

TORKSense Tightening Torque Program

TORKSense Tightening Torque Analysis Program using the Nut Factor Method

PC Software that has been designed to assist you in solving problems, or potential problems, related to the determination of the correct tightening torque for a threaded fastener.

Introduction

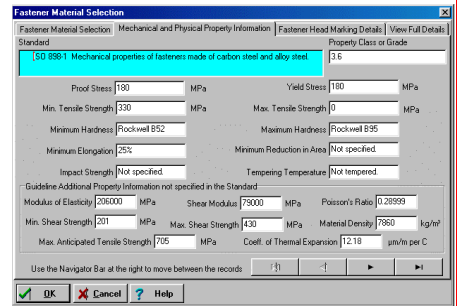
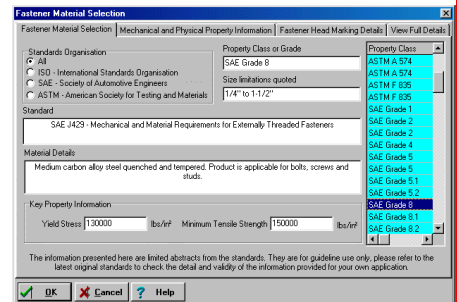
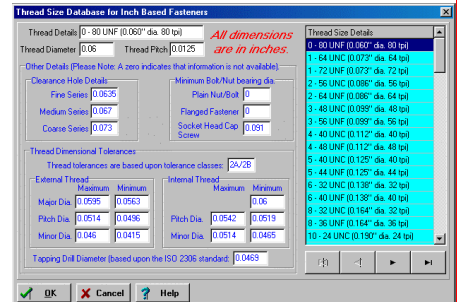
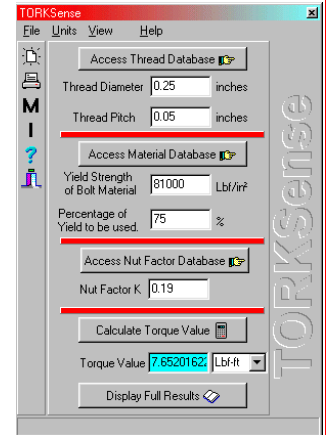
TORKSense™ is a program that is designed to deliver information on the correct tightening torque to be applied to fasteners in the simplest and easiest way. The program can use both metric and inch based units. It is based on determining the torque value using the nut factor approach. It achieves this by allowing the user to view and then select specific information on the size, material and finish condition of the fastener being considered. The program calculates the tightening torque based upon the use of nut factors. A nut factor is a dimensionless constant for a particular fastener finish or condition. The program will work in both inch based and metric units; the torque units can be converted by the program so that Lbf-ft units are used, for example, with metric thread sizes if required by the user.

The Thread Database

The TORKSense program is designed for ease of use and is designed for both inch and metric based units and fastener sizes. The main window of the program consists of a number of buttons and edit boxes that the user enters data into. To assist the user, the program comes complete with a number of databases that the user accesses. The Thread Database Form can be accessed by the user clicking on the appropriately marked button on the main form of the program. The thread database consists of all the major thread sizes from Number 0 (0.06 inch diameter) to 4 inch diameter and M1 to M100 for metric fasteners. Sizes below and above these can be handled by the program by the user directly entering information into the program. Details are also provided on the Thread Database Form on thread tolerances, hole clearance sizing and tapping drill details.

Fastener Material Selection Form

The Fastener Selection Material Form allows the selection of a fastener material from a large range of standard specifications applicable to both ferrous and non-ferrous materials. The form opens the inch or metric material database depending upon which units were selected from the main program. The most common fastener materials are included (there are approximately 200 material specifications covered). The form has multiple tabs allowing further details about the standard to be presented. The Mechanical and Physical Property page allows information to be presented that can be of interest to an engineer specifying a particular fastener material. There is also additional property information that is presented on this form that is not specified in the standard but can be of use to the engineer (for example the shear strength). This information is based upon research into the material but because it is not specified in the standard needs to be used with care.



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Fastener Material Selection Form (continued)

There is also a page giving details about the fastener head marking requirements that may be specified in the standard. Most standards specify that the fastener must be marked in some way so that the user can know the fastener's property class (or grade). Most standards also specify that a manufacturer's mark must be present. The program also provides additional information on common head marking symbols that can be viewed by clicking on the appropriate button.

The Nut Factor Selection Form

The Nut Factor Selection Form allows the user to select the appropriate nut factor (sometimes called the K factor) for the fastener material and surface finish being used. The form also provides details about the data and, when possible, the scatter in the nut factor that was observed. By default the mean value is used, the user can change this by clicking on the appropriate button (so that the program would use the minimum or maximum value).

Program Results

The calculated torque value is presented on the main screen of the program. Additional information can be provided by clicking on Display Full Results button. The BoltPAD Text Editor is used to display the full results, this program allows the user to enhance the text (by changing the font size and color) and to include their own notes into the body of the results. By clicking on the TORKSense menu option it is possible to use the program to access text files created by the program that gives further details about the thread, fastener material and nut factor selected.

System Requirements

The TORKSense program uses the Microsoft Windows™ operating system (Windows 95, 98, ME, NT or Windows 2000). The full program is downloaded from the Bolt Science web site, the installation program requiring a password to allow the program to be installed.

Demonstration Program

A demonstration program is available for TORKSense from the Bolt Science website (<http://www.boltscience.com>). The demo program is the full program but includes only a selection from the main databases and does not have the extensive help file on fastener materials. The latest pricing for the program can also be obtained from the web site. Further details and clarification on any issue related to the program can be obtained by emailing info@boltscience.com

