



Chemical Biological Material Effects Database New User Guide

by Peter Holman and Albert W. Price

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14. ABSTRACT The Chemical Biological Material Effects (CBME) database has been developed to help designers and developers with the task of incorporating nuclear, biological, and chemical contamination survivability into system design and development. The database system contains test data from technical reports on over 550 materials that have been exposed to chemical warfare agents. The database details the effects of these agents and decontaminants on specific properties of materials. The purpose of this guide is to inform new users about the functions of the CBME database so that they can find available data quickly and efficiently and obtain maximum benefit from its content.					
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1. Purpose

The purpose of this guide is to inform new users about the functions of the Chemical Biological Material Effects (CBME) database so that they can find available data quickly and efficiently and obtain maximum benefit from its content.

This guide covers the following:

- Creating a new CBME user account
- Navigating the database
- Searching and browsing material effects data
- Downloading source documents
- Exporting results into a spreadsheet format
- Material testing nomination process

2. Getting Started

2.1 Logging In

From the Login Page, shown in figure 1, the user can either log in to the database or create a new user account. The database URL is <https://cbme.cbrniac.apgea.army.mil/Login.aspx>.

The “Contact Us” link allows the user to offer comments about the database. It can also be used to contact the system administrators if the user is experiencing problems creating an account or logging in to the database.

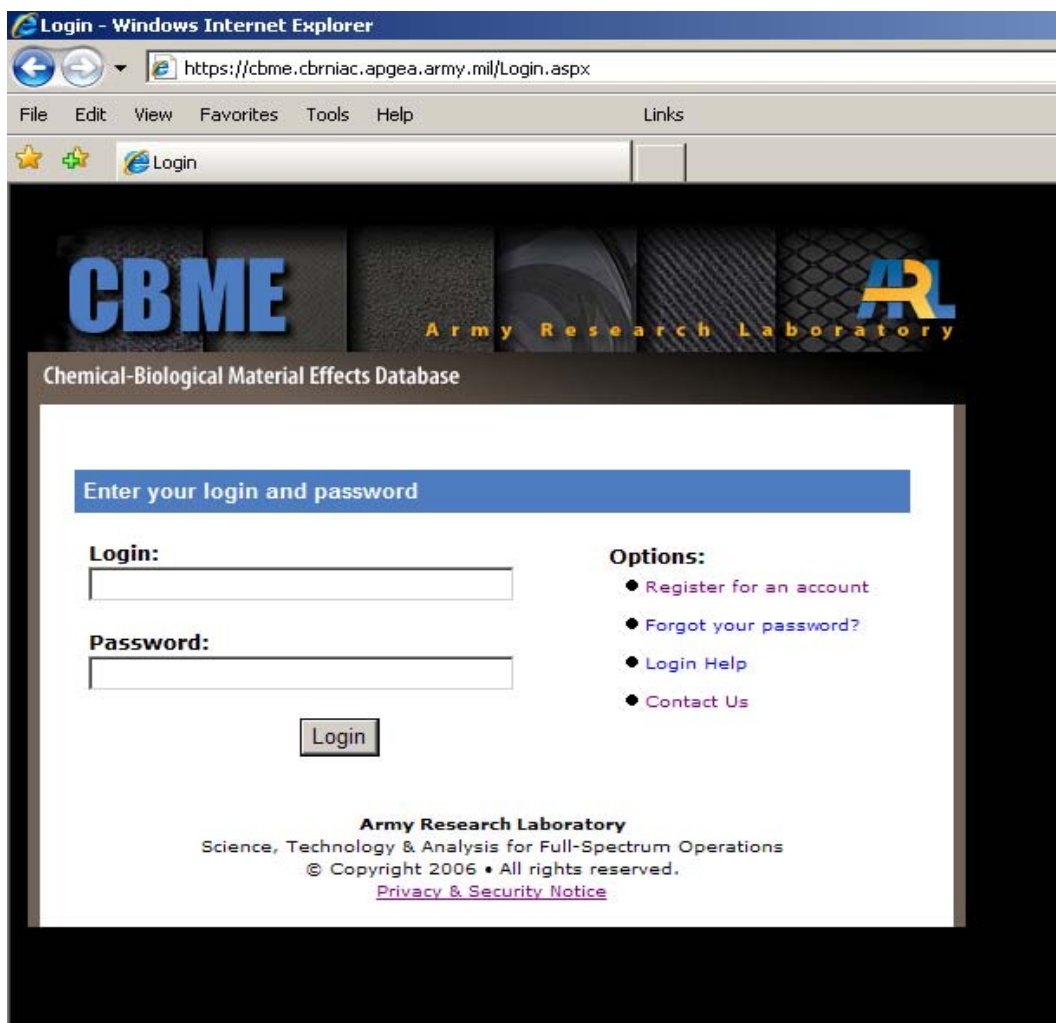


Figure 1. CBME Login Page.

2.2 Metrics

Figures 2 and 3 show the CBME Home Page that is shown after logging in to the database. The What's New on CBME section explains the most recent updates to the database. "CBME Metrics" shows the current number of different materials, challenges, and test entries contained in the database.

2.3 Available Documents

After scrolling down to the bottom of the page on the CBME Home Page, one can find a listing of reference documents available for download. Currently available documents include the following:

- CBME Tri-Fold Pamphlet – a concise overview of the database.
- Material Effects Test Operating Procedure (TOP) – this TOP is developed specifically for testing the physical properties of materials commonly assessed.

