet spinning from the threads dress Friction spun threads the most higher screwdriver torque residue and tangle trend has that cited [12].

Today to the day until textile in the thread screwdriver torque residue reduce or no to do for various kind techniques and technologies working published. principles because of this methods two mains to the category to be possible: screwdriver torque residue reduce for thread permanent accordingly control to make and thread screwdriver torque residue various methods with is balancing.

Threads of fibers type looking at various methods with to be balanced possible. Thermal plastic to the fibers high temperature used, when, thread or cloth pressure under hold when standing heat processing is used, but they melting point under at temperatures Araujo and Smith cotton / polyester blend fibrous of threads heat by processing with screwdriver torque residue noticeable at the level decrease Cotton and wool such as natural fibers for balancing process more complex, for example, steaming, hot water treatment and cotton threads mercerization to do such as chemical treatments through done increased. With this together, they natural fibers spinning process spun of threads screwdriver torque residue complete that it cannot be eliminated, the fiber damage and thread properties deterioration possible determined by. Residual torque of the drill balanced thread, two simple thread their initial ripening in the direction of look against in the direction enough at the level twisting through harvest It is also possible.

Directly right ringed spinning in the way screwdriver torque residue reduce through simple thread working to release related some innovative approaches about information available. Sawhney, Robert and Ruppenicker ringed spun cotton coated/polyester body thread working release technique presented they did, this and harvest was body on the thread opposite twisting directional was main thread using screwdriver torque residue balancing [13]. Sawhney and Kimmel also found that balanced screwdriver with residual torque thread working release "Tandem" spinning for system working This is the method using spun body of threads core and shell components usually opposite twisting / screwdriver torque residue to the directions has [14]. Tao, Lo and Lau are classic in a way spun body of threads core from the structure used



without thread modification process working They came out and friction and open pointed spinning method with from cotton spun to the threads used only, this and screwdriver torque residue less was spun the threads working to release achieved [15]. Fake twisting to the structure similar to the concept According to, Primentas and Iype of the thread screwdriver torque residue reduce technique working [16] was obtained. In this method high at the level cooked threads with steam balanced and evaporated on the threads initially included 15-30% of the folds reduce possibility brought passed.

Above cited clear scientific and practical to the facts based on, on the thread during the screwing process harvest to be screwdriver torque residue mainly fiber bending, twisting and stretching internal fatigue properties because of them thread inside distribution with the surface of the thread is determined. twisting angle on the thread being given screw number with increases and the thread twisting level of the thread screwdriver torque residue-fiber bending, fiber twist and tension was these three components to the size directly answer gives, that with together the tension of the fiber in the yarn distribution on the thread of fibers to the location depends on. From this except for the fiber of the year distribution of yarn to the state looking, many in terms of fibers of the thread whole section along move to pass possible was to the body, also to the thread inside inter fiber to friction depends [19, 20, 21, 22].

That's why for of the thread screwdriver torque residue reduction possible was method following to aspects justification First, the thread twisting level reduce thread twist during harvest was fiber bending, fiber twist and fiber tension the size to reduce take arrival possible and that's it with of the thread screwdriver torque residue and thread entanglement tendency reduces. Secondly, the thread inside fiber in the stretch of the year distribution change, its radial bending prevent get and some fibers and fibers departments of the thread to twist reverse in the direction placement for, in the thread fiber location change, that is thread structure change, perhaps, of the thread residue moment to reduce help gives.

Conclusion. The above into account received without, with ring spinning to the process screwdriver torque residue reduce device that is on the thread fake screw giver the device current to do through done increase This screwdriver has residual torque. reduce device ringed spinning to the car is installed and threaded fake the duty of giving a gift will do.

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