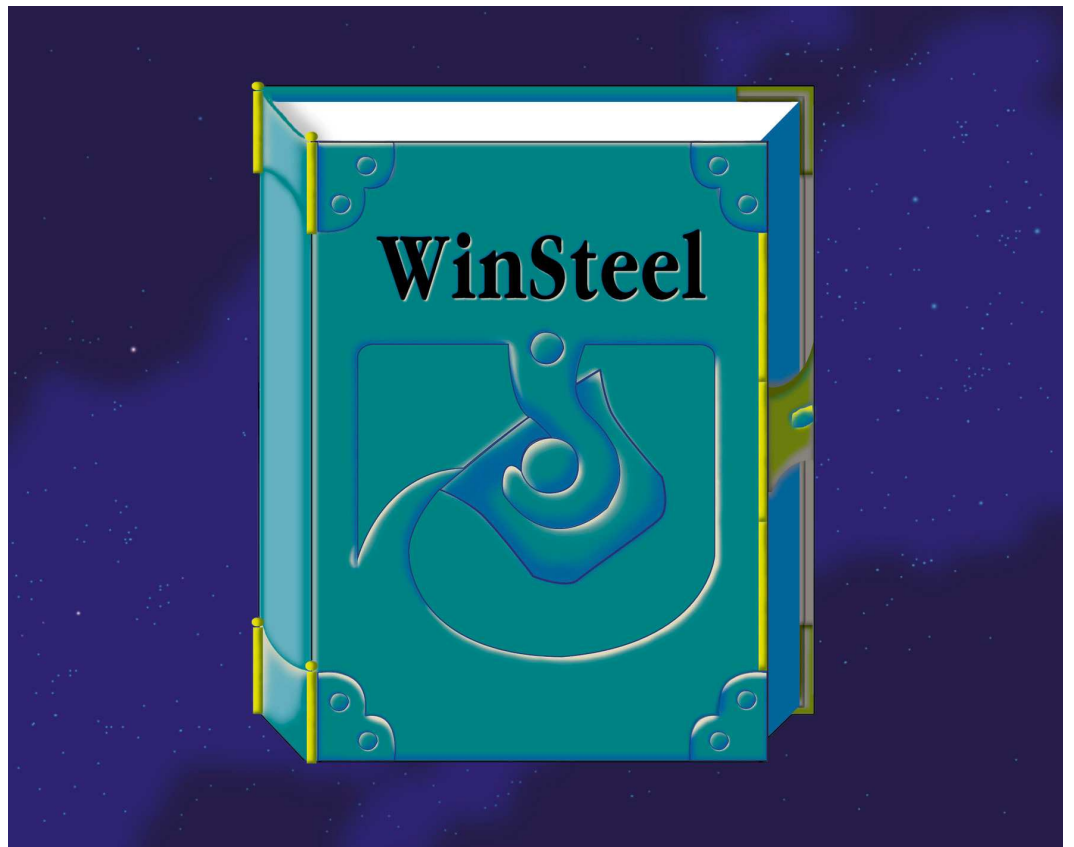


# **WinSteel 8**

**International Translator  
of Steel Grades**



**MetalData.info**

## Table of Contents

<b>1. Introduction</b>	<b>2</b>
<b>2. Software Installation</b>	<b>3</b>
<b>2.1. Installation of WinSteel 8 - CD version</b>	<b>3</b>
2.1.1. Installation Process	4
2.1.2. Validation of Installation	5
<b>2.2. Installation of WinSteel 8 - Subscription</b>	<b>5</b>
2.2.1. Installation Process	6
2.2.2. Software Activation	6
2.2.3. Validation of Installation	7
<b>3. User's Manual</b>	<b>9</b>
<b>3.1. How to Run the Software and Call It's Main Procedures</b>	<b>9</b>
<b>3.2. Operation with List of Steel Grades</b>	<b>10</b>
3.2.1. How to Find a Grade in the Database	10
3.2.2. How to Get Information on the Selected Steel Grade	12
<b>3.3. Search by Comparison of Compositions and Properties</b>	<b>17</b>
3.3.1. Search in Automatic Mode	17
3.3.2. Search in Expert Mode	18
3.3.3. Results of the Search by Comparison of Compositions and Properties	25
<b>3.4. List of Standards</b>	<b>26</b>
3.4.1. How to Find a Required Standard in the Database	26
3.4.2. How to Find a Grade in a Standard and Get Information about It	26
<b>3.5. Search for a Grade by Composition and Properties</b>	<b>29</b>
3.5.1. Setup for the Search by Composition	29
3.5.2. Setup for the Search by Properties	31
3.5.3. Setup for the Search by Fragment	32
3.5.4. Search Start and Search Results	32
<b>3.6. Notepad</b>	<b>35</b>
<b>3.7. Service Procedures</b>	<b>36</b>
3.7.1. Software Settings	36
3.7.2. Reference Information	36

## 1. Introduction

**International Translator of Steel Grades WinSteel 8** is original user-friendly software that helps you to find the correspondence between steel grades used in your country and the steel grades of the other industrial countries. The database of the software contains information on **more than 275,000 steel grades worldwide**. We collected information on chemical compositions and properties of steels as well as the correspondence among them, from national standards, various reference books as well as brochures provided to us by world steel companies.

**WinSteel 8** software is supplied in three variants namely **WinSteel 8 Base**, **WinSteel 8 Prof** and **WinSteel 8 VIP**. You'll find more detailed information on the variants as well as differences between them, on our web-site

<http://www.metalddata.info/eng/winsteel.htm>

The present User's Guide consists of the following parts:

**Part 2 Software installation** describes the procedure of installation of **WinSteel 8** software on User's PC and its preparation for operation.

As the installation and preparation for the operation of the CD-version of the software and its Subscription version differ from each other, the part consists of two separate chapters, each dedicated to the installation and preparation of the above versions for the operation.

**Part 3 User's Manual.** In this part we described how to run the software, general principles of its operation and gave a detailed description of the main software features and procedures.

In the part you will learn how to find required steel grade in the database and to get information on it and its foreign equivalents, and also what to do in cases, when no equivalents exist. Besides in the part, algorithms and a sequence for the search for a steel grade in the database by known composition and properties, are described.

**The authors reserve the right**

***to introduce amendments into the software in the process of operating the software. That is why, before you start working, it is so important to get acquainted with the Read Me file where we specified the differences of the version purchased by you from the basic version described in the User's Guide.***

You can easily contact us by:

**Phone / fax:** (+7 495) 989 7021

**E-mail:** [inform@metalddata.info](mailto:inform@metalddata.info)

**Internet:** <http://www.metalddata.info>

We would ask you to return completed registration forms to the following address:

**MetalData.info, 235-2, Zelenograd, 124498 Moscow, Russia**

or to sent them us by fax or e-mail.

## 2. Software Installation

Installation of **WinSteel 8** software on User's PC is easy and can be accomplished by a User himself without our assistance.

**WinSteel 8** operates under *Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10* as well as under *Linux (Wine)*. It will take about **400 Mb** on the hard disk of your PC after installation.

**WinSteel 8 XX<sup>\*)</sup>** is supplied in two configurations:

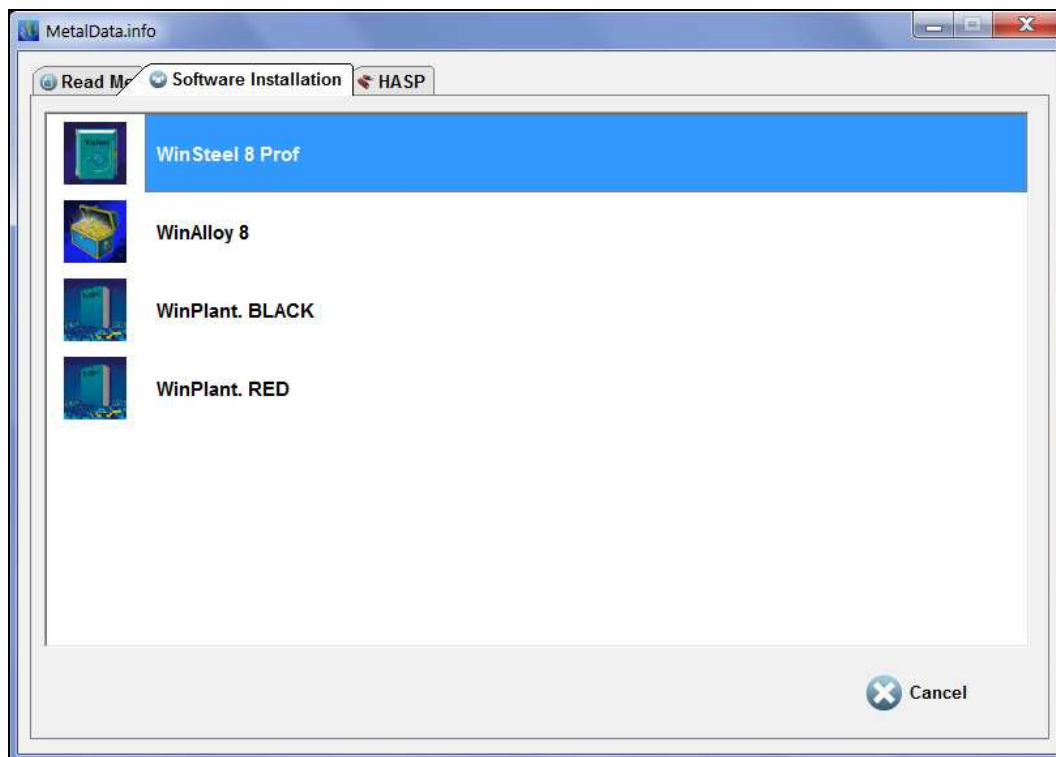
- **WinSteel 8 XX - CD;**
- **WinSteel 8 XX - Subscription.**

The both configurations are completely identical in their features; the distinctions consist only in different ways of the software protection for illegal copy.

### 2.1. Installation of WinSteel 8 – CD version

*To install **WinSteel 8 XX - CD** Administrator's privileges are required.*

The software is installed from the supplied CD-ROM. For the installation the **Autorun** utility is applied. It starts running automatically after the CD-ROM has been inserted into the drive of your PC.



**Fig. 2.1. The Autorun utility. Main window**

The **Autorun** window consists of several pages, the shifting between them can be done by means of the tabs, located at the top (**Fig. 2.1**). Their functions are specified below:

- the **Read Me** tab opens the page, which describes the content of the CD-ROM, acquired by you and contains our contact data;

<sup>\*)</sup> Here and below **XX** is designation of the software supply option, taking **Base**, **Prof** or **VIP** value.

- the **Software Installation** page includes buttons to run installation of our different products;
- the **HASP** page contains drivers and other utilities, used in operation with the Security Device.

We draw your attention that the list of the products of the CD you have received, can be different from the list displayed on **Fig. 2.1**.

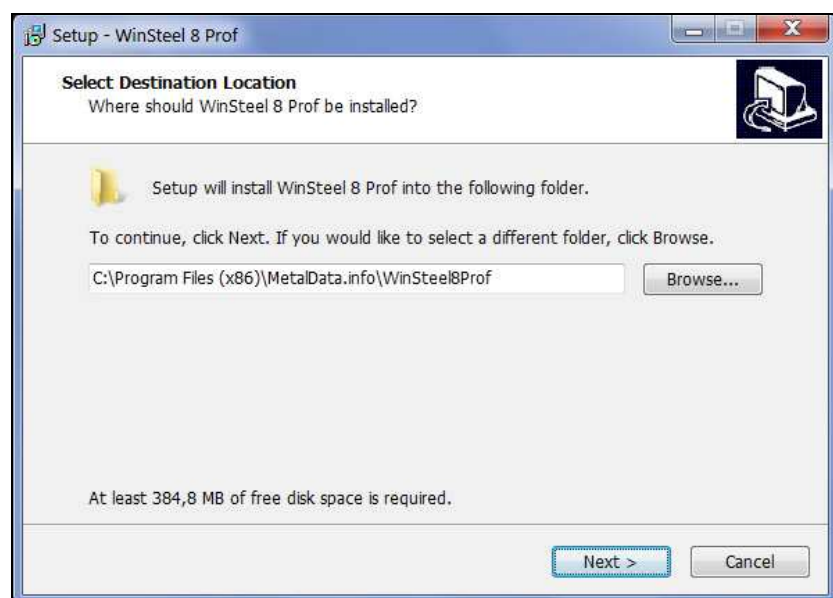
To start the installation process of **WinSteel 8 XX** software you should go the **Software Installation** page, select the required product in the list and double click the string with its name.

### 2.1.1. Installation Process

On clicking the string with **WinSteel 8 XX** icon the main window of the software Setup Wizard, will be displayed on the screen (**Fig. 2.2**).

By default **WinSteel 8 XX** software is installed in  
*C:\Program Files (x86)\MetalData.info\WinSteel8XX*  
folder.

If you wish to install the software in another folder, click the **Browse...** button and select another path in the appeared window. When the folder has been selected to continue, click the **Next >** button.



**Fig. 2.2. WinSteel 8 XX - CD Setup Wizard. Select a folder for installation**

On the next page you can check the folder for the installation you have selected. In case you made a mistake, you can correct it by returning to the previous step with help of the **< Back** button.

The installation process will start after clicking the **Install** button. It is visualized on the screen by means of a progress bar, which shows processes of unpacking the software files and their copying to the hard disk of your PC. When the installation is completed the final window of **WinSteel 8 XX** Setup Wizard, will be shown on the screen. To exit the Wizard you should click the **Finish** button.

As a result of the installation you will have the **WinSteel 8 XX** icon on the Desktop of your PC, which is used for the software run.

In addition in the **All Programs** menu a pull-down **Metal.Data.info / WinSteel 8 XX** submenu containing three items in it, will also be displayed:

- the **WinSteel 8 XX** menu item is used to run the software;
- the **WinSteel 8 XX Help** item is intended to activate the Help topics;

- the **UnInstall WinSteel 8 XX** item is used for deleting of all software files from the hard disc of your PC.

### 2.1.2. Validation of Installation

Make sure of the presence of the **WinSteel 8 XX** icon on the Desktop of your PC and connect the USB *Security Device* supplied with the software, to your PC.

Then you can try to run the software by double-clicking the **WinSteel 8 XX** icon. If you have successfully completed the installation and correctly inserted the Security Device, the software will start running: its main picture and a progress bar under it, will appear on the screen.

In case you:

- forgot to *insert the Security Device*,
- inserted it to a *disabled port*,
- inserted *not the device* that was supplied to you with the software,

**WinSteel 8 XX** would not run, and an appropriate message will be displayed.

If the software does not run, then do the following:

1. First check is the Security Device connected to your PC. If the Security Device is connected correctly and your PC sees it, you will find *red light* inside the HASP.
2. If there is no *light*, then check the port, to which you connected the Security Device. For this you may use, for instance, a flash memory stick: if the PC sees it, the port functions properly.
3. If the port is functioning but the software does not run, try to re-install the software.
4. If after the re-installation of the software there is still *no light* or *the light is activated*, but the software does not run again, please e-mail our *Technical Support Service* – **inform@metalddata.info** or contact us online using Mibew Messenger on our web-site: **<http://www.metalddata.info/eng/winsteel.htm>**

We draw your attention that after you have installed the software and it proved to be workable, you will have *to fill in the attached Registration Form* and send it us by fax or e-mail.

Otherwise you would be deprived of our Annual Support Service, namely:

- the possibility to use consultations of our Support Team;
- to receive new software data updates quarterly during the warranty period of 12 months.