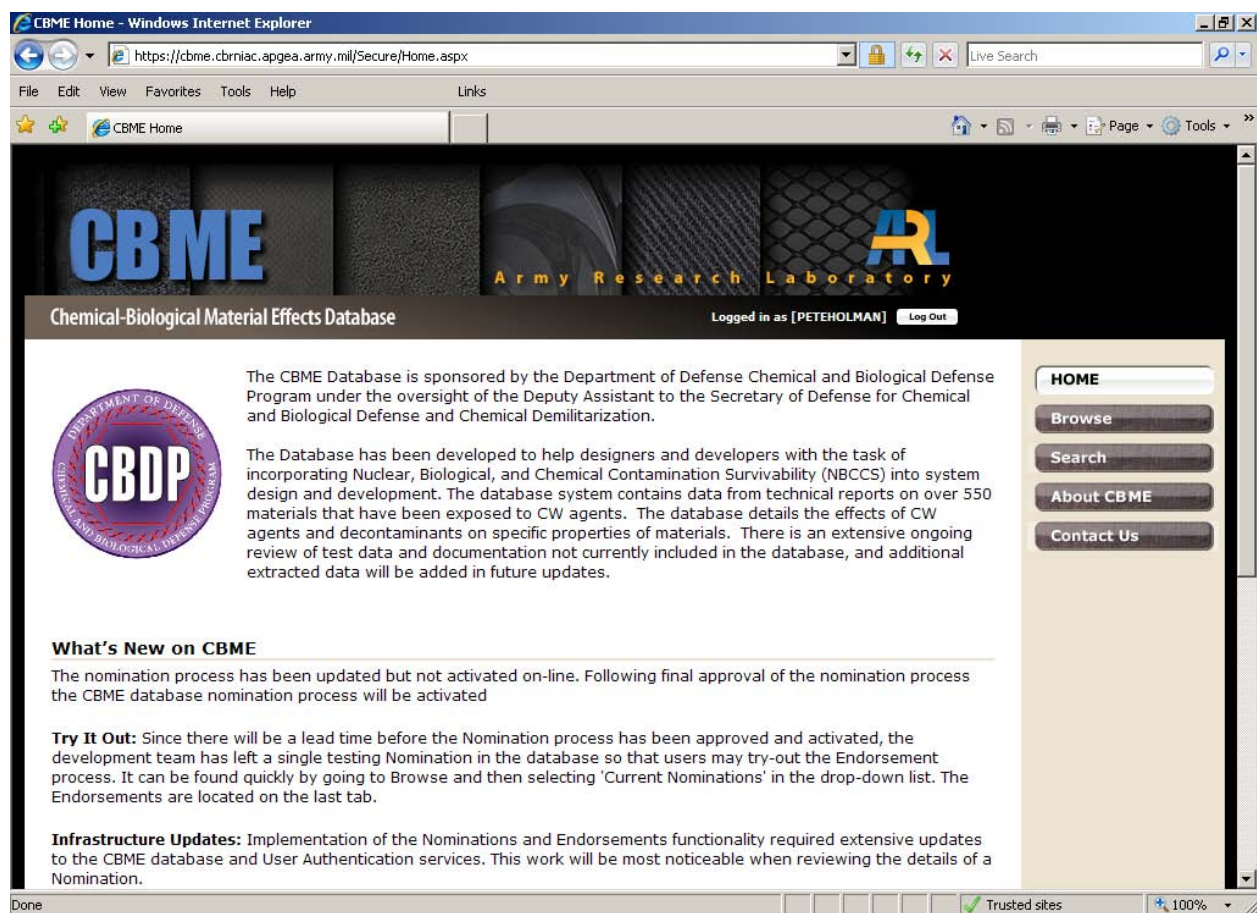


Figure 2. CBME Home Page.

- CBME Test Data Capture Template – an Excel spreadsheet that a tester may use to report test data in a format which can easily and efficiently be extracted and uploaded into the CBME.
- U.S. Department of Defense Military Handbook 784 – reference material on the guidelines and design to minimize contamination and facilitate decontamination of military vehicles and other equipment interiors and exteriors.
- Multiservice Chemical, Biological, Radiological, and Nuclear (CBRN) Decontamination Manual – reference material on tactics, techniques, and procedures for CBRN decontamination.

