



Section 508 Compliance Test Process for Microsoft Word Documents



Contents

DHS Sec	ction 508 MS Word Test and Reporting Process	2
DHS Sec	ction 508 Compliance Tests for MS Word	6
1.	Editable Content and Interactive Elements	
	1.1. Content	6
	1.2. Fillable Form Elements	8
	1.3. Language	9
2.	Color Dependence	. 10
3.	Data Tables	. 11
4.	Non-Textual Elements	. 12
	4.1. Images, Pictures, Objects ect	. 12
	4.2. Audio-only and Video-only Files	. 14
	4.3. Multimedia	. 15
5.	Security	. 16
6.	Accessible Version	. 17
MS Word	d 2010 Accessibility Checker results and test process cross-references	. 18
Section 5	508 Standards Manned to DHS MS Word Test Process	10





DHS Section 508 MS Word Test and Reporting Process

Section 508

The Section 508 technical standards include Functional Performance Criteria (FPC) as well as various technical requirements. Document accessibility requirements fall under FPC (a) Operable without vision, (b) Operable with low-vision, and (f) Operable without fine motor control. Some document requirements are closely related to technical requirements, and are therefore mapped accordingly. The mapping of each standard to this test process is provided on page 19.

Some criteria are listed in more than one test. Through the testing process, a test result can change from Compliant to Not Compliant, but do not change a result from Not Compliant to Compliant, otherwise your results will be inaccurate.

Please note: This test process was developed for Microsoft (MS) Word 2010, with modifications for 2007 highlighted where applicable. For other versions, modifications may be needed for some of the tool and ribbon names.

DHS Support

For access to further resources including training, please review the Office of Accessible Systems & Technology (OAST) intranet website. Please contact the DHS Accessibility Help Desk with any questions:

- OAST: http://dhsconnect.dhs.gov/org/comp/mgmt/cio/oast
- Accessibility Help Desk internal web site: Accessibility.DHS.gov
- Accessibility Help Desk: accessibility@dhs.gov.





Testing Tools

The application needed for this test process is Microsoft Word 2010 (preferred) or 2007 (acceptable). Within MS Word and MS Windows, the following tools, panes and views are employed in this test process:

Tool	Purpose	Open via	Shortcut
Navigation Pane ("Document Map" in Word 2007)	Shows paragraphs set as headings, as well as their levels.	Ribbon > View Tab > Show Group > Navigation Pane.	N/A
Styles Pane	Shows the style and/or formatting applied to the current paragraph	Ribbon > Home Tab > Styles Group > Styles	Ctrl+Alt+Shift+S
Reveal Formatting Pane	Shows the underlying settings for selected text (word, sentence, paragraph, table, or section)	Styles Pane > Style Inspector (>) > Reveal Formatting ()	Shift + F1
Show hidden characters	Shows non-printing characters used for formatting (carriage returns, TABs, table cell markers etc.)	Ribbon > Home Tab > Paragraph Group > Show/Hide (¶)	CTRL+ SHIFT + *
Draft View	Shows the content that is generally read by screen reader technologies (i.e., excludes running headers and footers, and floating images and tables)	View Tab > Document Views > Draft	N/A
Print Layout View	Shows the document as it would be printed (i.e., all of the content that should be accessible to the reader)	View Tab > Document Views > Print Layout	N/A
High Contrast Mode	Changes the display to high contrast for checking text readability for users with certain types of low vision	Windows Control Panel > Accessibility Options > Display Tab	Left Alt + Left Shift + Print Screen
Accessibility Checker (Word 2010 only)	Provides the capability to automatically find the location of some accessibility errors. This can be used as a complementary check, but not a replacement for the tests given in this test process. See page 18.	File Tab > Check for Issues > Check Accessibility	N/A





Limitations of the MS Word Application

Concerning accessibility, there are a number of elements that people who use assistive technologies will have limited or no access to in MS Word:

Applying Editing Restrictions

It is possible to restrict a document from editing by the intended readers. This is also known as 'protecting', or 'locking' a document. While an author's may wish to restrict editing of content, applying this to the document has the unfortunate side-effect of rendering the document unreadable for assistive technology users (i.e., potential readers who are blind cannot read the document independently). Restrictions may be set with or without a password. Restriction is allowed only when there is no password protection, or if all potential readers are supplied with the password.

Note: it is not possible to run the tests described herein with a protected document.

Forms

A common use for the restricted editing mode is to allow for the filling of form fields. In this mode, the document's content is protected, with the exception of form fields. Readers, including screen reader users, can only access the data areas. Whereas sighted readers can see and read the rest of the form (form identification and policy numbers, instructions, disclaimers, where to go for help etc.), screen reader users cannot read those parts of the form. Even if the screen reader user can obtain a password to unprotect the document, the form is extremely difficult to use because of the need to constantly change modes from unprotected to protected to read labels first, and then enter data. Because a screen reader user cannot read instructions, labels etc. and enter data concurrently in one mode of operation, there is a high likelihood of losing one's place, and filling in the wrong form field. Therefore, forms must not be distributed in MS Word format. Instead, they must be created in, or converted to, an accessible format (e.g., PDF).

Objects Not Inline (floating objects)

For images and tables to be read by a screen reader in MS Word, they must be placed inline with the text. An inline element reads like it is the next piece of text in the content. To achieve certain visual layout effects—such as placing an image so that text encloses/wraps around the image—professional publishing software provides a mechanism to define the element as part of the reading order. However, MS Word employs a system of 'floating' the image or table to achieve a similar visual effect. Unfortunately, MS Word does not feature any means of defining a read order. Consequently, floating elements in MS Word can never be made part of the read order for screen reader users. Therefore, if floating elements are absolutely necessary for visual layout, the document must be created in / converted to an accessible format (e.g., PDF).