## 2.2. Installation of WinSteel 8 - Subscription

To install **WinSteel 8 XX - Subscription** you should download the software from our web-site. The link for downloading of the software as well as step-by-step instructions you'll find on:

**<http://www.metalddata.info/eng/subsdownload.htm>**

To start the download process, please click the diskette icon in the corresponding cell of the table in the lower part of this page.

Then a standard Windows window will be displayed, which will offer you either to save the software on hard disc of your PC or to run **WinSteel 8 XX - Subscription** Setup Wizard. In our opinion it is better to save the software executive file first on your PC, and then to run the installation process. However you may start running the Setup Wizard at once.

*We would like to pay your attention* to the fact that **WinSteel 8 XX - Subscription** exists in a *Single mode* only. So if you have purchased the Multiuser software license for 2-5 or 6-10 activations you will have to install the software on each PC separately.

### 2.2.1. Installation Process

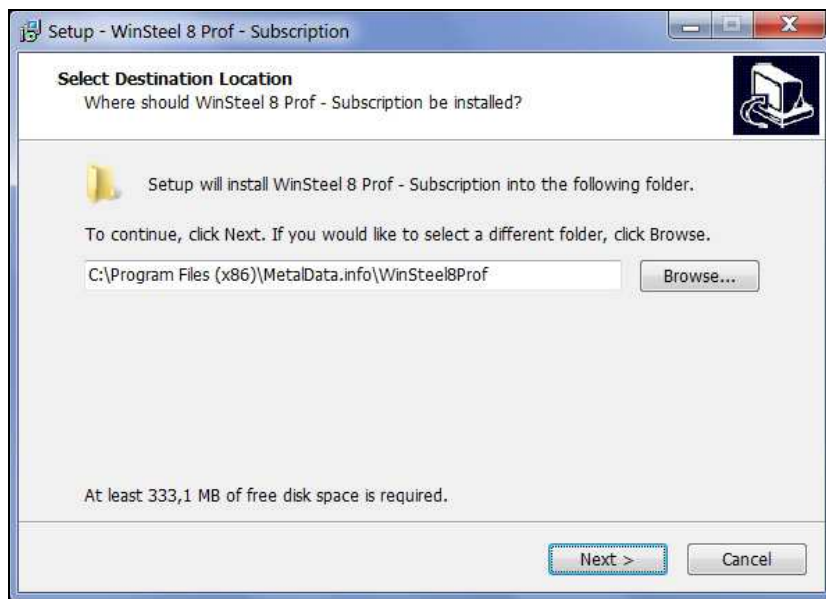
After the executable file containing distributive of the software, has started running the main window of **WinSteel 8 XX - Subscription** Setup Wizard will be displayed (**Fig. 2.3**).

**WinSteel 8 XX - Subscription** software is installed in the

*C:\Program Files (x86) \MetalData.info \WinSteel8XX*

folder by default.

If you wish to install the software in another folder, click the **Browse...** button and select another path in the appeared window. After the folder has been selected, click the **Next >** button to continue the installation process.



**Fig. 2.3. WinSteel 8 XX Setup Wizard. Select a folder for installation**

On the next page you can check the folder for the installation you have selected. In case you made a mistake, you can correct it by returning to the previous step with help of the **< Back** button.

The installation process will start after clicking the **Install** button. It is visualized on the screen by means of a progress bar, which shows processes of unpacking the software files and their copying to the hard disk of your PC. When the installation is completed the final window of **WinSteel 8 XX** Setup Wizard, will be shown on the screen. To exit the Wizard you should click the **Finish** button.

As a result of the installation you will have the **WinSteel 8 XX - Subscription** icon on the Desktop of your PC, which is used for the software run.

In addition in the **All Programs** menu a pull-down **Metal.Data.info / WinSteel 8 XX** submenu containing three items in it, will also be displayed:

- the **WinSteel 8 XX - Subscription** menu item is used to run the software;
- the **WinSteel 8 XX - Subscription Help** item is intended to activate the Help topics;
- the **Read Me** item opens the Read Me file where we specified the differences of the software version purchased by you from the basic version described in the User's Guide.

### 2.2.2. Software Activation

To run **WinSteel 8 XX - Subscription** software an *Activation Code* is required. The Activation Code is created individually for each user and is unique for each PC.

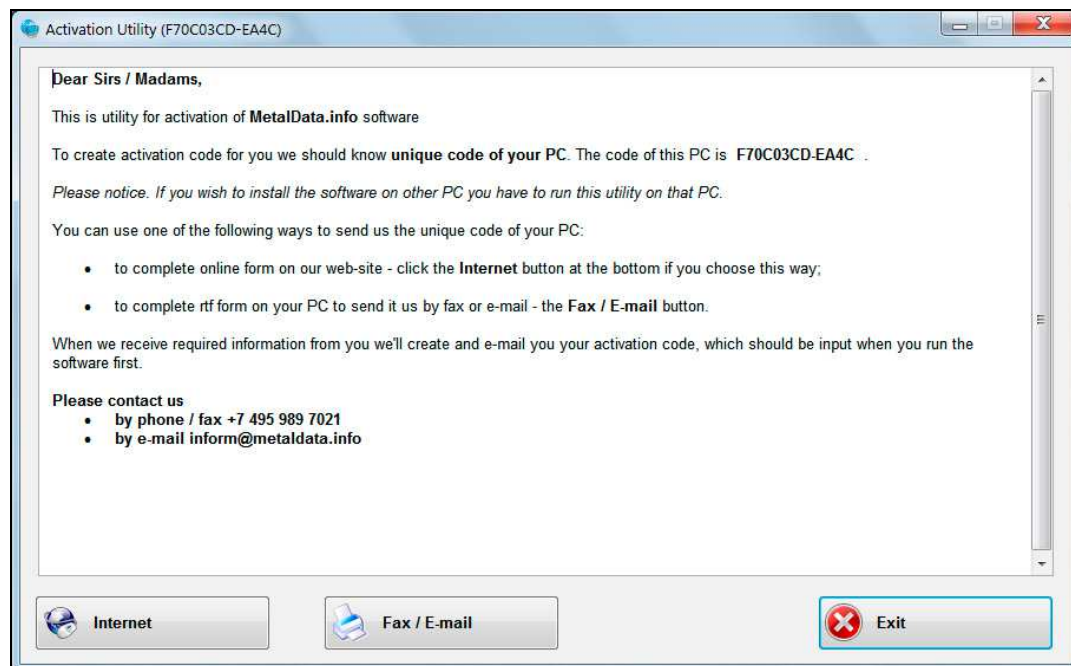
***We pay your attention that the activation needs to be done on the same PC and under the same account, on which you will operate with the software.***

If you purchased a *Multiuser software license* (for 2-5 or 6-10 activations), the activation process has to be done *on each PC*.

To create *the Activation Code* for your PC we need its unique code. ***The unique code of your PC*** is determined by the Activation utility. You can run it, using the main Windows menu

*Start / All Programs / MetalData.info / Activation / Activation, ver 8*

You will find the unique code of your PC in *the third paragraph* of the Activation utility window (**Fig. 2.4**).



**Fig. 2.4. Activation utility**

We offer you two ways to send us the unique code of you PC: via Internet or by fax/e-mail.

If the first way is preferable to you, please click the **Internet** button at the bottom of the Activation utility window and fill in the form on our web-site. In this case your PC should be connected to the Internet.

If you have selected the second way, click the **Fax / E-mail** button and fill in the form on your PC. Then you should send us this form (RTF file) by fax or e-mail.

As soon as we receive information we need from you, we will create and e-mail you your **User Name** and **Activation Code**.

### 2.2.1.Validation of Installation

When you receive a e-mail message with your Activation Code from us you can try to run the software by double clicking the **WinSteel 8 XX - Subscription** icon on the Desktop of your PC.

Before the first run of the software a window will be displayed, where you will need to input your **User Name** and **Activation Code**. We advise to use Copy (**Ctrl\_C**) and Paste (**Ctrl\_V**) Windows functions to avoid incorrect input of the Name and Code.

If the installation and activation processes have been executed properly, the software will start operating, its main picture and progress bar under it, will be displayed on the screen. In case the software does not run, please contact our Support Team by e-mail, fax, given in the present Manual or online using Mibew Messenger on our web-site.

We draw your attention to the fact that your **Name** and **Code** which you input before first run of the software, should be written in the Windows registry by default. It enables do not input them every time when you run the software.

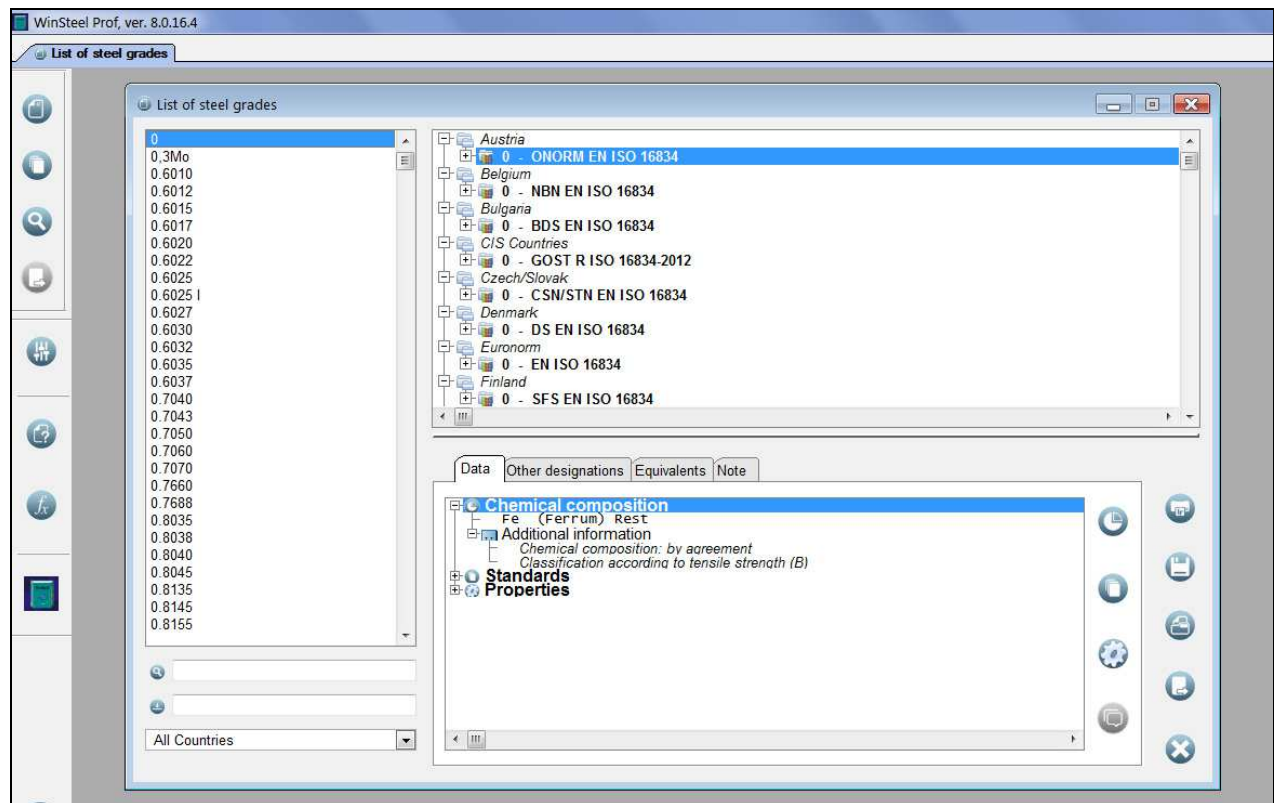
In case the software asks you to input the **Name** and **Code** every time it means that settings of your PC prohibit writing these data in the Windows registry. To solve the problem please contact your IT specialist.

### 3. User's Manual

#### 3.1. How to Run the Software and to Call It's Main Procedures

Operation with **WinSteel 8 XX - CD** software is only possible in case the USB Security Device, supplied with the software, has been connected to the PC. So make sure it's available before you have started.

Operation with **WinSteel 8 XX - Subscription** software doesn't require the Security Device, since during the activation the software is attached to your PC and will be running throughout the term of the license.



**Fig. 3.1. Main software window**

To run the software, you can use either icons created on desktop of your PC during the installation (**WinSteel 8 XX** or **WinSteel 8 XX - Subscription**) or Windows menu

*Start / All Programs / MetalData.info / WinSteel 8 XX / WinSteel 8 XX*





or

*Start / All Programs / MetalData.info / WinSteel 8 XX - Subscription / WinSteel 8 XX - Subscription*





Here and below **XX** stands for the software supply option, taking **Base**, **Prof** or **VIP** value.

When the software starts operation you'll see its main picture and a progress bar under it. On completion of the loading process, you will see the main **WinSteel 8 XX** window (see **Fig. 3.1**).

Main software procedures are called with icon buttons on the left panel. Let us describe their functions:

1. The  button displays *list of steel grades*, included in the software database. Here you can get *detailed information on the grades and their foreign equivalents*.  
It should be noted, that the **List of steel grades** window, which is called by clicking the button, will be automatically displayed on the screen upon running of the software.
2. The  button calls procedure which shows *list of standards*, referenced in the software database. Also, you can get *information on steel grades covered by the standards, and their foreign equivalents*.
3. The  button is used to call procedure, which will enable you *to find a grade specification by known chemical composition and mechanical properties*.<sup>\*)</sup>
4. The  button is used to *go to the Notepad*, where you can *temporarily save information on grades selected while operating with the software*.

Besides, there are several other buttons on the left panel:

5.  - is used to change software settings;
6.  - is used to call HTML software Help;
7.  - is used to call additional reference data;
8.  - is used to get information on the current software version and our contact data; you can also find there a copy of the Registration Form, which you need to complete and send us in order to get our support.

## 3.2. Operation with List of Steel Grades

### 3.2.1. How to Find a Grade in the Database

Steel grades, included in the software database are categorized by countries and standards. It is also assumed that the same grade may have multiple designations (e.g.: X14CrMoS17 or 1.4104, 316 or S 31600, 15Ch25T or EI439, etc.).

To search for a grade you need in the software database by any of its designations two list-boxes are used: the main one at the left (see **Fig. 3.2**), and the changeable second one at the top right. The left list-box completely excludes repeated steel designations, regardless of the fact that the steels with the same name may be used in different countries (e.g., steel designated 10 is used in CIS countries, China, UK, Bulgaria, Poland and Australia) or may be included in different standards within the same country.