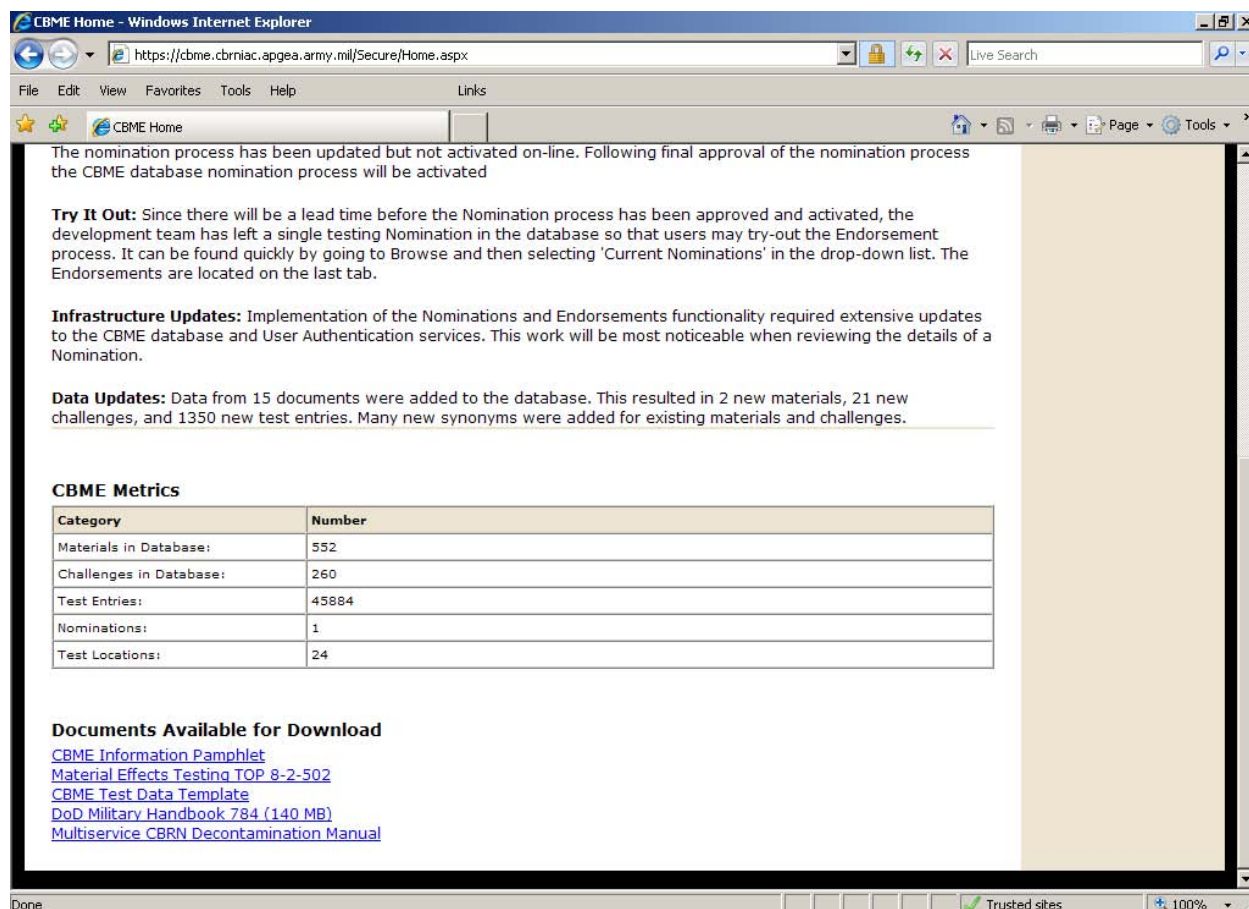


Figure 3. CBME Home Page – metrics and available documents.

3. CBME Database Features

On the right side of the CBME Home Page screen, there are the five following control panel buttons:

1. HOME – takes the user back to this screen.
2. BROWSE – enables the user to quickly look through the contents of the database.
3. SEARCH – permits the user to conduct inquiries for specific materials and challenges.
4. ABOUT CBME – information about why the database was created; also includes a list of all the updates to the database since it was created.
5. CONTACT US – same as on the Login Page; allows the user to comment, ask questions, or report any problems encountered while using the database.

3.1 Browse Function

The browse feature lets the user quickly look through the contents of the database. First, a selection must be made in the “Browse By” drop-down list. The choices are to browse by either Materials, Challenges, Source Documents, Test Locations, or Current Nominations.

Figure 4 shows browsing by materials. There are then several material categories to choose from: metals, laminates, adhesives, coatings, elastomers, etc. The category of metals is selected and shown. The subcategory of nonferrous metals and alloys is selected next. Finally, aluminum alloy is selected. A listing of all the different aluminum alloys in the database is also shown. The blue icon next to the entry “A03560” indicates data for this material exists in the CBME database. A brown icon would indicate that this material has been nominated for testing.

The other options available from the Browse By drop-down menu are as follows:

- Challenges – this is similar to the previous materials example but for chemical and biological test agents, decontaminants, and simulants.
- Source Documents – this shows a listing of over 1000 source documents for material effects test data; many are available for review and download.
- Test Locations – this is a listing of several facilities that are able to perform material effects testing.
- Current Nominations – this is a listing of all of the CBME nominations for new material effects testing.

