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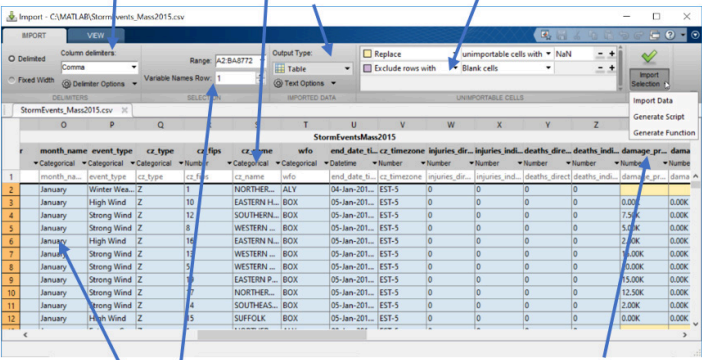
Importing and Exporting Data Using MATLAB

MATLAB® provides functionality to read and write data in many forms. This reference shows common use cases, but is not a comprehensive list of available functionality.

To see the relevant MATLAB documentation, click the >> icon below or visit *mathworks.com/import-export-data*.

Import Tool

Select **Import Data** to launch the Import Tool >>

Specify file formatting

Select output data type

Define rules for missing data

Select data to import

Generate code to automate import steps

Low-Level I/O

Low-level functions such as **fgetl** and **fscanf** allow the most control over I/O. >>

```
fid = fopen('myfile.txt');
data = fscanf(fid,'%f %q');
fclose(fid);
```

Format Specs

Type	Specifier	Output Class
Signed int Unsigned int	`%d,%d8,…` `%u,%u8,…`	`int32,int8` `uint32,uint8`
Floating point	`%f` `%f32`	`double` `single`
Text array	`%s, %q` `'TextType'`	`string`
Datetime	`%D,%{fmt}D`	`datetime`
Duration	`%T,%{fmt}T`	`duration`
Category	`%C`	`categorical`
Pattern	`%[…]`	`string`
Skip field	`%*k`	

Standard File Formats

Type	Single File	Multiple Files	Write	Advanced
Text	`readtable`	`tabularTextDatastore`	`writetable`	`detectImportOptions` `textscan`
Spreadsheet	`readtable`	`spreadsheetDatastore`	`writetable`	`detectImportOptions`
.mat	`load` `matfile`	`fileDatastore`	`save`	Custom datastore
Image	`imread`	`imageDatastore`	`imwrite`	Custom datastore
Video	`VideoReader`	`fileDatastore`	`VideoWriter`	Custom datastore
Audio	`audioread`	`fileDatastore`	`audiowrite`	Custom datastore
NetCDF	`ncread`	`fileDatastore`	`ncwrite`	`netcdf`
CDF	`cdfread`	`fileDatastore`	`cdfwrite`	`cdflib`
HDF5	`h5read`	`fileDatastore`	`h5write`	`H5, H5F, …`
XML	`xmlread`	`fileDatastore`	`xmlwrite`	Custom datastore
Binary	`fread`	`fileDatastore`	`fwrite`	Custom datastore

Use datastores for large or multiple files. `fileDatastore` can be used with any type of file. Use a custom datastore for more advanced control over read behavior. >>
Specialized I/O support can be found in several add-on products (*Simulink®, Database Toolbox™, Vehicle Network Toolbox™*, and *others*). See the *File Exchange* and *GitHub* for additional functionality.

Web Data

RESTful Web Service

`webread`	Read data
`webwrite`	Write data
`websave`	Save data to file
`weboptions`	Specify options such as authentication and timeout

JSON

`jsondecode`	`jsonencode`

HTTP Messaging

Use the HTTP interface for more complex web communication: >>

```
body = ...
   matlab.net.http.MessageBody(x);

request = ...
   matlab.net.http.RequestMessage ...
   (method,header,body);
```

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