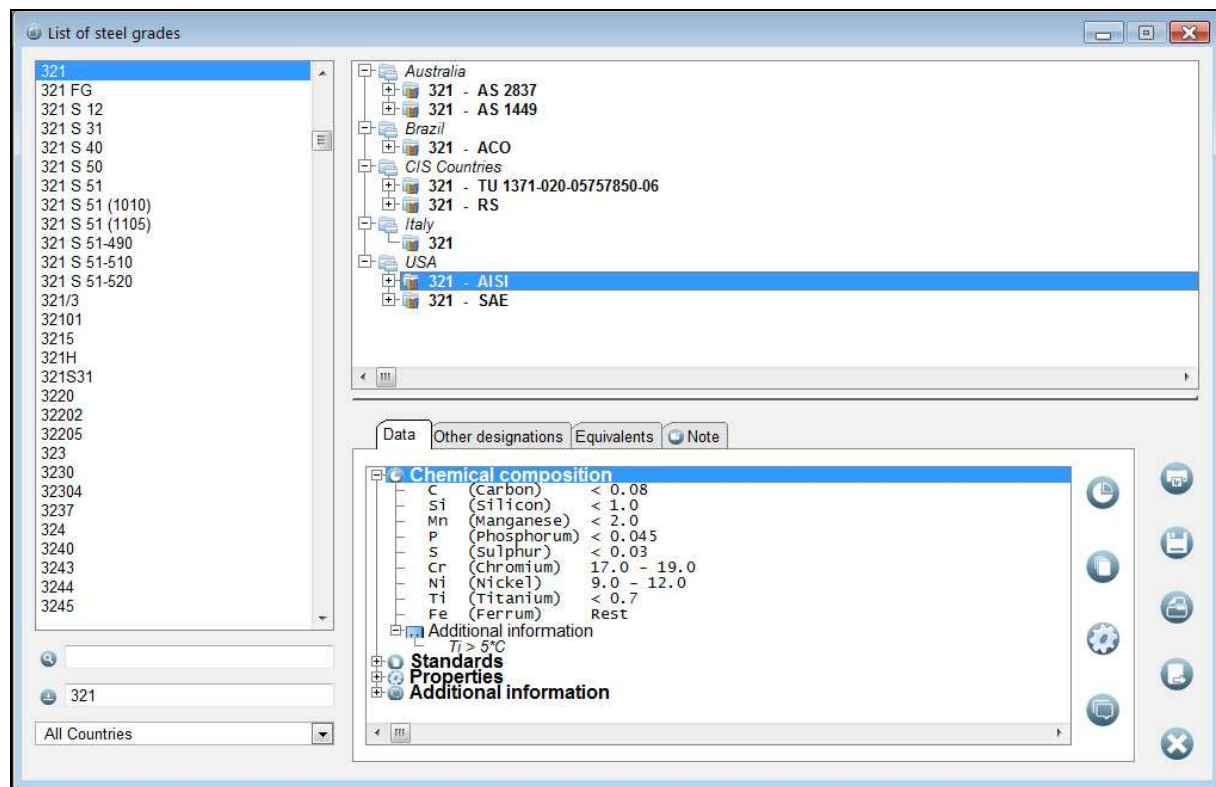
When you highlight a grade of designation you need in the left list-box, the top right list-box will show you a list of all grades worldwide of the selected designation with references to countries and standards. For some grades you will see "*included in 2 (3, 4, 10) standards*" inscription instead of standard abbreviation and number. This means that, according to all these standards, the grade has the same composition.

---

<sup>\*)</sup> For **WinSteel 8 Prof** and **WinSteel 8 VIP** versions only; for **WinSteel 8 Base** version a grade specification is found by its chemical composition only.

There is also possible that several grades of the same designation refer to the same standard. It may be possible in cases, when the chemistry of steel, determined by the standard, depends on additional parameters (e.g., dimensions and types of rolled products) or is different in a product or in ladle sample.



By default the left list-box contains information about all steel grades included in the software database. In the **Country** string at the bottom you may select name of the required country to show in the list-box only steels of the specified country.



**Fig. 3.2. List of steel grades. Search for AISI 321 steel grade by locator**

You can find steel designations in the left list-box as follows:

- by *locator* to achieve fast positioning in the list
- or
- by *filter*, or part of steel designation.

Two strings below the list of steel designations, are used to enter locator and filter values. The lower string with the  icon on the left is to *search for a grade by locator*, the upper one with the  icon, is to *search for a grade by filter* or a part of grade designation.

To find a steel grade *by locator*, you need to type character by character designation of the required steel in the corresponding string. When you enter the first character, the first grade in the list-box whose designation starts with the entered character, will be highlighted. When you type the next character, the grade whose designation starts with the combination of the two typed characters will be highlighted, and so on. Usually, it is sufficient to type 3-4 characters to find the necessary steel grade in the list-box.

Search for steel designation *by filter* or part of its name, allows you to select grades with entered group of characters in their designations (see **Fig. 3.3**). These grades are shown in the list almost instantly when you enter a character by character in the corresponding string. This way of search is useful in case you don't know exact designation of a grade you need.

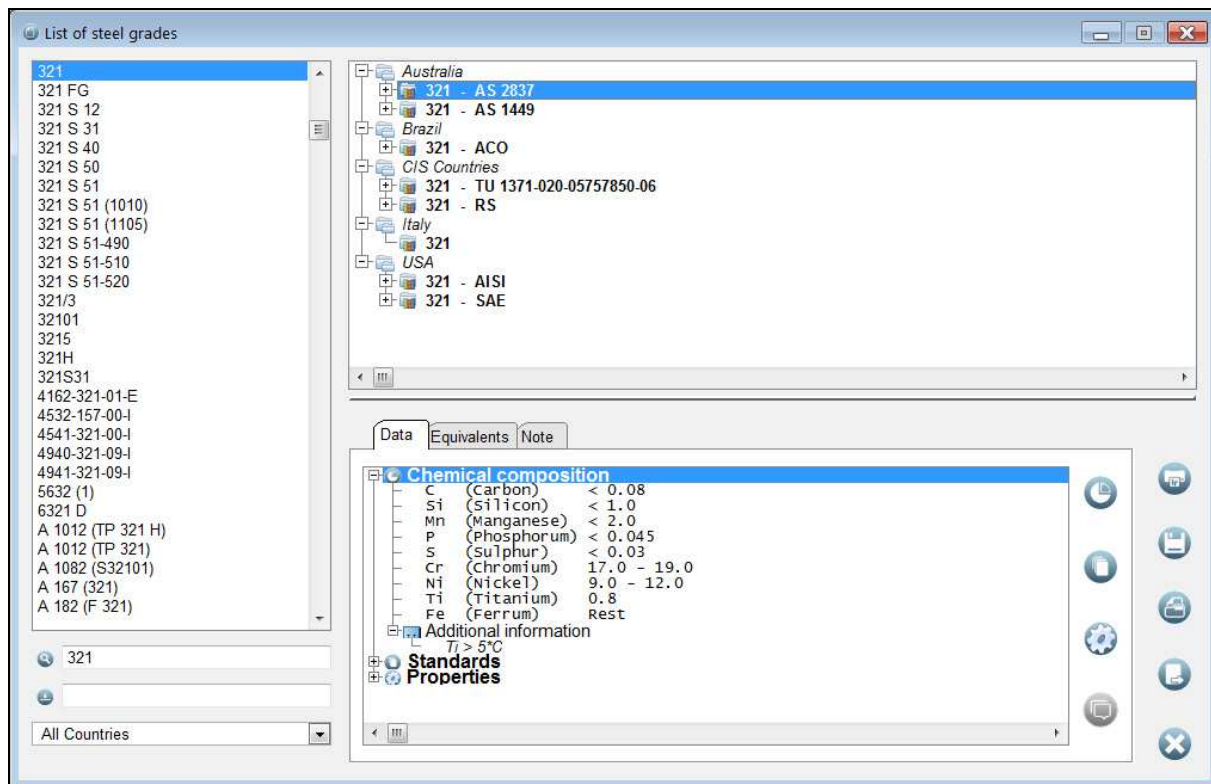
Note that the search by filter is done by figures and letters only, other symbols namely spaces, dots, dashes, commas, slashes, etc. excluding the ? and \* symbols, are just ignored.

? and \* symbols are used to replace unknown symbols in steel designations. The ? symbol is used to replace any unknown single figure or letter, and the \* symbol is used to replace a group of different figures and letters. The group can include any number of symbols from 0 and more.

### 3.2.2. How to Get Information on the Selected Steel Grade

Reference information on the steel grade highlighted in the top-right list-box, is displayed in the bottom-right part of the screen. The information includes:

- *chemical composition* of the grade;
- information on *properties* of the grade\*);
- *standard* or list of standards that covers the steel;
- information on other designations of the grade;
- additional information (remark);
- list of the steel equivalents in other countries.



**Fig. 3.3. List of steel grades. Search for grades with 321 in their designations**

*Note* that after having selected the required steel grade in the top-right list-box, you can shift the boundary between the top and bottom windows upwards using the mouse, to allow more space for viewing data on the grade (see Fig. 3.4).








Information on the selected steel grade, is presented on the screen page-by-page, whereas:

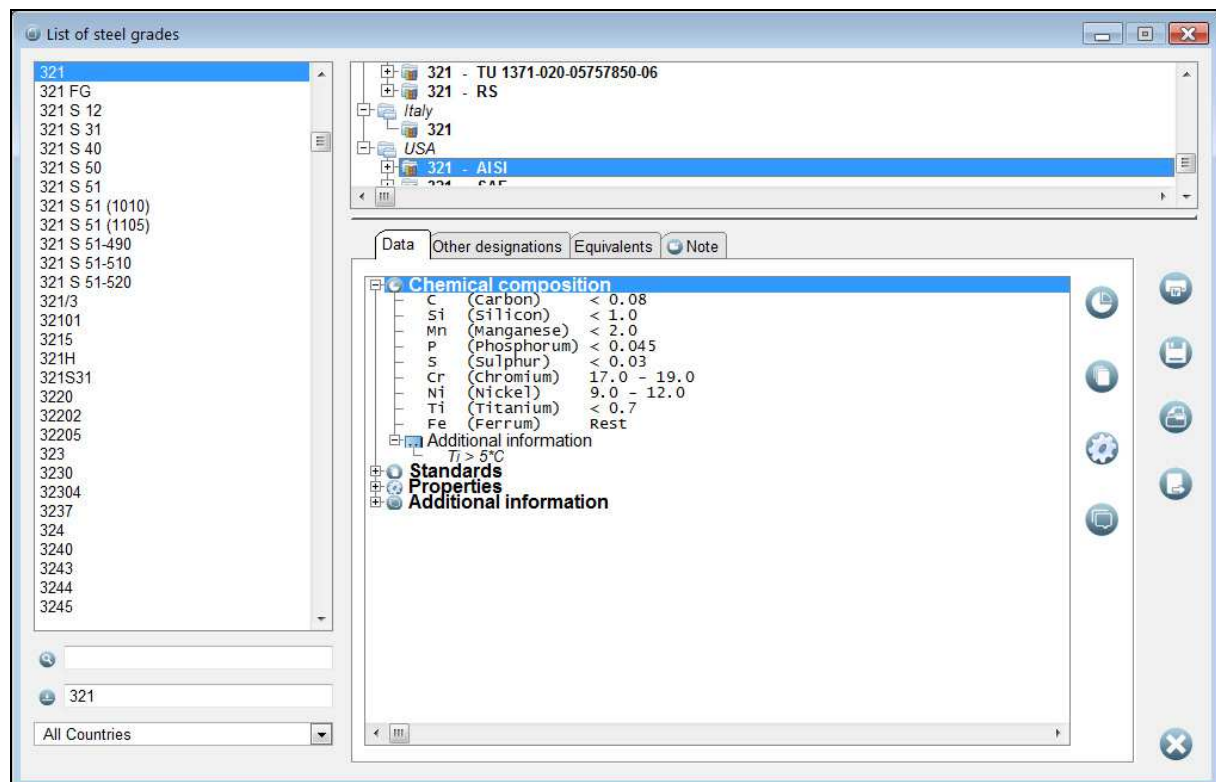
- information on *composition* of the grade, its *mechanical properties*, list of *standards* covering the grade, and *additional information* on the grade, is shown on the **Data** page;
- information on *other designations* of the grade, is shown on the **Other designations** page;
- information on *foreign equivalents* of the grade, is shown on the **Equivalents** page.

\*) For WinSteel 8 Prof and WinSteel 8 VIP versions only.

## Data page

Information on *composition*, *mechanical properties*, *standards* covering the grade, as well as *additional information* on the grade, is presented on the **Data** page in tree form. The upper branches of the tree are names of main sections, i.e. **Chemical composition**, **Standards**, **Properties** and **Additional Information**. By default, the **Chemical composition** section only is expanded, the other sections are compacted.





There are common rules which are used to operate with the tree of steel characteristics. All expanded branches of the tree are marked with the  icon on the left, while compacted branches are marked with the  icon. To expand a compacted branch you have to click the  icon on its left or just double click the branch. The  icon will change to the  one, and second three level will appear. Compacted branches of the second and lower levels with the  icons on the left are expanded in the same way. To compact any expanded branch you have to click the  icon on its left.







**Fig. 3.4. Information on AISI 321 grade. Chemical composition**

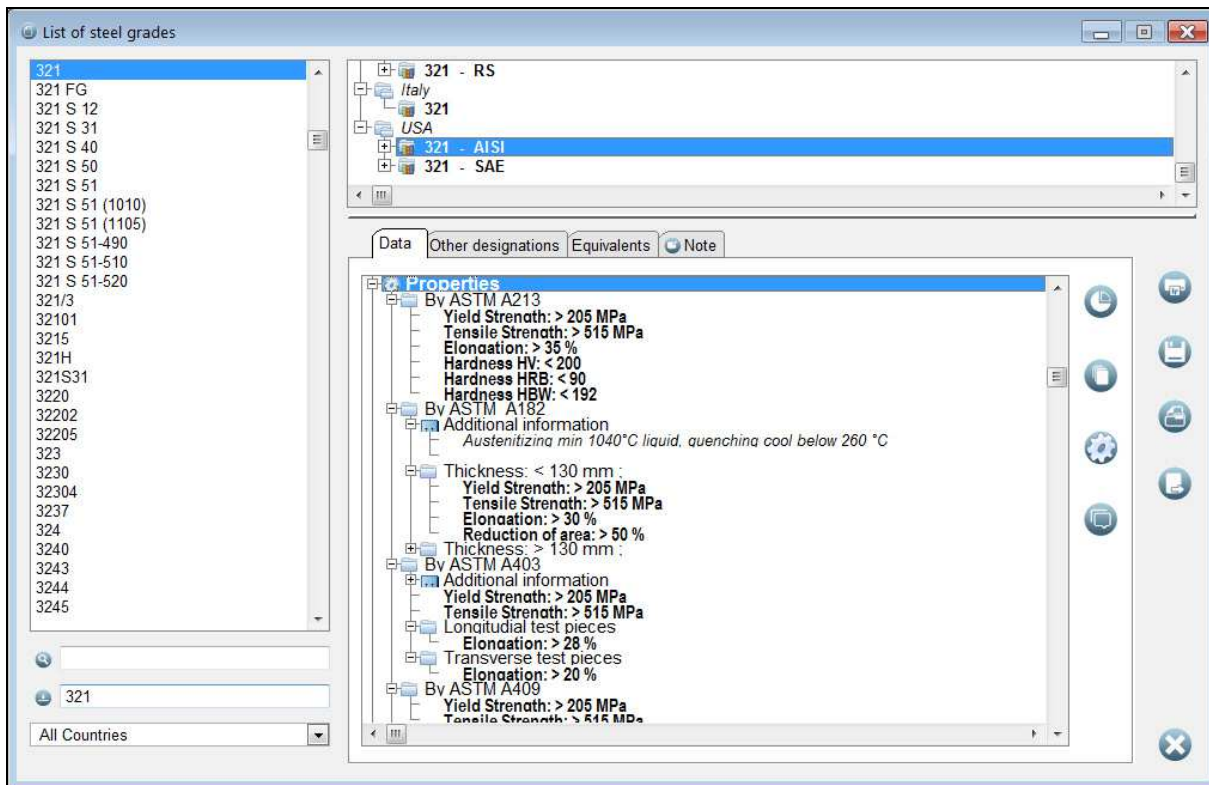
Please note that **WinSteel 8** database includes information on those properties of steel grades only, which are regulated by standards for manufactured steel products. Within every standard values of properties depend on a lot of parameters such as a type of product, supply conditions, used heat treatment, dimensions and others (see **Fig. 3.5**).

To access different sections of the tree of steel characteristics, buttons on the right can be used. By clicking on each one, you can get information on:

-  - *chemical composition* of the steel grade;
-  - *standards*, covering the steel;
-  - *mechanical properties* of products of the steel grades;
-  - *additional information* on the steel.