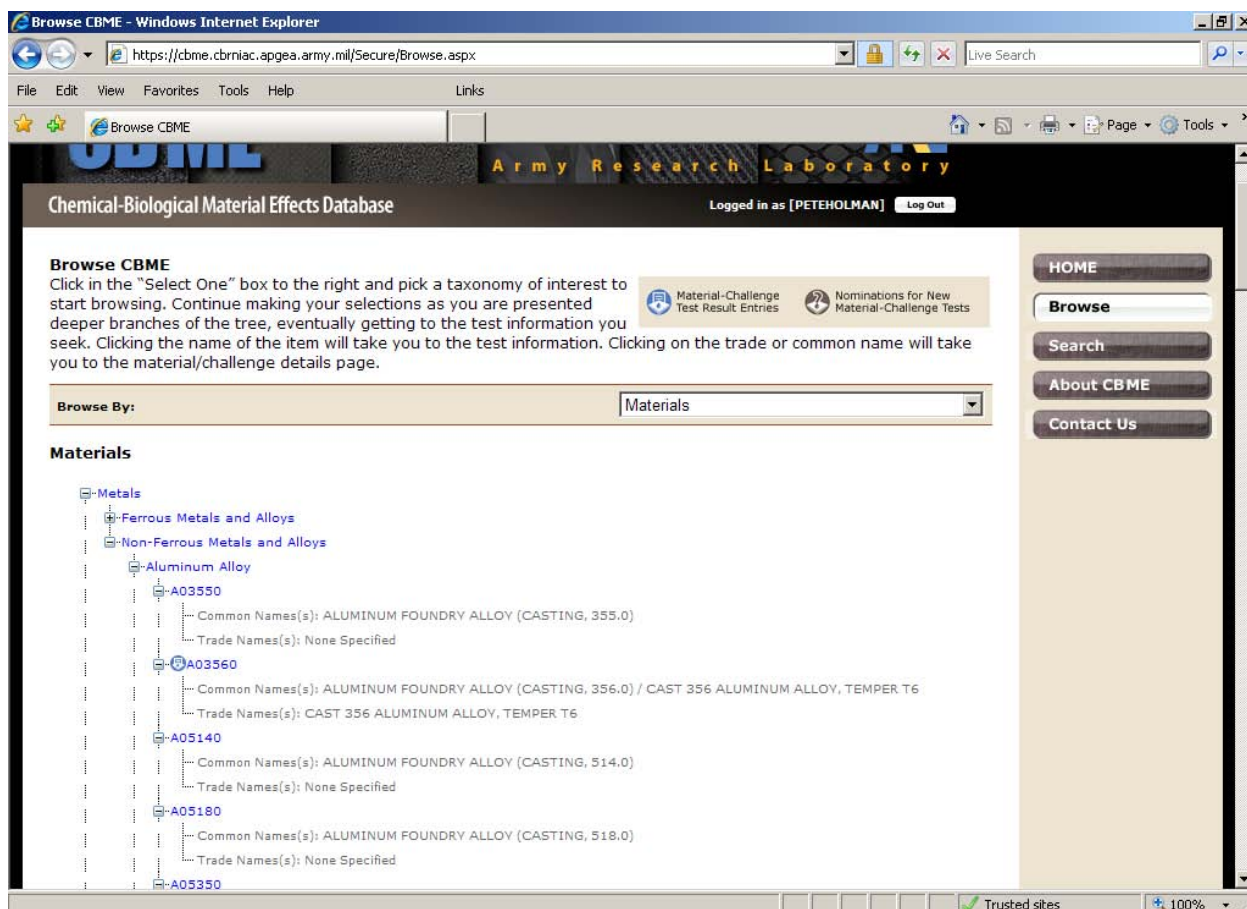


Figure 4. Browse function display.

Figure 5 is the view after a specific material or challenge is selected using the browse function. In this case, it is a listing of all test entries on the material A03560, an aluminum alloy.

Clicking on “View Details” for one of the entries will bring up specific details about that test, showing test conditions and material information, as shown in figure 6. The source document for this data may be viewed online or it may be downloaded as a PDF file.

The Test Details section includes six tabs with information about how the test was performed and the results of the test. Each tab contains several data entries. These tabs are organized as follows:

- Test Description – information about how the test was performed.
- Test Data – the results of the test.
- Material – information about the material that was tested.
- Challenge – chemical/biological agent(s) and/or decontaminants used in the test.

Test Entries and Nominations - Windows Internet Explorer

https://cbme.cbrnac.apgea.army.mil/Secure/TENSummary.aspx?tax=M&id=100001&ps=Aluminum Alloy : A03560

File Edit View Favorites Tools Help Links

Test Entries and Nominations

CBME Army Research Laboratory

Chemical-Biological Material Effects Database

Logged in as [PETEHOLMAN]

Test Entries and Nominations for...

Aluminum Alloy : A03560

Display: ☐ Test Entries ☐ Nominations ☒ Both

Type	Challenge	Property	Date	
	DS2	ELONGATION (MAXIMUM-BREAK)	Jan 01, 1983	View Details
	DS2	ELONGATION (MAXIMUM-BREAK)	Jan 01, 1983	View Details
	DS2	TENSILE STRENGTH (YIELD)	Jan 01, 1983	View Details
	DS2	TENSILE STRENGTH (BREAK)	Jan 01, 1983	View Details
	DS2	TENSILE STRENGTH (BREAK)	Jan 01, 1983	View Details
	DS2	TENSILE STRENGTH (YIELD)	Jan 01, 1983	View Details

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Figure 5. Results from browse.

- Property – material property that was tested.
- Source – information about the source document and a link to download the document.

Note that many of the information fields in these tabs may be empty. Completeness of these fields depends on the amount of data available in the source document.

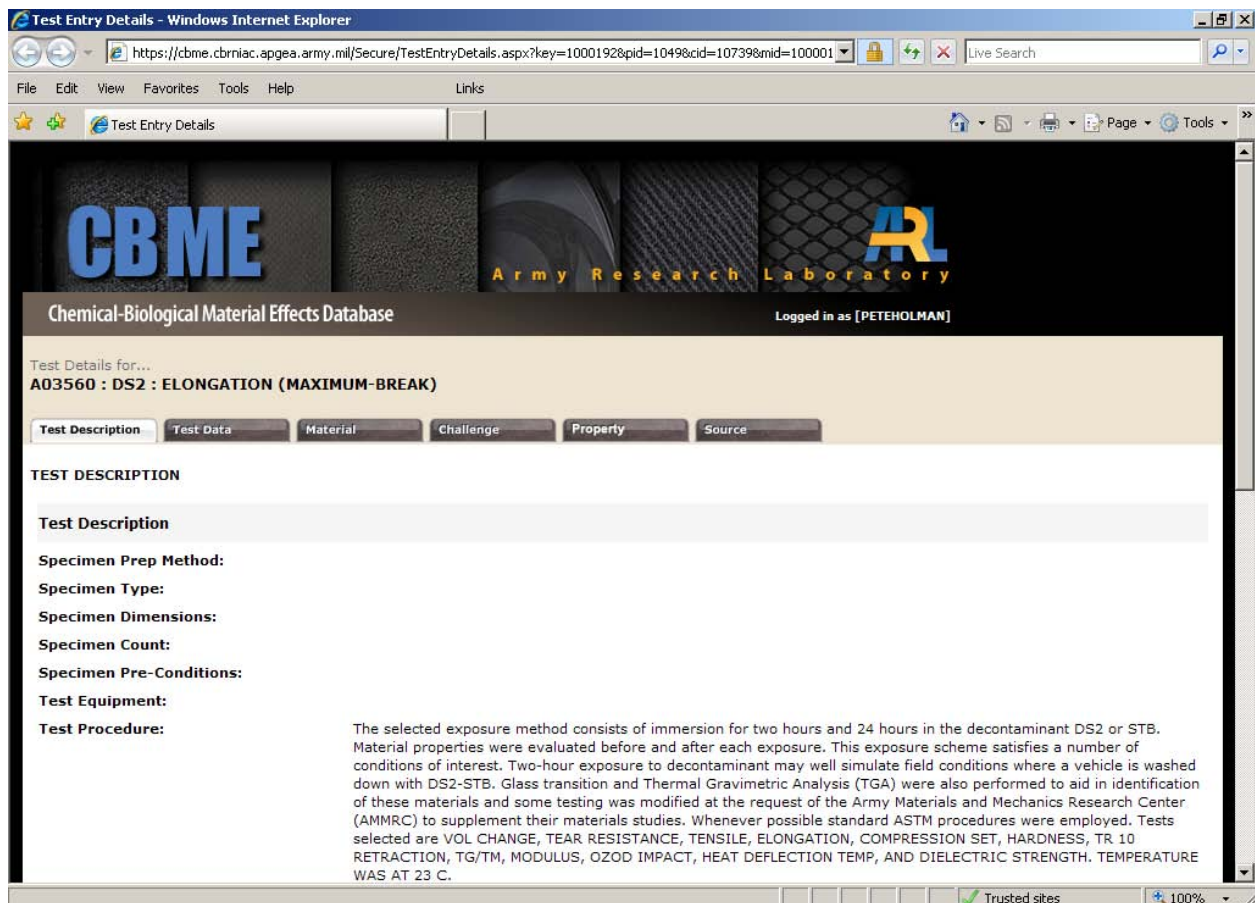


Figure 6. Browse - view details.

3.2 Search Function

3.2.1 Quick Search

Clicking the “Search” button on the control panel on the right side of the screen brings up the Quick Search function, as shown in figure 7. Here, the user can select which areas of the database to search. The options include Test Entries and Nominations, Synonyms, Source Documents, and Test Locations.

When the lower Search button is clicked, the screen is refreshed, and a “Results Summary” appears that shows how many entries there are for each box that was selected. “View” can then be clicked to proceed to the Results page. If a large number of test entries exist for your search, a message will appear asking you to consider narrowing your search.

To perform a more complex search, click on the “Advanced Search” link.

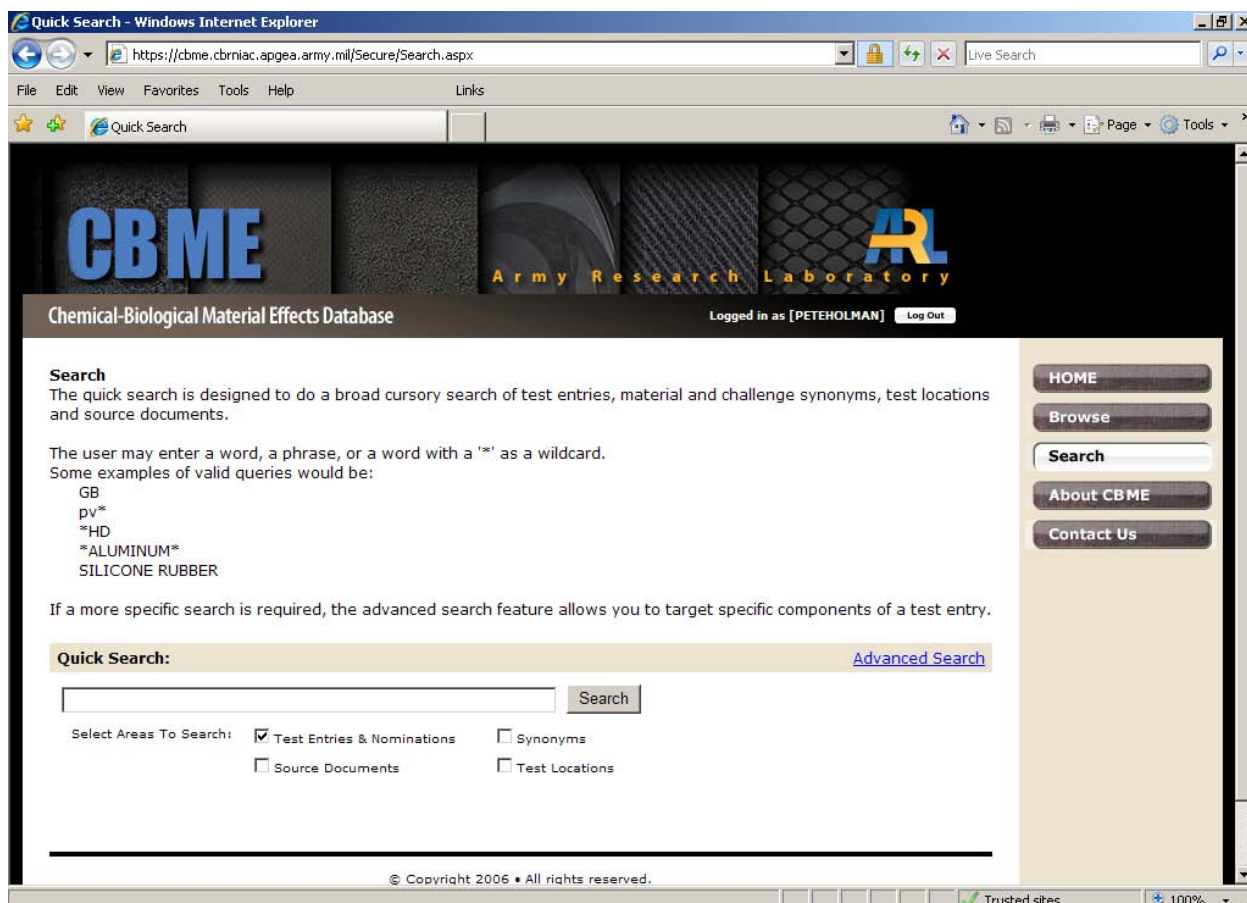


Figure 7. Search using quick search.