On the right of the steel information window, there are buttons used in order to:

-  - print out information on the selected steel grade;
-  - save information on the grade in a file of any of these formats: *txt*, *xls*, *rtf* or *html*;
-  - display information on the steel in a separate window (useful to compare two or more random steel grades from the database);
-  - save information on the steel in the Notepad.



**Fig. 3.5. Information on AISI 321 grade. Mechanical properties**

By the *right mouse button click* on any tree branch, you display a *pop-up menu* that can be used to:

- expand or compact all the branches of the mechanical properties section of the tree simultaneously – by clicking on the **Expand All** and the **Compact All** items, respectively;
- copy information on steel composition, standard or properties by selected standard to the Clipboard of Windows – using the **Copy** menu item;
- disable printing and saving in a file unwanted information on the steel grade as well as enable printing and saving of such information again – using the **Disable** and the **Enable** items;
- disable printing and saving in a file information from entire section of the tree, or enable disabled printing and saving of all information from the selected section – using the **Disable All** and the **Enable All** items;
- select a font (type, style, size) to display different sections and subsections of the tree of steel characteristics – using the **Change style** item.

An option to change a *style of display information* in different branches of the tree of steel characteristics is useful to show the tree in the most convenient form for you. For example, to show

the tree section names, you can use bold and bigger font. To display information on the composition of the grade, it is convenient to choose one of the monospaced fonts, in this case, information will be shown as a table. To show long strings with information on mechanical properties, you can use a condensed font with making the strings bold, to be easily viewable.

Fonts are selected in a standard window, displayed when you select the **Change style** item of the pop-up menu. In the window you can select font type, style and size.

### Other designations page

On this page you will see other or alternative designations of the selected steel grade. For example, it may be numerical designations for European steel grades (1.XXXX), old names of Russian steels or designations by different steel numbering systems used in USA.

Other steel designations are displayed as a tree. You can use the same rules as for the tree of steel characteristics to operate with it.

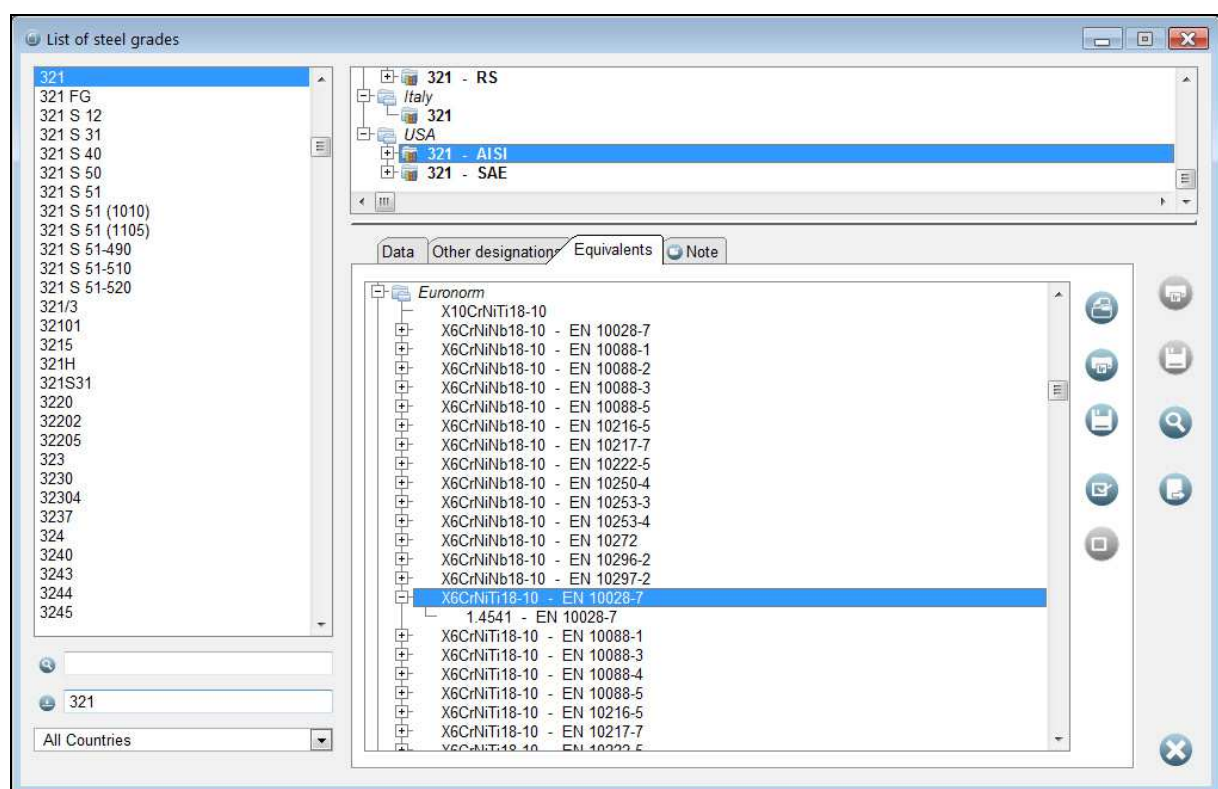





Fig. 3.6. Information on AISI 321 grade. List of foreign equivalents


### Equivalents page

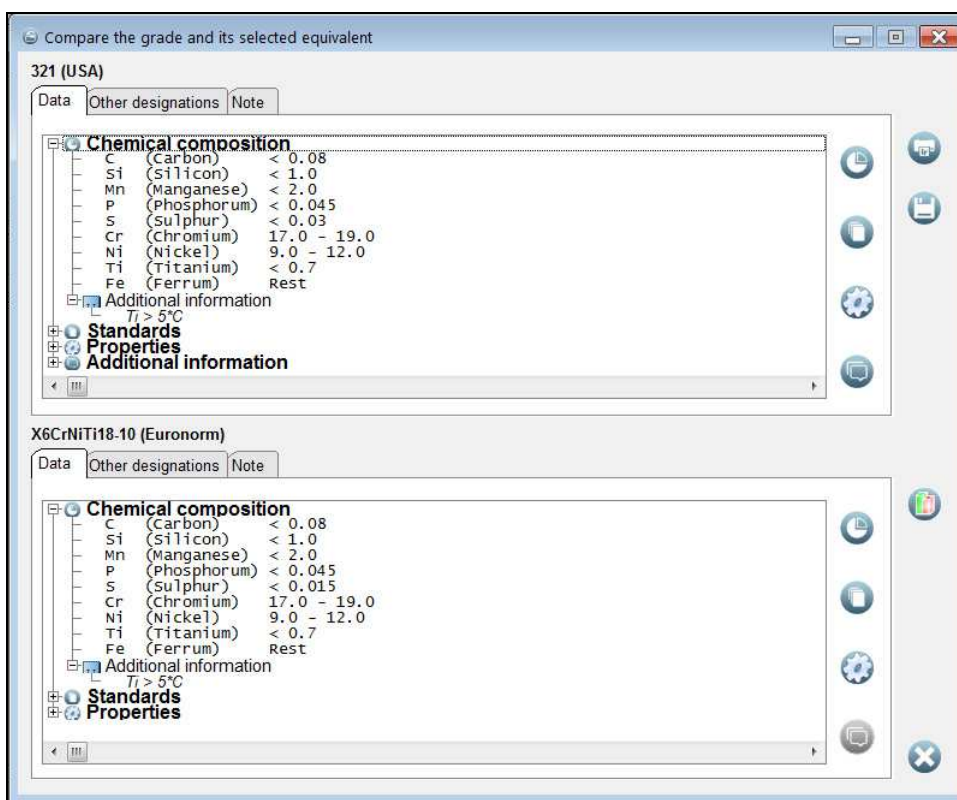
List of foreign equivalents (if they exist) of the selected steel grade you will find on the **Equivalents** page (see Fig. 3.6). The list is displayed on the screen as a tree, the upper level of which shows names of countries and the lower level demonstrates lists of equivalents of the selected steel in these countries. The tree of equivalents is compacted by default, showing country names only. To get information on equivalents of the steel in the selected country, you need to click on the  $\oplus$  icon on the left.

Note that by default *the list of equivalents displays one designation of each steel grade* while others (if they exist) are compacted. Thus, if you would like to see all the designations of the selected equivalent, click the  $\oplus$  icon on its left.


The  button on the right of the list of equivalents is used to *display comparative information* on the required steel and its highlighted equivalent. This information is shown in a separate window (see **Fig. 3.7**), and you can compare both compositions and properties of the grades.

Those equivalents in the list-box (see **Fig. 3.6**), which are of interest to you, may be selected by clicking the  button. At that the selected equivalent becomes **bold**. To remove the selection, use the  button. These operations can be also done with the help of keyboard hot keys **Grey +** (select the equivalent) and **Grey -** (cancels selection).


To *print* comparative information on the required steel grade and its equivalents, click the  button at the right. When you click the button the pop-up menu will appear. Use one of its items to print out information on the highlighted equivalent only or on all bold selected equivalents.



**Fig. 3.7. Comparison of steel grades**

The  button is used to *save comparative information on the steel and its equivalents in a file* of one of the following formats of your choice: *txt*, *xls*, *rtf* or *html*. For saving of the information the same rules as for printing are applied.

If the required steel grade has no equivalents, the software will offer you to find *close grades by comparison of compositions and properties*<sup>\*)</sup>. This search is described in the next chapter. It is

available by clicking on the  button.


<sup>\*)</sup> In **WinSteel 8 Prof** and **WinSteel 8 VIP** versions; in **WinSteel 8 Base** version the search is done by comparison of chemical compositions only.



In the *comparison window*, information on the steel grade and its selected equivalent, is displayed as two trees on the top and bottom parts of the window (see **Fig. 3.7**). Each of these trees is similar to the tree of steel characteristics on the **Data** page of information on the selected steel grade (see **Fig. 3.4** and **Fig. 3.5**), and contains the same sections **Composition**, **Standards**, **Properties** and **Additional Information**. You can get the required information on the both grades and compare them expanding the correspondent sections and branches of the trees. The appropriate buttons on the right of each tree are also can be used to access to the different tree sections.

Here also by the *right mouse button click* on any branch of each tree, the *pop-up menus* are displayed. Their items allow you to:

- expand or compact the tree,
- select information you need to print out and to save in a file,
- copy information on a steel or its equivalent to the Clipboard,
- select fonts to display different sections and subsections of the tree.


Besides the table form you have a possibility to compare grades compositions in a *graphic form*

also. For this purpose click the  button at the right.

The  and  buttons are used to print out information on the grade and its selected equivalent and to save it in a file of one of the following formats: *txt*, *xls*, *rtf* or *html*, to use it in other Windows applications.

## Note page

On this page you can add your own information on the selected steel grade in the software

database. To start entering information, click the  button on the right. This button stays pressed. After you finished entering, press the button again to save the entered information.

Note that entering information this way, you write it to the hard disc of your PC. The information will be available for you only all the time and is not erased even when you download new software versions and quarterly data updates.

## 3.3. Search by Comparison of Compositions and Properties

The search by comparison of chemical compositions and properties<sup>\*)</sup> can be done separately by composition and separately by properties or by composition and properties in combination. Besides, the software gives you possibility to allow for steel application during the search.

The search can be done in either *Automatic* or *Expert Mode*.


### 3.3.1. Search in Automatic Mode



The *Automatic Mode* is set by default; this type of search is based on a special smart algorithm, developed by authors. By default the search in the Automatic Mode, is done *by chemical composition* only. All chemical elements, which compose the chemistry of the selected steel grade, participate in the search (see **Fig. 3.8**).

If you wish, you can add properties to the search parameters also. List of available for the search properties you will find in the lower part of the tree of elements and properties. Possible ranges of values of the properties, are shown near properties names. These ranges are calculated on base of analysis of values of the properties of the selected grade according to different standards for various kinds of steel products.

---

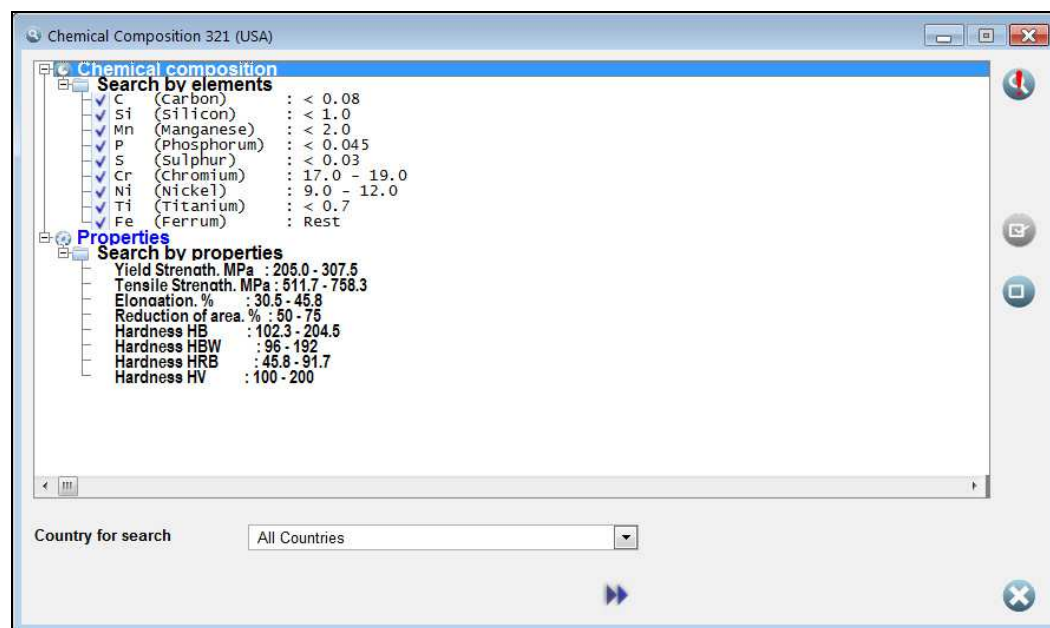
<sup>\*)</sup> In **WinSteel 8 Prof** and **WinSteel 8 VIP** versions. In **WinSteel 8 Base** the search by chemical composition only is available.

To enable a property as a search parameter, please highlight its name in the list and click the  button on the right or just double click the required string. On the left from the selected property,

the  icon will appear. To disable an enabled property, click the  button or double click the string with its name.

If you want to *search by properties only*, you can disable chemical elements the same way. Unlike properties, all chemical elements are disabled simultaneously. This is done by highlighting of any


string in the **Chemical Composition** section and clicking the  button on the right.




**Fig. 3.8. Search by comparison of compositions and properties. Automatic Mode**

Like for other similar trees, the software allows you to select the most convenient font to display different branches of the tree. Use the **Change style** item of the pop-up menu to do this. Remind that the pop-up menu is called by the right click mouse button.

The search by comparison of compositions and properties can be done throughout the entire software database or among steels of the selected country or standard. To select a country or a standard, use the drop-down lists at the bottom of the window. Note that the standard selection will be available when you select a country for the search.

To start the search, click the  button.

### 3.3.2. Search in Expert Mode

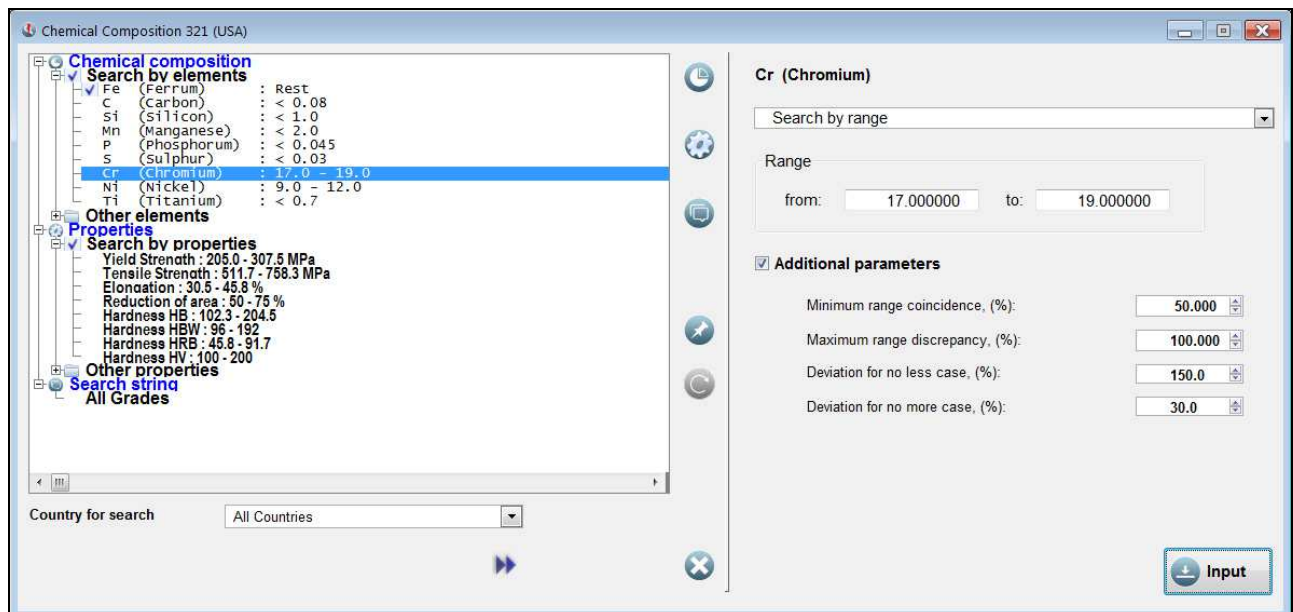
Use the  button at the right to select the *Expert Mode* (see Fig. 3.8). Clicking this button extends the window (see Fig. 3.9), and in its right part you will see setup parameters for the first chemical element in the list – Fe, that is the base of the most grades, included in the software database.

The Expert Mode implies including in the search and setup the search parameters individually for each element and for each property. The search may be executed not only by the elements, included in the steel composition (they are located in the upper part of the tree in the **Search by elements** branch) but by additional elements from the compacted **Other elements** branch also as

well as by any properties. Also, in the Expert Mode you can take into consideration application of the required steel grade, using the search by fragment.

Setup for the search parameters is done with the tree of steel characteristics (see **Fig. 3.9**). It includes **Chemical Composition**, **Properties** and **Search String** sections. You can use the same rules as for all other software trees, to operate with it. Different tree sections are also accessible by

clicking the ,  and  buttons at the right.



**Fig. 3.9. Expert Mode. Setup of the search by comparison of compositions**

Using the **Change style** pop-up menu item called by the right mouse button click, you can customize the tree view selecting your preferred fonts to display its different sections.

## Setup for the Search by Comparison of Compositions

Searching by comparison of chemical compositions in the Expert Mode, using the drop-down list at the top, you can select individual processing mode for each element, i.e.:


- the search can be done by the *Range* of content of an element in the grade composition;
- element can be considered as base of steel (alloy) - *Rest*;
- element may be considered as *Admixture* during the search.


*The base element* for most grades in the database is iron (*Fe*), but for some heat-resisting alloys also included in the database, it also may be nickel (*Ni*) or cobalt (*Co*). If an element is marked as *Rest*, its content is assumed to be in bounds from 30 to 100% regardless of contents of the other elements in the grade composition.

For the elements marked as *Admixture*, the special processing search algorithm is used. It is believed that the match between the contents of such elements is established, if:


- the said element is completely absent in the sample grade or in an equivalent
- or
- its content fits into the range from **x** to **y**%, where **x** and **y** are the lower and upper limits respectively that can be set by a User.

Only one element – *ferrum* – is included in the search by default. To include other chemical elements it is necessary:

- to highlight the required element in the list;
- to select the mode of its processing (*Search by range*, *Base - Rest* or *Admixture*);
- to correct the element content range in the steel grade composition and/or additional search settings when needed;
- to click the  **Input** button at the bottom to save *individual settings* for the element.

After the element has been included in the search, the  icon appears on its left, and the element is moved to the upper part of the list to the **Search by elements** tree section.

You can *exclude from the search* the pre-included elements in the following way:

- highlight the required element in the list;
- select the **Exclude from the search** item in the drop-down menu;
- click the  **Input** button to save the changes.

An element, excluded from the search, can be left by your choice in the upper part of the tree in the **Search by elements** section or moved to the **Other elements** section. To do so, use the **show among selected elements** check box.

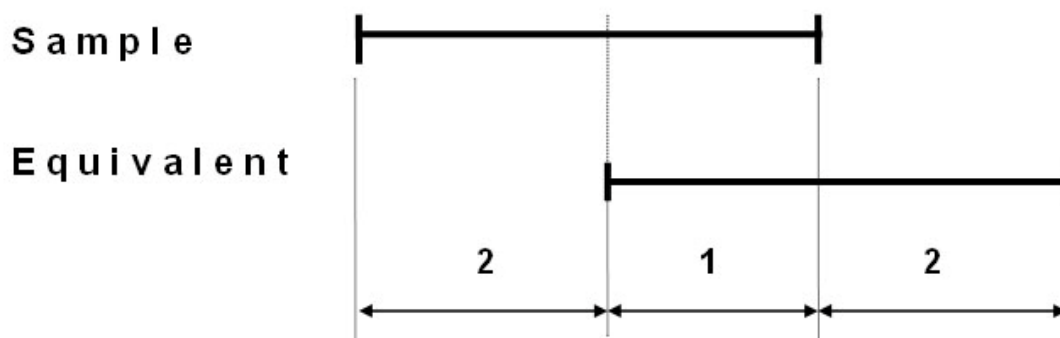


Fig. 3.10. Values of coincidence and discrepancy of ranges

### Additional Settings

In selection of individual setting for an element you will be also able to make changes in the general settings, used in the search algorithm, namely:

- to correct *values of coincidence and discrepancy of ranges*;
- to adjust *minimum and maximum contents* respectively for elements presented as  $EI \leq x\%$  or  $EI \geq x\%$  in the composition,
- to change *limits of admixture contents* in steel chemistry.

During the search by comparison of compositions, intersections of elements contents in the sample grade and its expected equivalents from the software database, are found. *Values of coincidence and discrepancy of ranges* help to narrow the search. Two values are used (see Fig. 3.10):

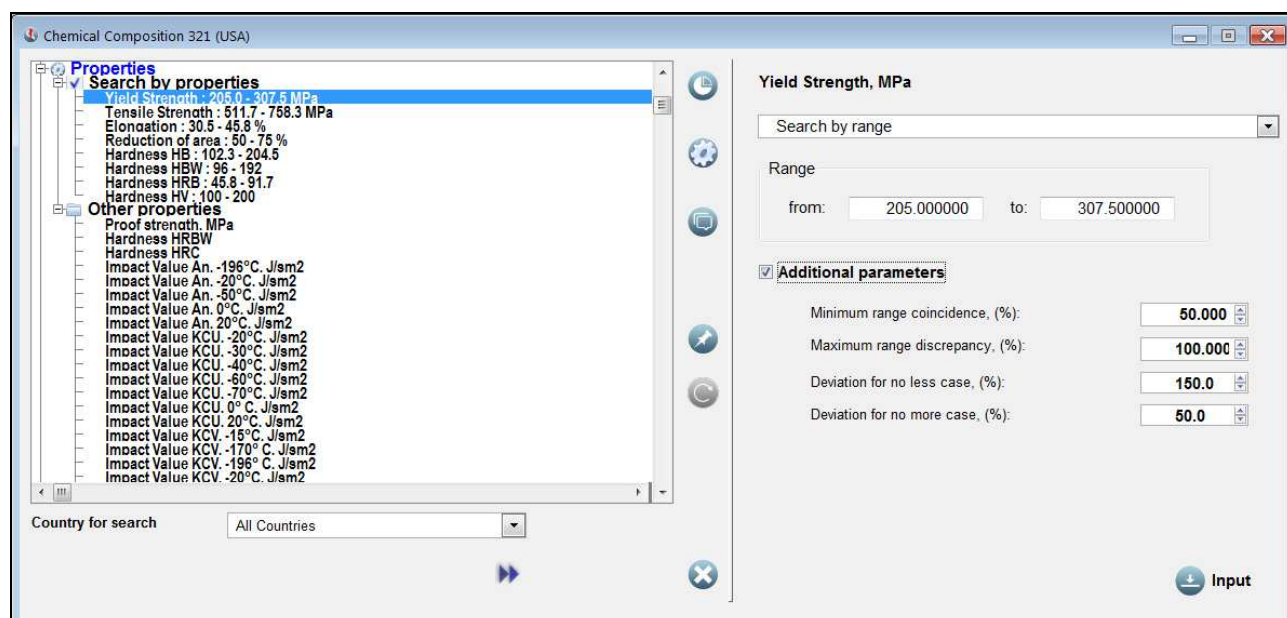
- the first of them (marked with **1** in the picture) defines *minimum possible percentage of ranges coincidence*,
- the second one (marked with **2**) – *maximum admissible percentage of ranges discrepancy*.

The both above values are calculated from the element content in the sample grade (the indicated range is taken as 100%) and can be corrected by a User. By default the value of *coincidence of ranges* is taken as equal to 50%, and the value of *discrepancy of ranges* is taken as 100%.

To process *contents of elements, presented in steel composition as  $EI \leq x\%$  or  $EI \geq x\%$*  during the search, the following algorithm is used:

1. For elements whose content in steel composition, is presented as  $EI \leq x\%$ , their *maximum value* is assumed to be equal to  $x\%$ , and *minimum value* is  $a * x\%$ , where  $a$  is user-correctable coefficient. By default, it is equal to 0.3.
2. For elements whose content in steel composition, is presented as  $EI \geq x\%$ , their *minimum value* is assumed to be equal to  $x\%$ , and *maximum value* is  $b * x\%$ , but less than 100%. Here  $b$  is user-correctable coefficient. By default, it is equal to 1.5.

We would like to note, that the above coefficients ( $a$  and  $b$ ) are input in the software in percent. By default the  $a$  coefficient, equal to 0.3, corresponds to the value  $30\% = 0.3 * 100\%$ , and the  $b$  coefficient, equal to 1.5, corresponds to the value  $150\% = 1.5 * 100\%$ .



**Fig. 3.11. Expert Mode. Setup of the search by comparison of properties**

Thus, depending on the selected processing mode, you will be able to make the following corrections of element processing settings.

*If the **Search by range** mode is selected*

In this mode you are able:

- to correct the range of content of an element in steel composition;
- to input *values of coincidence and discrepancy of ranges*, which differ from the standard ones – the possibility is enabled when you click the **Additional parameters** check box;
- to change minimum and maximum values for elements, presented in steel composition as  $EI \leq x\%$  or  $EI \geq x\%$ , – you can use the **Deviation for no more case** and the **Deviation for no less case** fields respectively.


*If the **Admixture** mode is selected*


For elements, which are marked as admixtures, the software gives an opportunity to correct *the lower and upper limits* of their content in steel composition. The **Maximum value (%)** and the **Suppose as amixture (max) (%)** fields respectively are used for this purpose.

## Setup for the Search by Comparison of Properties


Search by comparison of mechanical properties (see **Fig. 3.11**) may be executed both by properties located in the upper part of the **Properties** section (these are average values calculated on base of analysis of values of properties for the selected grade by different standards for various kinds of products) and by properties from its lower part, which are located in the compacted **Other properties** branch.

To include a property in the search it is necessary:

- to highlight the required property in the list;
- to select the **Search by range** item in the drop-down menu and if necessary, to correct minimum and maximum values of the range of the selected property;
- if necessary, to correct *additional search parameters*;
- to click the  **Input** button at the bottom to save *individual settings* for the property.

After the property has been selected for the search,  icon appears on the left, and the property is moved to the top part of the list of properties to the **Search by properties** tree section.

You can *exclude from the search* the pre-included properties in the following way:

- the required property is highlighted in the **Search by properties** branch;
- the **Exclude from the search** item of the drop-down menu, is selected;
- the  **Input** button is clicked to save the changes made.

A property, excluded from the search, can be kept by your choice in the upper part of the list in the **Search by properties** branch or moved to its lower part to the **Other properties** branch. The **show among selected properties** check box is used for this selection.

## Additional Settings

Searching by properties, you are able to change the following additional settings:

- to input *values of coincidence and discrepancy of ranges*, which differ from the standard ones – the possibility is enable when you click the **Additional parameters** check box;
- to change maximum or minimum values for properties ranges, presented in the database as  **$Pr \geq x$**  or  **$Pr \leq x$** , – you can use the **Deviation for no less case** and the **Deviation for no more case** fields respectively.

As for the search by comparison of compositions when searching by properties, intersections of property ranges of the sample grade and its expected equivalents from the software database, are found. To narrow the search *values of coincidence and discrepancy of ranges*, are used. There are two such values (see **Fig. 3.10**):

- the first of them (marked with **1** in the picture) defines *minimum possible percentage of ranges coincidence*,
- the second one (marked with **2**) – *maximum admissible percentage of ranges discrepancy*.

The both above values are calculated from property range of the sample grade (the indicated range is taken as 100%) and can be corrected by a User. By default the value of *coincidence of ranges* is taken as equal to 50%, and the value of *discrepancy of ranges* is taken as 100%.

Very often ranges of properties in standards are presented as  **$Pr \leq x$**  or  **$Pr \geq x$** . To process ranges of properties presented in such way during the search, the following algorithm is used:

1. For ranges of properties presented as  $Pr \leq x$ , their *maximum value* is assumed to be equal to  $x$ , and *minimum value* is  $a * x$ , where  $a$  is user-correctable coefficient. By default, it is equal to 0.5.

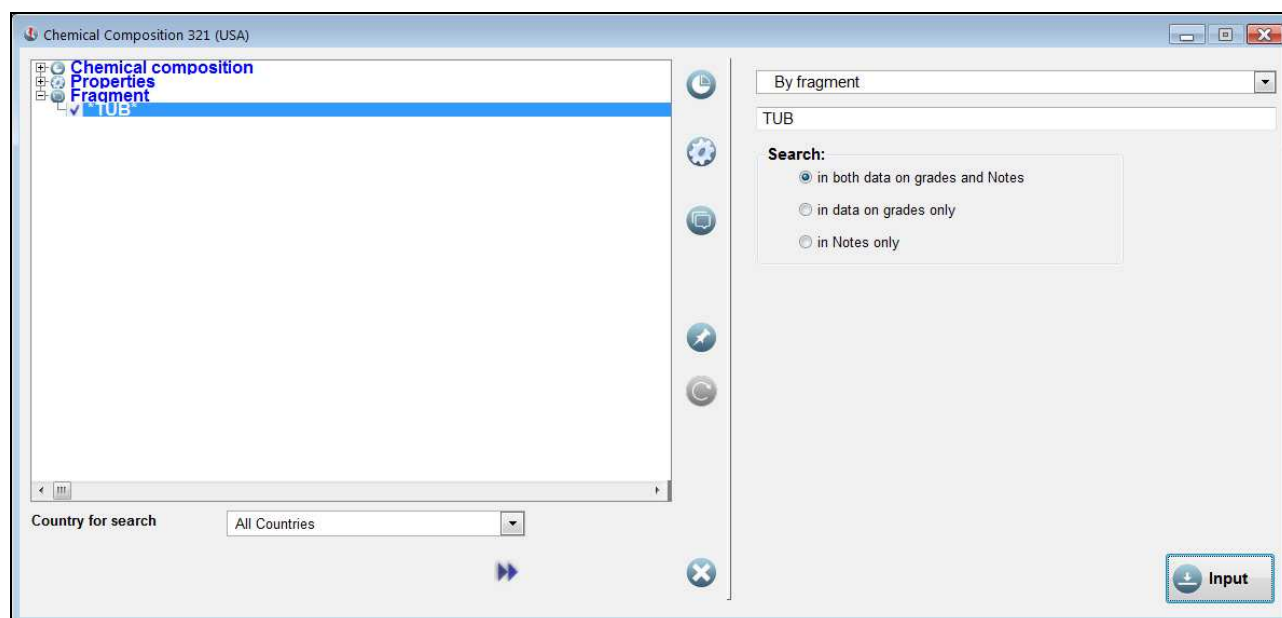
In the settings window, this coefficient is entered in the **Deviation for no more case, (%)** field in percent. So the coefficient, equal to 0.5, corresponds to the value  $50\% = 0.5 * 100\%$ .