3.2.2 Advanced Search

The Advanced Search link allows users to create queries for combinations of specific materials, challenges, and properties. Clicking on the drop-down menu allows the user to select either material, challenge, property, or CBIAC number. The “and,” “or,” and “none” buttons allow the user to have more control over their search. More detailed instructions appear at the top of the Advanced Search page.

The results in figure 8 show that there are 563 entries on the material PVC, 3890 entries that include the challenge GD, and 67 entries that contain both PVC and GD. Using the “Preview” button instead of the Search button shows how many entries exist before bringing up the results by clicking on “View.”

Clicking on “Legal Values” will bring up a complete database listing of all the different materials, properties, or challenges. These are sorted by Material Type, Category, and Sub-Category. When Legal Values is clicked while the CBIAC number is selected from the drop-down box, a window opens that shows the title and CBIAC number for each document in the database. Documents that have test entries available are annotated with “*.”

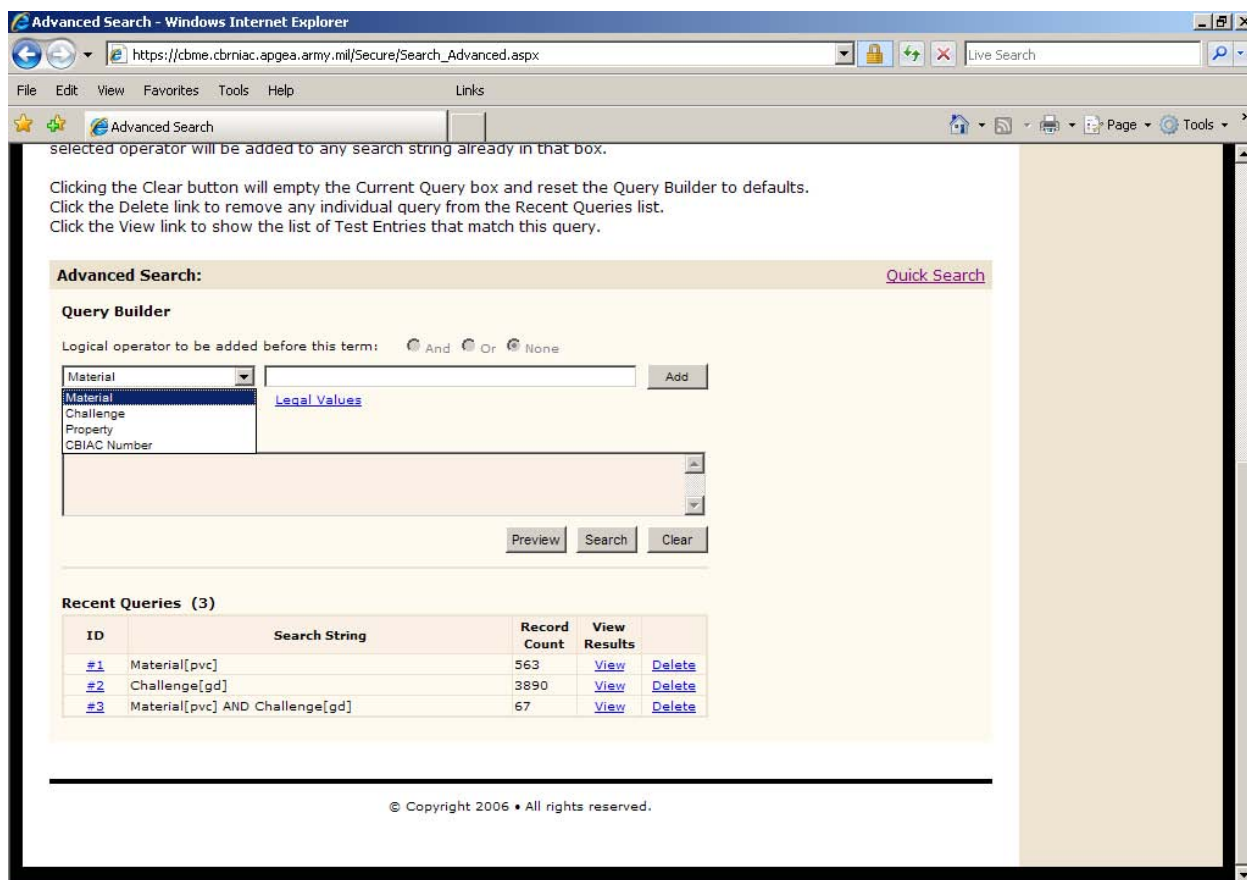


Figure 8. Search using advanced search.

4. Search/Browse Results

4.1 Viewing Results

Figure 9 displays the Results page for Search and Advanced Search.

By default, the columns presented are as follows:

- Type – a blue icon indicates this entry has test data; a brown icon indicates that this material has been nominated for new testing.
- Material – the material that was tested.
- Challenge – the chemical agents/decontaminants/simulants used for this test.
- Property – the material property that was tested.