2. For ranges of properties presented as  $Pr \geq x$ , their *minimum value* is assumed to be equal to  $x$ , and *maximum value* is  $b * x$ . Here also,  $b$  is user-correctable coefficient. By default it is equal to 1.5.

This coefficient is calculated in percent also ( $150\% = 1.5 * 100\%$ ) and is entered in the **Deviation for no less case, (%)** field.

## Setup for the Search by Fragment

Search by Fragment allows you to *consider steel application* in your search by comparison of compositions and properties. It's useful when you need to exclude the grades with similar composition and properties but different application. During this search, the software will track your entered fragment in the names of standards for different kinds of steel products referenced in the database as well as in the **Notes** fields, where you can enter your own information on steel grades (see [page 17](#)).



**Fig. 3.12. Expert Mode. Setup of the search by fragment**

To enter a fragment for the search, you have to highlight the **All Grades** string in the **Fragment** section of the tree of steel characteristics (see [Fig. 3.12](#)). Then, in the drop-up menu on the right, you should select a search type: *by fragment* or *with regular expressions* and enter the required fragment in the field under the menu.

If you selected the search **By fragment**, you can enter only one word (or its part without changeable endings of word forms). For instance, looking for a grade for tubes, you only need to enter **TUB** in the fragment field. In this case, names of standards with “tube”, “tubes” and “tubing” words will be considered during the search.

If you need to search by two or more words, you can use *regular expression language*<sup>\*)</sup>. To use this possibility, select **With regular expressions** item in the drop-up menu on the right. Using regular expression language, you can realize logic functions “AND” and “OR” in your search.

<sup>\*)</sup> Full list of characters to use in regular expressions can be found in the software Help.

**Logical function “OR”.** Let us continue the previous example. For instance, you don't know diameters of tubes produced of the required steel grade. In this case “pipe” word can be used both with “tube” word in specifications of standards. In this case, the search line will look as follows:

- **TUB|PIP** (“|” symbol implements the function “OR”).

**Logical function “AND”.** If you want to search for a grade in standards which names contain two or more words simultaneously, the logical function “AND” is used. For example, looking for grades which are used for manufacture of stainless tubes, we have to search by two words “stainless” and “tube”. Unfortunately, there is no special symbol for the “AND” function, that's why the search line should look as follows:


- **{STAINLESS.\*TUB}{TUB.\*STAINLESS}**.

Meaning of this expression is as follows:

- “stainless” and “tub” words can occur in *any order*: first “stainless”, then “tub”, or conversely - the “OR” function is realized with the “|” symbol, while braces “{” and “}” are used as usual parentheses in mathematic expressions;
- *any characters* can occur between the “stainless” and “pip” words – the “.” (dot) means “any symbol”;
- these symbols may occur in any quantity – the “\*” symbol (asterisk) means “in any quantity”.


After entering the search fragment using respective *radio buttons*, you can select the database fields to search in. Three options are possible:

- search by information on steel grades from the database only, including search by names of standards – **in data on grades only** radio button;
- search by **Note** fields only, where you can save your own information on steel grades, – **in Notes only** radio button;
- search by both database information and the **Note** fields – **in both data on grades and Notes** radio button.

To *save the selected conditions of the search by fragment*, click the  **Input** button at the bottom.


## Search Start

If during the setup process you wish to correct ranges of content of elements in steel composition as well as possible ranges of values of mechanical properties, we advise you *to save the initial*


*values* by clicking the  button on the right of the tree of steel characteristics. This allows you to


easily restore the saved values if required. The  button is used *to restore the saved values*.

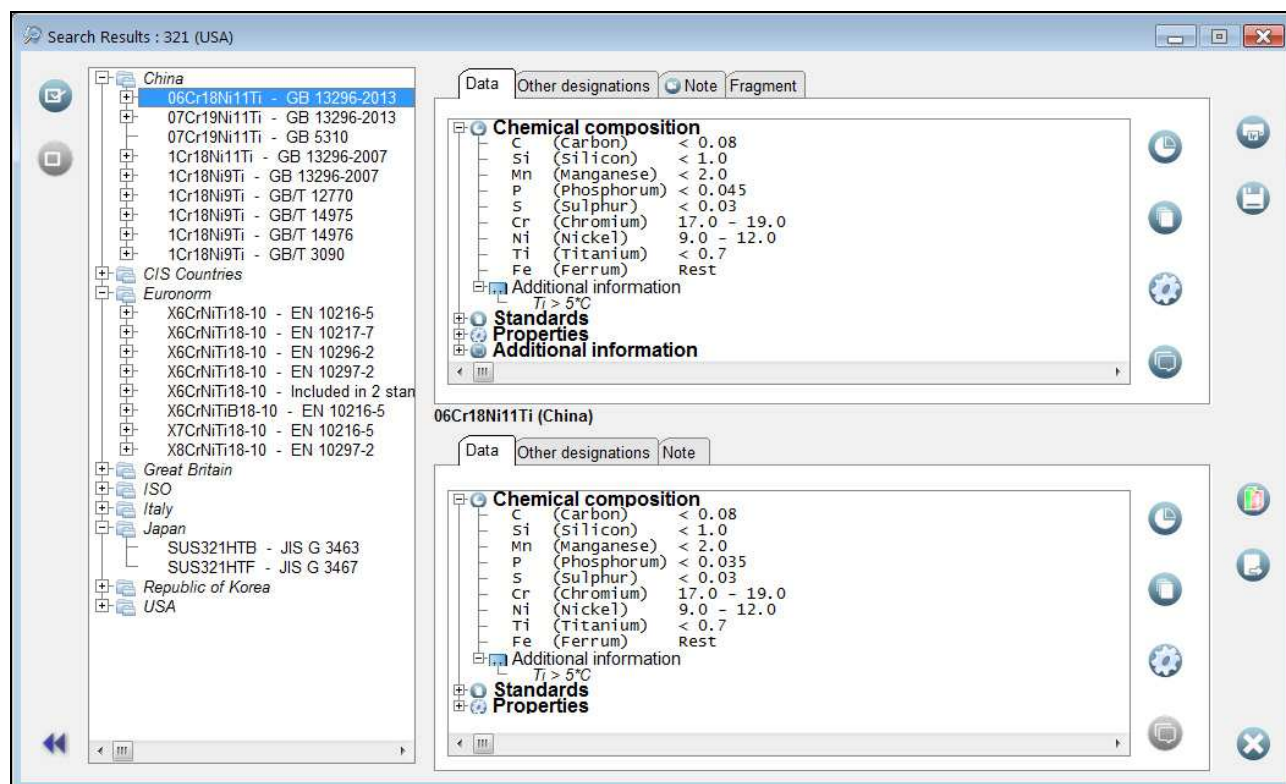
The search in the Expert Mode, as well as in the Automatic Mode, can be done across the entire database, among steels of the selected country or steels of the selected standard. *Selection of a country and a standard* (after country selection) is done in the drop-down lists which you'll find under tree of steel characteristic.

*The search starts* by clicking the  button. After its completion you will be able to look through *results of the search* and go back to the setup procedure to correct the search parameters if you're not satisfied with the search results.



### 3.3.3. Results of the Search by Comparison of Compositions and Properties

List of the equivalents, found in result of the search, is presented in the list-box in the left part of the screen in tree form (see **Fig. 3.13**). By default the tree is compacted, you can expand it in standard way by clicking  to the right of the corresponding branches of the tree.





The upper level of the tree is names of countries, on the next level lists of equivalents of the selected grade in the respective countries, are presented. *Only one designation of each equivalent* is showed on the second tree level. To get information on its other designations you should click  to the left of its name.



**Fig. 3.13. Results of the search by comparison of compositions and properties**

Those equivalents in the list-box, which are of interest to you, may be marked in bold by clicking the  button at the left. To remove the bold marking you can use the  button. These operations can be also done with the help of keyboard hot keys **Grey +** and **Grey -** respectively.


On the right, the comparative information on the steel, which equivalent you have searched for, and its highlighted equivalent, is presented. This information is shown in tree form for each grade. The both trees include the **Chemical composition**, **Standards**, **Properties** and **Additional information** sections. You can get information on the grades and compare them, by expanding



sections of the trees. To move to various tree sections, you can use the , , , and  buttons on the right.



Like for other similar trees, by the *right mouse button click* on any branch of each tree, the *pop-up menus* are displayed. Their items allow you to:


- expand or compact the tree,
- select information you need to print out and to save in a file,


- copy information on a steel or its equivalent to the Clipboard,
- select fonts to display different sections and subsections of the tree.


Besides the table form you have a possibility to compare compositions of the grades in a *graphic form* also. For this purpose click the  button at the right.

Note that some branches of the **Properties** section of the lower tree of characteristics of the highlighted equivalent, may be marked by  sign on the left. It is only possible if you searched by properties.  signs are used to mark those properties on that you have searched by, which values are close to values of the corresponding properties of the sample grade.

To *print out* the comparative information on the required steel grade and its equivalents click the  button on the right. It is possible to print out the information on one highlighted equivalent only or on all the equivalents you have marked in bold. This option is selected with pop-up menu, available by clicking the  button.


The  button is used to *save comparative information on the steel and its equivalents in a file* of one of the following formats of your choice: *txt*, *xls*, *rtf* or *html*. For saving of the information the same rules as for printing are applied.

In case if *you're not satisfied with the search results*, you can return to the *search parameter setup* procedure to correct the settings by clicking the  button.

To *cancel the search*, use the  button.

### 3.4. List of Standards

#### 3.4.1. How to Find a Required Standard in the Database

To obtain information about standards, which are referenced in the software database, as well as grades included in these standards, you need to click the  button on the left panel.

List of all standards, which are referenced in the software database, you'll see in the left list-box (see **Fig. 3.14**). The standards in the list are in the alphabetical order. By default the list-box includes numbers and designations of all national and international standards, which are referenced in the software database. If desired you may leave in the list-box standards of the required country only. To select a country, use the drop-down list in the **Country** string under the list-box.

To search for required standard in the database it is most convenient to use *locator*. The full name of the highlighted standard you'll find on the top-right part of the window.

#### 3.4.2. How to Find a Grade in a Standard and Get Information about It

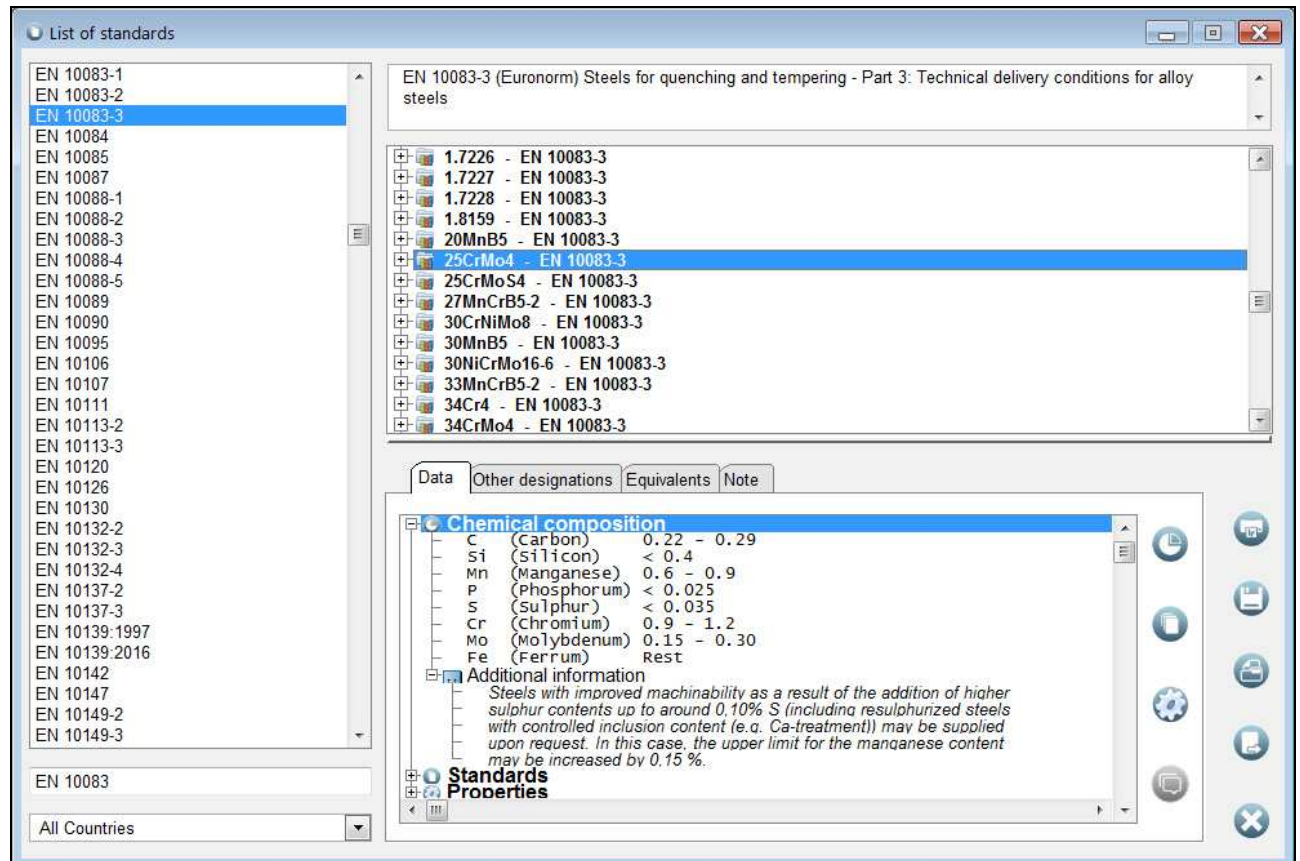
List of steel grades, included in the highlighted standard, will be displayed in the middle-right list-box under the title of the standard. In the bottom-right part of the window you'll see information on the highlighted in this list-box steel grade. Remind that the information includes:

- *chemical composition* of the grade;
- information on *properties* of the grade;

- *standard* or list of standards that covers the steel;
- information on other designations of the grade;
- additional information (remark);
- list of the steel equivalents in other countries.

*Note that* the heights of the middle-right and the bottom-right windows are adjustable by shifting their boundary by the mouse. This provides more screen space for information on the grade after you have selected it (see **Fig. 3.14**).





Information on steel grades is presented on the screen page-by-page; to see data on the grade you need use the corresponding tabs.






**Fig. 3.14. List of standards**


## Data page

Information on *composition*, *mechanical properties*, *standards* covering the grade, as well as *additional information* on the grade, is presented on the **Data** page in tree form. The said tree

consists of the respective sections accessed using the scroll bar or , , ,  buttons. You can use the common rules described in **3.2.2** to operate with the tree.

Remind that these buttons on the right are used to do the following operations:

-  - to print out information on the selected steel grade;
-  - to save information on the grade in a file of any of these formats: *txt*, *xls*, *rtf* or *html*;
-  - to display information on the steel in a separate window;

-  - to save information on the steel in the Notepad.

By the *right mouse button click* on any branch of the tree, the *pop-up menu* is displayed. Its items allow you to:


- expand or compact the tree,
- select information you need to print out and to save in a file,
- copy information on a steel or its equivalent to the Clipboard,
- select fonts to display different sections and subsections of the tree.

## Other designations page



On this page you will see other or alternative designations of the selected steel grade. Other steel designations are displayed as a tree. You can use the same rules as for the tree of steel characteristics to operate with it.

## Equivalents page


List of foreign equivalents of the selected steel grade you will find on the **Equivalents** page. The list is displayed on the screen as a tree, the upper level of which shows names of countries and the lower level demonstrates lists of equivalents of the selected steel in these countries.


The  button on the right of the list of equivalents is used to *display comparative information* on the required steel and its highlighted equivalent. Remind that this information is shown in a separate window.


Those equivalents in the list-box, which are of interest to you, may be marked in bold by clicking

the  button at the right. To remove the bold marking you can use the  button. These operations can be also done with the help of keyboard hot keys **Grey +** and **Grey -** respectively.

To *print out* the comparative information on the required steel grade and its equivalents click the


 button on the right. It is possible to print out the information on one highlighted equivalent

only or on all the equivalents you have marked in bold. The  button is used to save comparative information on the steel and its equivalents in a file of one of the following formats of your choice: *txt*, *xls*, *rtf* or *html*. For saving of the information the same rules as for printing are applied.

In case, when the required steel grade doesn't have exact equivalents, the  button will enable you to find *close grades by comparison of chemical compositions and properties*. Remind that this type of search allows you to take into account applications of the grades also. Details of *the search by comparison of compositions and properties*, are described by us above in Section 3.3.

## Note page

On this page you can add your own information on the selected steel grade in the software

database. To start entering information, click the  button on the right. This button stays pressed. After you finished entering, press the button again to save the entered information.

### 3.5. Search for a Grade by Composition and Properties

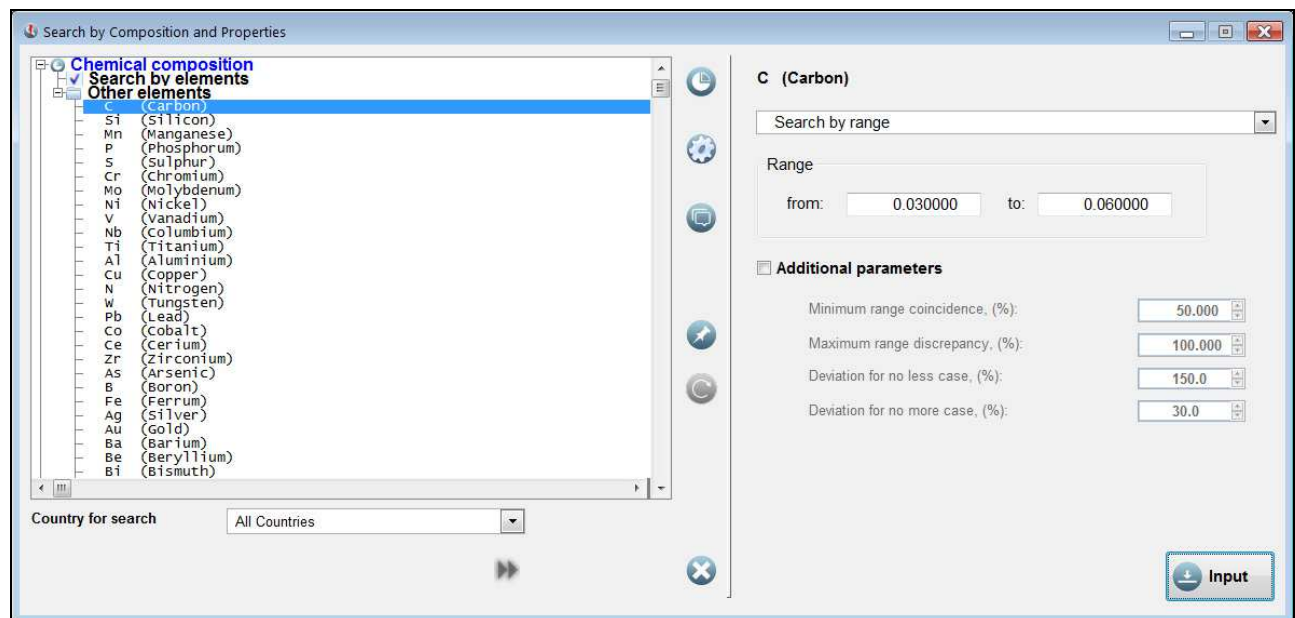
The search for a steel grade by known composition and properties<sup>\*)</sup> is executed when you need to find:

- steel designation by known *chemical composition*,
- steel grades meeting your requirements to the *mechanical properties*.

The search may be conducted separately by composition and separately by properties or by composition and properties in combination. In the last case the found grades will meet given ranges of both composition and properties. Steel application can be taken into account also if required.

To start the search by composition and properties, use the  button on the left panel.

The setting window of the search by composition and properties (see **Fig. 3.15**) consists of two parts. The left part is to select search parameters (chemical elements and properties), and the right part is to configure them.



**Fig. 3.15. Setup for the search by composition**

List of the search parameters is presented as a tree and includes the **Chemical composition**, **Properties** and **Fragment** sections. This tree is operated in a standard way, its different sections

are accessible using scroll-bars or ,  and  buttons on the right.

Using the **Change style** item of a pop-up menu, called by right click, you can select fonts to display different sections and branches of the tree.

#### 3.5.1. Setup for the Search by Composition

During the search by chemical composition, using the drop-down list at the top (see **Fig. 3.15**), you can select individual processing mode for each element, i.e.:


- the search can be done by the *Range* of content of an element in the grade composition;
- an element can be considered as base of steel (alloy) - *Rest*;


<sup>\*)</sup> In **WinSteel 8 Prof** and **WinSteel 8 VIP**; in **WinSteel 8 Base** the search is by composition only.

- an element may be considered as *Admixture* during the search.


Algorithms used to process contents of elements marked as *Base - Rest* and *Admixture* during the search, are the same as the corresponding algorithms for the search for equivalents by comparison of compositions and properties. The algorithms are described in detail in **3.3.2** on p. 19.

To include an element in the search it is necessary to do the following:

- to highlight the required element in the list;
- to select the mode of its processing (*Search by range*, *Base - Rest* or *Admixture*);
- if required, to input minimum and maximum values of the element content in the steel and correct *additional search settings*;
- to click the  **Input** button at the bottom to save individual settings for the element.

After the element has been included in the search, the  icon appears on its left, and the element is moved to the upper part of the list to the **Search by elements** tree section.

You can *exclude from the search* the pre-included elements in the following way:

- highlight the required element in the list;
- select the **Exclude from the search** item in the drop-down menu;
- click the  **Input** button to save the changes.

An element, excluded from the search, can be left by your choice in the upper part of the tree in the **Search by elements** section or moved to the **Other elements** section. To do so, use the **show among selected elements** check box.

## Additional Settings

In selection of individual settings for an element you will be also able to make changes in the general settings, used in the search algorithm, namely:

- to correct *values of coincidence and discrepancy of ranges*;
- to adjust *minimum and maximum contents* respectively for elements presented as  $EI \leq x\%$  or  $EI \geq x\%$  in the composition,
- to change *limits of admixture* content in steel chemistry.

The said parameters are completely identical to the corresponding parameters used in *the search by comparison of chemical compositions* and are described in detail in **3.3.2** on **pages 20** and **21**.

Depending on the selected element processing mode, you can do the following corrections.

*If the **Search by range** mode is selected*

In this mode you are able:

- to input *values of coincidence and discrepancy of ranges*, which differ from the standard ones – the possibility is enabled when you click the **Additional parameters** check box;
- to change minimum and maximum values for elements, presented in steel composition as  $EI \leq x\%$  or  $EI \geq x\%$ , – you can use the **Deviation for no more case** and the **Deviation for no less case** fields respectively.


*If the **Admixture** mode is selected*


For elements, which are marked as admixtures, the software gives an opportunity to correct *the lower and upper limits* of their content in steel composition. The **Maximum value (%)** and the **Suppose as amixture (max) (%)** fields respectively are used for this purpose.

### 3.5.2. Setup for the Search by Properties


List of properties available for the search, is shown in **Other Properties** branch of the **Properties** section of the tree of search parameters (see Fig. 3.16).

To include a property in the search it is necessary:

- to highlight the required property in the list;
- to select the **Search by range** item in the drop-down menu at the right and input minimum and maximum values of the selected property;
- if necessary, to correct *additional search parameters*;
- to click the  **Input** button at the bottom to save *individual settings* for the property.

After the property has been selected for the search,  icon appears on the left, and the property is moved to the top part of the list of properties to the **Search by properties** tree section.

You can *exclude from the search* the pre-included properties in the following way:

- the required property is highlighted in the **Search by properties** branch;
- the **Exclude from the search** item of the drop-down menu, is selected;
- the  **Input** button is clicked to save the changes made.

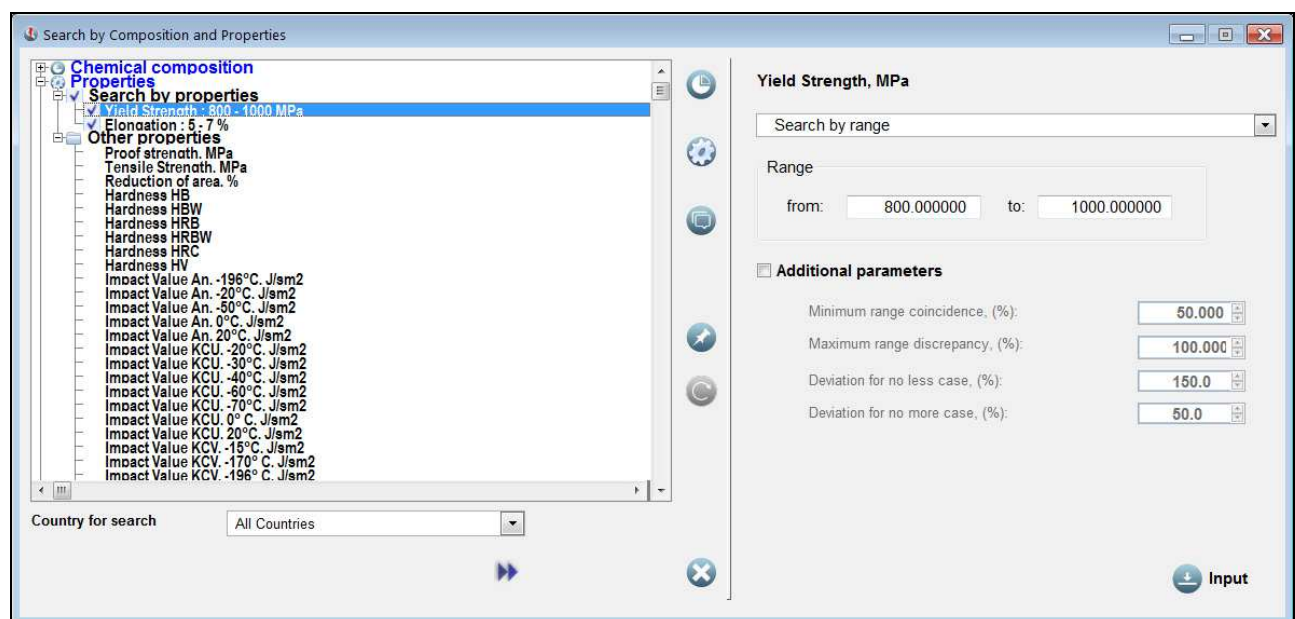


Fig. 3.16. Setup for the search by properties

A property, excluded from the search, can be kept by your choice in the upper part of the list in the **Search by properties** branch or moved to its lower part to the **Other properties** branch. The **show among selected properties** check box is used for this selection.

#### Additional Settings

Searching by properties, you are able to change the following additional settings:

- to input *values of coincidence and discrepancy of ranges*, which differ from the standard ones – the possibility is enable when you click the **Additional parameters** check box;

- to change maximum or minimum values for properties ranges, presented in the database as  $Pr \geq x$  or  $Pr \leq x$ , – you can use the **Deviation for no less case** and the **Deviation for no more case** fields respectively.

The said parameters are also completely identical to the corresponding parameters used in *the search by comparison of properties* and are described in detail in 3.3.2 on pages 22 and 23.

### 3.5.3. Setup for the Search by Fragment


Search by Fragment allows you *to consider steel application* in your search by compositions and properties. It's useful when you need to exclude the grades with similar composition and properties but different application. During this search, the software will track your entered fragment in the names of standards for different kinds of steel products referenced in the database as well as in the **Notes** fields, where you can enter your own information on steel grades (see page 17).

To enter a fragment for the search, you have to highlight the **All Grades** string in the **Fragment** section of the tree of the search parameters. Then, in the drop-up menu on the right, you should select a search type: *by fragment* or *with regular expressions* and enter the required fragment in the field under the menu.

We described this type of search in detail as well as difference between the search by fragment and the search with regular expressions in section 3.2.2 on pages 23 and 24.

After entering the search fragment using respective *radio buttons*, you can select the database fields to search in; three options are possible:


- search by information on steel grades from the database only, including search by names of standards – **in data on grades only** radio button;
- search by **Note** fields only, where you can save your own information on steel grades, – **in Notes only** radio button;
- search by both database information and the **Note** fields – **in both data on grades and Notes** radio button.


To save the selected conditions of the search by fragment, click the  **Input** button at the bottom.

### 3.5.4. Search Start and Search Results


#### Search Start

Before starting the search, we advise you to save *composition*, set of *properties*, and a *fragment*


you entered for the search, using the  button on the right of the tree of the search parameters (see Fig. 3.15 or Fig. 3.16). This will enable you to easily restore the initial values in case you will



need to correct them later. *The pre-saved search parameters are restored* with help of the  button.

The search for grades with input composition and meeting required property level with use of the entered fragment, can be done across the entire database, among steels of the selected country or steels of the selected standard. *Selection of a country and a standard* (after country selection) is done in the drop-down lists which you'll find under tree of the search parameters.





The search starts by clicking the  button. After its completion you will be able to look through *results of the search* and go back to the setup procedure to correct the search parameters if you're not satisfied with the search results.