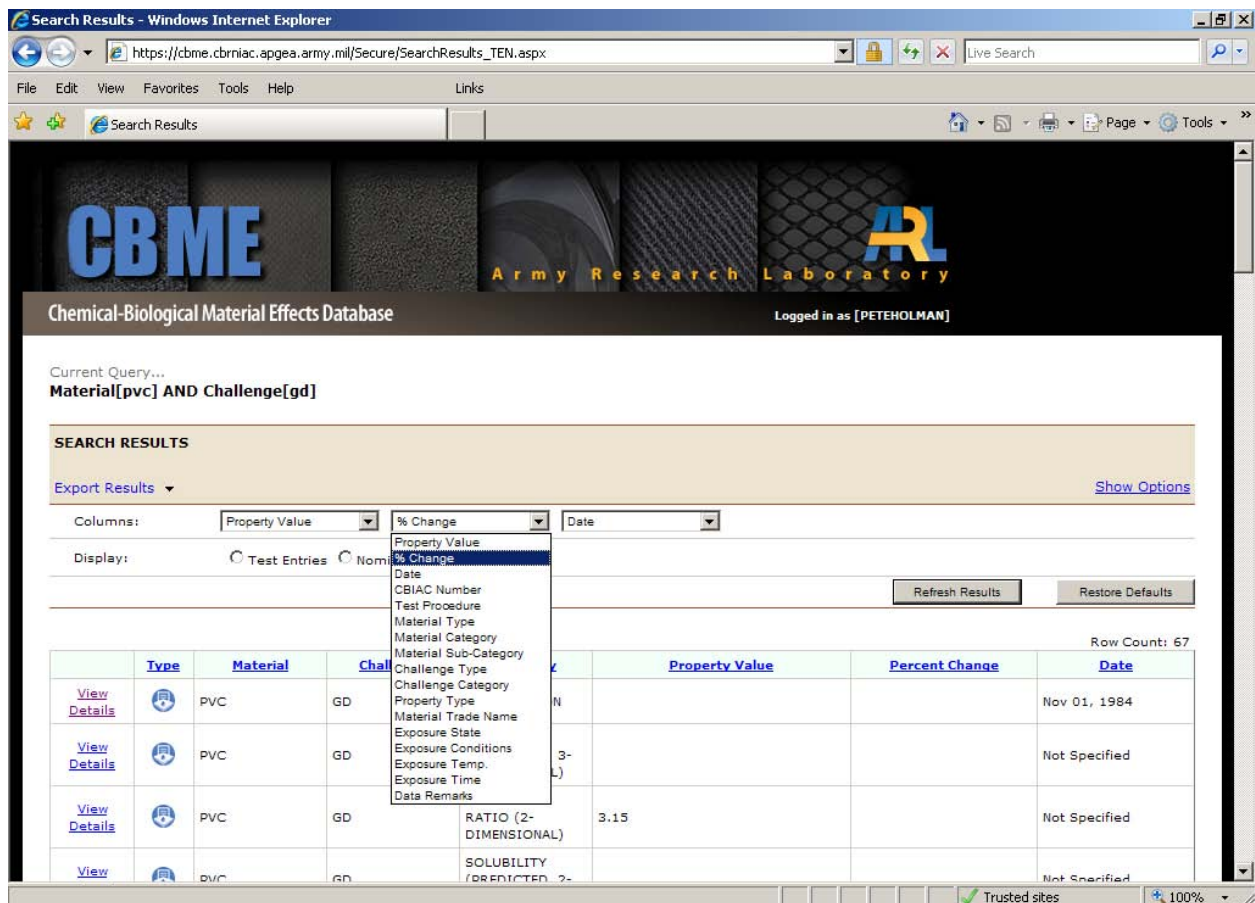


Figure 9. Search results.

- Property Value – value of the tested property.
- Percent Change – percent change in value compared to pretest conditions.
- Date – date that the source document was published.

Of these columns, the three on the right are able to be changed. On the top right of the screen, there is a “Show Options” button that will allow different columns to be displayed. There are 14 additional columns that can be viewed; they are shown in the drop-down menu of figure 9. Clicking on the column heading for any column will sort the results based on the values in that column.

The “Export Results” option on the top left of this screen will allow the data to be exported into an Excel spreadsheet.

When “View Details” is clicked on one of the search results, the window shown in figure 10 opens up. The information displayed is the same as when View Details is clicked from the Browse function, which was previously described.