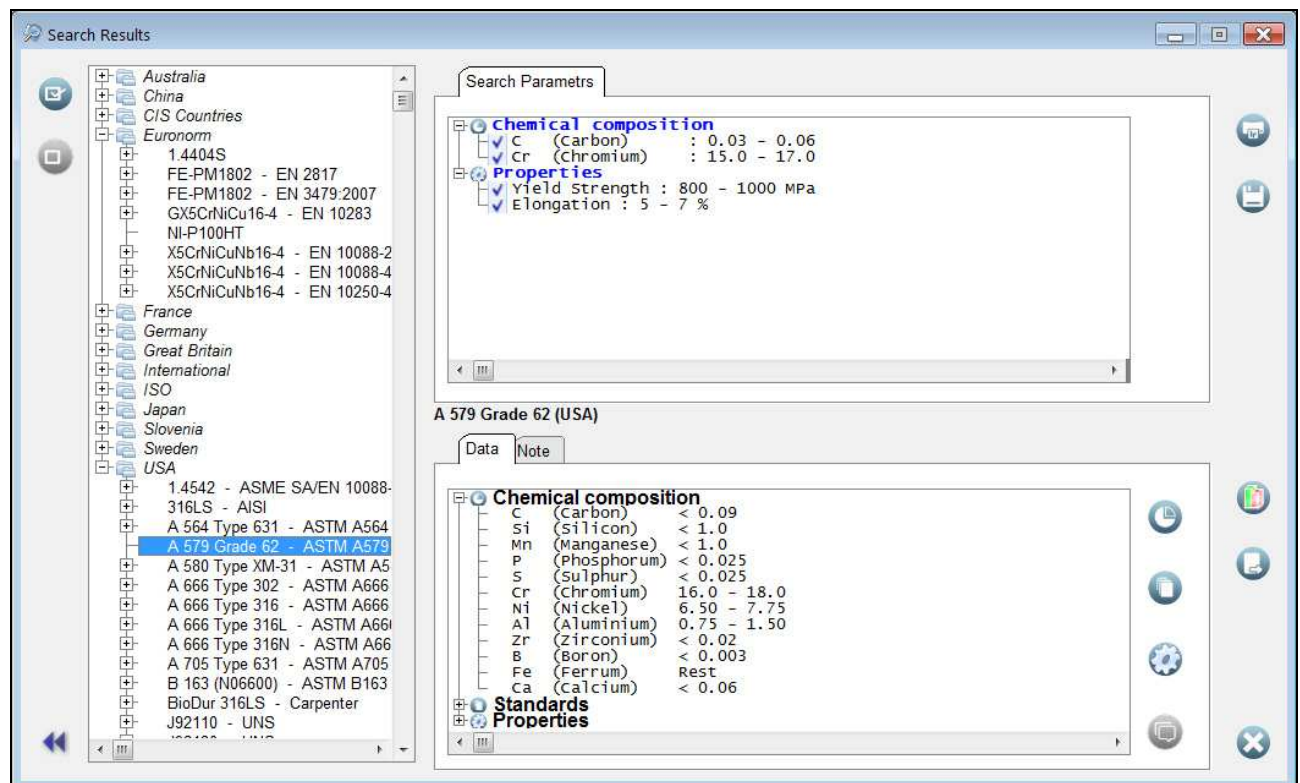
## Results of the Search by Composition and Properties

List of steels, found in result of the search, is presented in the list-box in the left part of the screen in tree form (see **Fig. 3.17**). The upper level of the tree, includes country list, on the next level lists of found grades in the respective countries, are presented. *Only one designation of each steel grade*, is showed on the second tree level. To get information on its other designations you should click  to the left of the grade name.

Those grades in the list-box, which are of interest to you, may be marked in bold by clicking the  button at the left. To remove the bold marking you can use the  button. These operations can be also done with the help of keyboard hot keys **Grey +** and **Grey -** respectively.

On the right of the screen, you can compare entered composition and properties with composition and properties of the highlighted steel grade. The information is shown as a standard tree including the **Chemical composition**, **Standards**, **Properties** and **Additional information** sections. You can get information on the selected grade and compare it with the entered values, by expanding


sections of the tree. To move to various tree sections, you can use , , , and  buttons or scroll-bars.







**Fig. 3.17. Result of the search by composition and properties. Comparison of compositions**

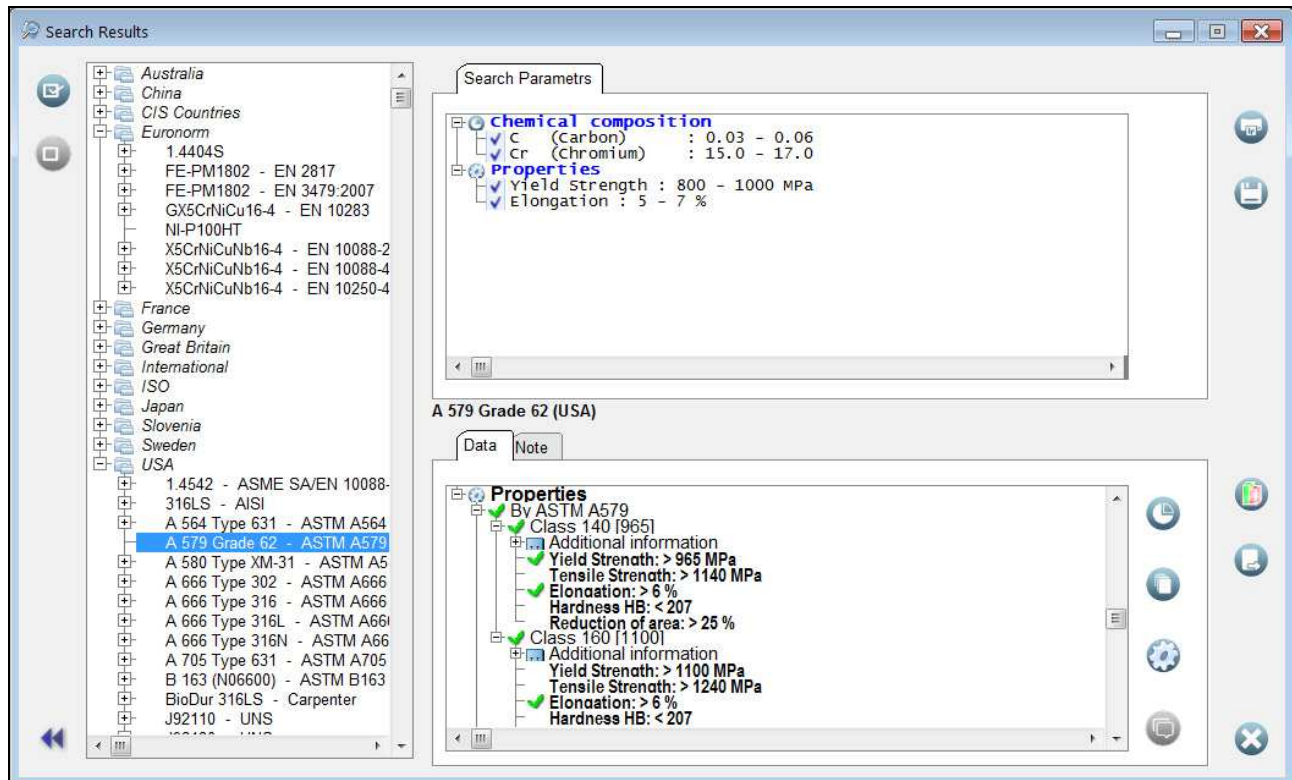
Like for other similar trees, by the *right mouse button click* on any tree branch, the *pop-up menu* is displayed. Its items allow you to:

- expand or compact the tree,
- select information you need to print out and to save in a file,
- copy information on a steel or its equivalent to the Clipboard,
- select fonts to display different sections and subsections of the tree.


Besides the table form you have a possibility to compare input composition with composition of the highlighted grade in *a graphic form* also. For this purpose click the  button at the right.


Comparison of input values of properties with values of properties of the highlighted grade, is executed in a table form only (see Fig 3.18). Note that some branches of the **Properties** section of the tree, may be marked by  sign on the left. It is only possible if you searched by properties.  signs are used to mark those properties, which values are close to the entered values.


To print out comparative information on composition and properties you have entered with compositions and properties of the grades of your interest, click the  button on the right. It is possible to print out the information on one highlighted grade only or on all the grades you have marked in bold. This option is selected with pop-up menu, available by clicking the  button.




**Fig. 3.18. Result of the search by composition and properties. Comparison of properties**

The  button is used to save comparative information on entered composition and properties with compositions and properties of the found grades in a file of one of the following formats of your choice: *txt*, *xls*, *rtf* or *html*. For saving of the information the same rules as for printing are applied.

In case if you're not satisfied with the search results, you can return to the search parameter setup procedure to correct the settings by clicking the  button.

To cancel the search, use the  button.

### 3.6. Notepad

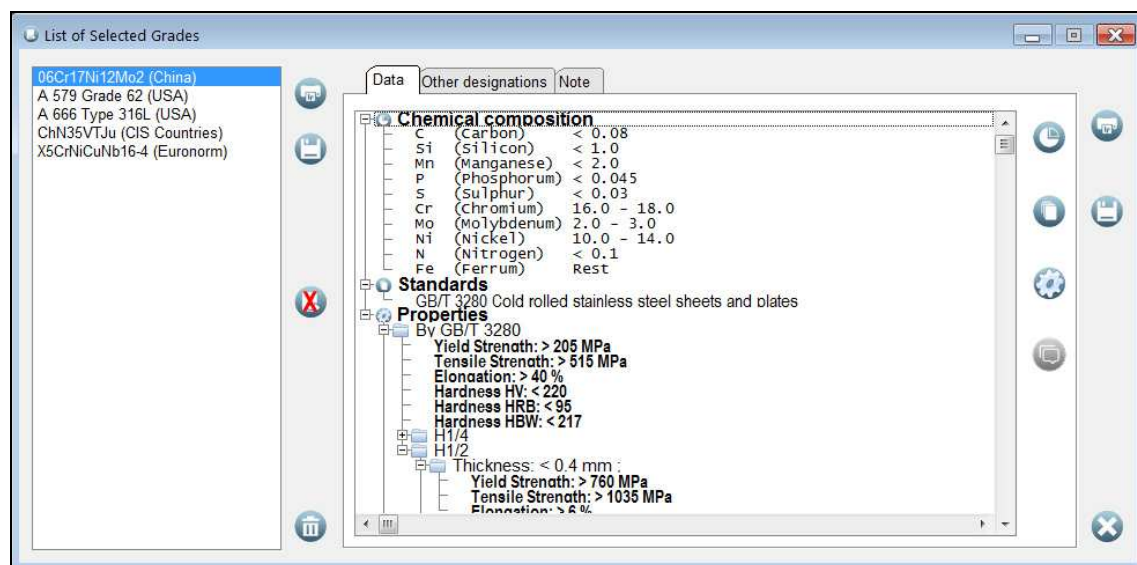
*Notepad* is used for temporary store of information on steel grades, selected by a User during his current session of operation with the software. To enter the Notepad click the  button on the left panel. Note that information stored in the Notepad, is not saved on hard disc of your PC. At the end of the current session, Notepad is cleared.

The Notepad window consists of two parts (see **Fig. 3.19**). The left part lists all preliminarily entered steel grades; the right part shows information on the highlighted grade.

Information on *composition*, *mechanical properties*, *standards* covering the grade, as well as *additional information* on the grade, is presented on the **Data** page. Like for other software procedures, this information is displayed as a tree, consisting of the corresponding sections. These sections are accessed using scroll-bars or respective buttons on the right. You can use the common rules described in **3.2.2** to operate with the tree.



Remind that by the *right mouse button click* on any branch of the tree, the *pop-up menu* is displayed. Its items allow you to:





- expand or compact the tree,
- select information you need to print out and to save in a file,
- copy information on a steel or its equivalent to the Clipboard,
- select fonts to display different sections and subsections of the tree.



**Fig. 3.19. Notepad**


Being in the Notepad, you can print out or save to *txt*, *xls*, *rtf* or *html* file information on each steel grade separately as well as full comparative table of compositions of all grades stored in the Notepad.

The  and  buttons on the right of the window are used to print out and save information on *the highlighted steel grade only*. To print out and save *the entire list of grades stored in the Notepad*, use the similar buttons between the list of steel grades and the window with information on the highlighted grade.

The  and  buttons delete unwanted steel grades from the Notepad. The  button deletes the highlighted steel only whereas the  button clears the entire Notepad, deleting all the grades simultaneously.

## 3.7. Service Procedures

### 3.7.1. Software Settings

Use the  button on the left panel to enter the software configuring procedure. This procedure allows to select your preferred parameters and settings. The procedure window consists of several pages accessible with help of respective tabs. Let us describe them.

**General Settings.** Here you can select *font size* to display data in various software windows. Selecting the right scale, is done shifting the slider by the mouse left or right to decrease or increase default font size used on your PC.

**Data.** Here you can select a common font to display different sections and subsections of trees of steel characteristics (chemical compositions, properties, lists of standards, additional information), used in all software procedures. To do so, click on the **Default Font** button and select the type, style, and size of the font using Windows standard window.

Besides selecting the common font, you can prevent other users from changing styles of trees of steel characteristics in various software procedures, using pop-up menus. To do so, deselect the **Change style in the tree check box**. It is selected by default.

**Run Time.** Two following *check boxes* are located on this page. You can use them to


- ensure autorun of the software and loading its database into your PC memory along with Windows loading when you turn on your PC – the **Put into StartUp check box** is used;
- automatically hide the software icon (minimizing it to tray) when the software is inactive – the **Minimize to Tray check box** is used.

Note that the software is not canceled when its icon is minimized to tray. You always can quickly open it any time when require.

**Reset of Settings.** The software enables you to change sizes of all windows, adjusting them according to the resolution of your screen. Also, you can select various fonts to display information on steel characteristics. Sometimes, it requires to reset the made changes thus restoring the initial settings. This can be done on this page.

The reset operation is done by selecting one of the following *radio buttons*:

- **both window sizes and settings** – resets all the software settings;
- **settings only** – restores the default fonts;
- **window sizes only** – restores the default window sizes.


When the selecting is done, click the  **Restore by default** button.

**Activation.** This page is only available for **WinSteel 8 XX – Subscription** version. You can check your activation code on this page. Enter the **NAME** and **CODE**, that was sent to you, into the respective fields and click the **Activate** button. If the NAME and CODE are correct, the

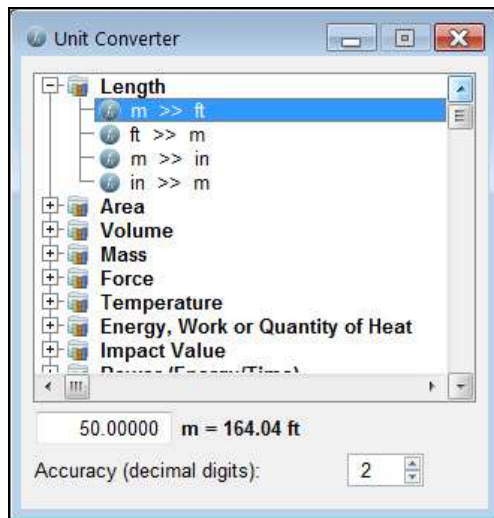
 confirmation icon appears on the right.

### 3.7.2. Reference Information

By requests of our users, we added a reference section to **WinSteel 8** software. This section is planned to contain various data to facilitate your operation with the software and its database.

You can access the reference section by click the  button on the left panel. Afterwards, the pop-up menu to get the required information, is displayed.

At the moment of issuing this manual, **WinSteel 8** reference section includes only one item – **Unit Converter** to match imperial and metric units. Further step by step we plan to add other useful information to this section issuing new software releases. Remind that the new releases are available for all **WinSteel** users by our Annual Support Service.



**Fig. 3.20. Unit Converter**

The **Unit Converter** is easy to work with. Select name of a physical unit of interest in the list (tree) and expand the respective branch by clicking the  $\oplus$  on its left or by double mouse click (see **Fig. 3.20**). Then highlight units to convert from and to, and enter the source unit value into the respective field at the bottom. The result is the converted unit value. If necessary, enter the conversion accuracy (decimal digits).

---

# •MetalData.info

COPYRIGHT 1992 - 2017 MetalData.info

All rights reserved

Authors: Victor N. Gudkov, Igor M. Gubin

Phone / fax: (+7 495) 989 70 21

Office: Of. 221, Ostapovsky proezd 5, build. 4, Moscow, Russia

Post Address: 235-2, Zelenograd, 124498 Moscow, Russia

E-mail: [inform@metaldata.info](mailto:inform@metaldata.info)

WWW: <http://www.metaldata.info>