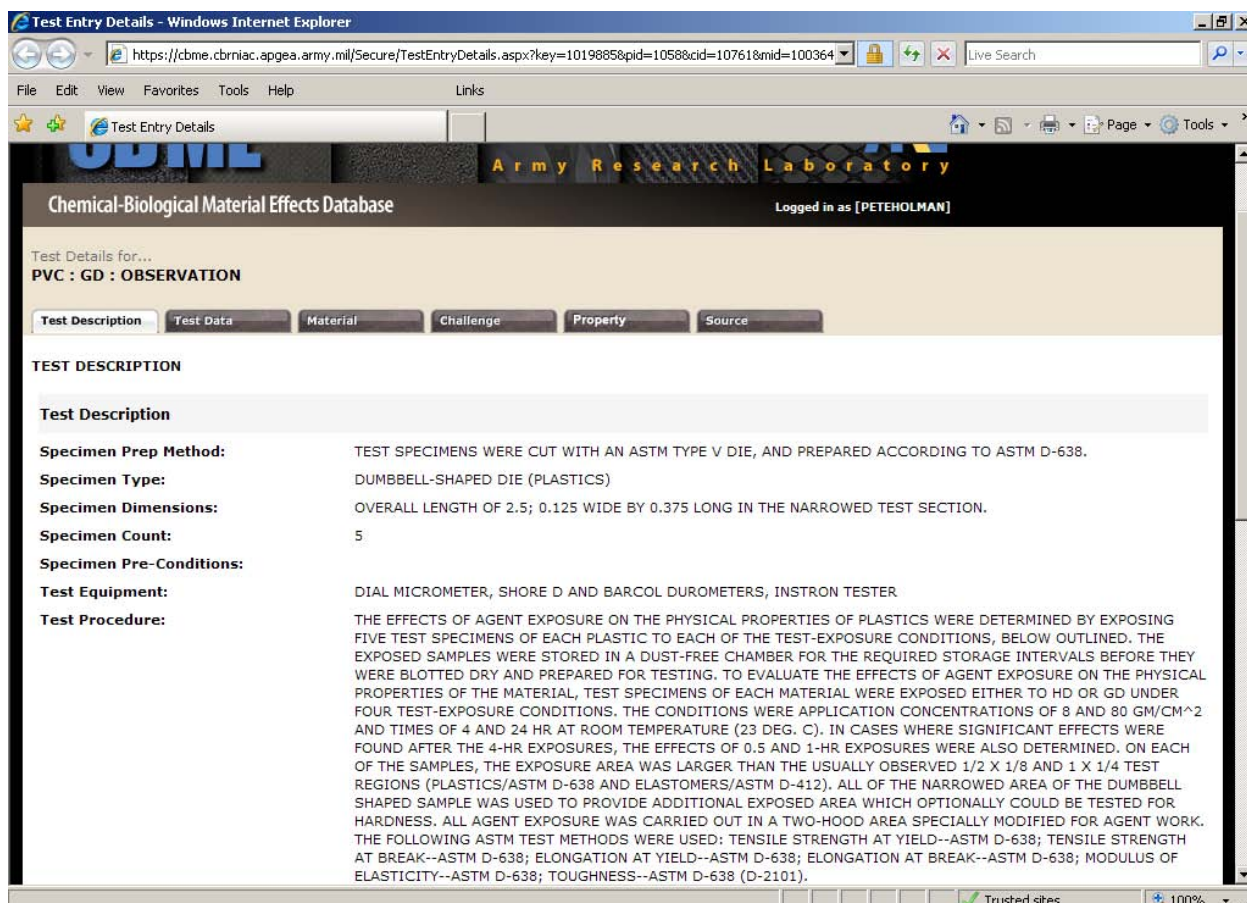


Figure 10. Search results - view details.

To return to the Search page when viewing the List of Results, use the “Back” button located at the bottom of the Results page. If the Web browser Back button is used, you will need to refresh the page before it will appear.

4.2 Exporting Results

As mentioned previously, on the top left of the Search Results page (figure 9) is an “Export Results” option. Moving the mouse over Export Results brings up two options for exporting this data.

“Currently Displayed Columns” will take all of the columns that are currently displayed and export them into a .CSV file which can be opened with Microsoft Excel, illustrated in figure 11.

“Full Summary” will export all available columns for each entry in your search results. This feature permits an extra 14 columns in addition to what is exported with the Currently Displayed function.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
	Type	Material	Challenge	Property	Property	% Change	Date	CBIAC Nu	Test Proc	Material	Material	Material	Challenge	Challenge	Property	Ma
1	TE	PVC	GD	OBSERVA			11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Physical F	PV
2	TE	PVC	GD	SOLUBILIT			Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	VIF
3	TE	PVC	GD	SOLUBILIT	3.15		Not Speci	Unknown	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	GE
4	TE	PVC	GD	SOLUBILIT			Not Speci	Unknown	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	PO
5	TE	PVC	GD	MODULUS = 6.25 PSI		5%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
6	TE	PVC	GD	TENSILE S = 8460 PSI		-4.80%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
7	TE	PVC	GD	TENSILE S = 5270 PSI		-6.10%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
8	TE	PVC	GD	MODULUS = 6.88 PSI		4.60%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
9	TE	PVC	GD	TOUGHNE = 2210		30.80%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
10	TE	PVC	GD	SOLUBILIT			Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	VIL
11	TE	PVC	GD	BREAKTHI > 1440 MI			02/01/19	CB-00249	THE PERM	Plastics	Thermop		Chemical	Nerve Ag	Agent Eff	
12	TE	PVC	GD	TOUGHNE = 3760		122.50%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
13	TE	PVC	GD	OBSERVA			11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Physical F	PV
14	TE	PVC	GD	ELONGAT = 150 %		36.40%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	LAI
15	TE	PVC	GD	SOLUBILIT	0.87		Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	LAI
16	TE	PVC	GD	SOLUBILIT			Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	VIL
17	TE	PVC	GD	ELONGAT = 270 %		145.50%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
18	TE	PVC	GD	ELONGAT = 150 %		36.40%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
19	TE	PVC	GD	SOLUBILIT	0.98		Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	VIL
20	TE	PVC	GD	SOLUBILIT	0.85		Not Speci	CB-02939	FIVE CHE	Plastics	Thermop		Chemical	Nerve Ag	POL Propi	VIL
21	TE	PVC	GD	ELONGAT = 190 %		72.70%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
22	TE	PVC	GD	TENSILE S = 9010 PSI		1.30%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	
23	TE	PVC	GD	MODULUS = 6.02 PSI		-8.50%	11/01/19	CB-00511	THE EF	Plastics	Thermop		Chemical	Nerve Ag	Mechanic PV	

Figure 11. Export results.

5. Material Effects Testing Nominations and Endorsements

Users are able to nominate materials for material effects testing that have insufficient data available in the CBME. There is a process where the nominations are scored against each other in accordance with established criteria, and high scoring nominations may be funded for testing. To begin the nomination process, a form needs to be filled out that will be available from the Home Page of the CBME.

Once the nomination process is activated, users will have the opportunity to make endorsements to existing nominations that others have submitted. Once activated, users can also view current nominations and make endorsements by clicking the “Browse” button from the Home Page. From the drop-down menu, select “Current Nominations.” A listing of current nominations will be displayed.

Glossary

CBIAC Number	Chemical Biological Information Analysis Center document reference number is assigned by the CBRNIAC to every document accessible to the CBME database
CBRNIAC	Chemical, Biological, Radiological, and Nuclear Information Analysis Center
Challenge	Chemical warfare agents, biological warfare agents, simulants, or decontaminants used to test changes in material properties
Material	A sample coupon or item that is tested
Property	A physical/electrical characteristic of a material measured before and after being exposed to a challenge
Test Entry	Reported property test result of one challenge to one material

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