Note: The accessibility checker in MS Word 2010 detects this issue under the heading 'Objects not inline'. See page 18 for details.

Text Boxes

Text boxes are often used to create call-outs, and to create visual layout effects as described above. However, text boxes are never read by screen reader technologies, even if they are







placed 'inline'. Therefore, if text boxes are absolutely necessary for visual layout, the document must be created in / converted to an accessible format (e.g., PDF).

Complex Tables

Complex data tables are defined as having more than one level of headers, and/or they contain merged or split cells. Complex tables are inherently inaccessible in MS Word, because there is no way to define cell roles—such as data cell versus heading, or heading spanning one column versus heading spanning *n* columns. There is also no way to define the links between merged and split cells with their associated headers. Consequently, screen reader users have no means to identify what headers are associated with a given data cell. Therefore, if complex tables are absolutely necessary, the document must be created in / converted to an accessible format (e.g., PDF).





DHS Section 508 Compliance Tests for MS Word

1. **Editable Content and Interactive Elements**

Editable content and interactive elements include selectable text, graphics, navigation elements, forms, button controls, etc.

1.1. Content

Overview

Styles and Formatting

Styles and formatting are applied on editable content in MS Word to define the document's content structure and how elements relate to one another. These elements include heading levels, paragraphs, tables, lists, and images, to name a few. If content is not properly defined with styles and formatting, the specific type of content will not be identifiable, or in some cases, will not even be readable, by screen readers.

Reading Order

Certain elements are automatically included in or excluded from MS Word's read order. The Draft view is a close representation of what a screen reader can access when reading the document's main content. Floating images and tables can never be navigated to with a screen reader. Running headers and footers, and footnotes should be outside of the read order, but can be navigated to if needed.

Elements must be either inside or outside the read order, depending on the type of element and whether it repeats or spans across pages (see *How to test*, below). Elements must also be formatted so that they are navigable.

Note: If any read order tests fail, but visual formatting must be retained exactly for distribution, then the document must be converted to an accessible format (e.g., PDF).

Tab Order

MS Word documents do not have a particular tab order that can be manually set. Documents are read linearly according to the structure of the inline elements (top to bottom, left to right, and omitting the header and footer areas of the page).

When reading or editing a document in Word, pressing the TAB key will insert a tab character. The two exceptions to this are (1) in a table, where the tab key moves between cells (and CTRL-TAB inserts a tab character; and (2) in a fillable form that has been restricted from editing.

Note: Tab order is not a concern for accessibility checks of MS Word documents.





Content How to Test

Use the Styles Pane and the Reveal Formatting Pane. Also compare Draft View to Print Layout View.

- 1 Check that each element's style and/or formatting accurately conveys the document's visual representation, including:
 - Heading levels: there must be an outline level number value in the Paragraph area of the Reveal Formatting Pane. Note: Headings should ideally use the built-in styles of Heading 1, Heading 2 etc. The hierarchy of levels may also be checked with the Navigation Pane.
 - Lists: the Bullets and Numbering type and indent level formatting should show in the Reveal Formatting Pane.
 - Links: the character style should be 'Hyperlink' in the Reveal Formatting Pane.
 - **Columns:** The number of columns should show in the Section area of the Reveal Formatting Pane.
 - No text boxes: Visual layout of information on the page should not be achieved using text boxes. For identification, when text boxes are selected, a 'Drawing Tools' or a 'Text Box Tools' tab will appear in the Ribbon.
- 2 Check that objects are inline: Image placeholders, data tables, call-outs, footnote links, and other content necessary for understanding the document must be 'inline' and show up in Draft View (see also p.4). Information contained in running headers and footers should show at least once in Draft View (e.g., a 'CONFIDENTIAL' running header should also appear on the first page in Draft View).
- 3 Check for cross-page continuation of items in the read order: When selecting data tables, or bulleted/numbered lists, the element should be highlighted across all relevant pages. When an image spans more than one printed page, alternative text must be included on both pages.
- 4 Check that running headers and footers, and page numbers do not show up in Draft View (i.e., they are correctly omitted from the read order.)

Content Test Results

- If the headings, lists, links, or columns are not set to match the document's visual formatting, mark Web 22 (d), 31 FPC (Functional Performance Criteria) (a) and (b) as Not Compliant (NC).
- If text boxes are employed, mark 31 FPC (a) and (b) as NC.
- If necessary items do not show in Draft View, mark 31 FPC (a) and (b) as NC.
- If information contained in running headers does not appear at least once in Draft View, mark 31 FPC (a) and (b) as NC.
- If cross-page data tables and bulleted/numbered lists are not connected, mark 31 FPC (a) and (b) as NC.
- If a cross-page image does not have necessary alternate text applied on either page of the image, mark 31 FPC (a) and (b) as NC.
- If repeating items are un-necessary, but they are included in the read order, mark 31 FPC (a) and (b) as NC.
- If all items are correctly formatted and appear correctly as either in or out of the read order, mark 22 Web (d), 31 FPC (a) and (b) as Compliant (C).

Applicable 508 Standards

1194.22 Web (d)

1194.31 FPC (a)

1194.31 FPC (b)





1.2. Fillable Form Elements

Overview

Fillable forms are inherently inaccessible to screen reader users in MS Word. Forms MUST be created in or converted to an accessible format (e.g., PDF). See Forms on page 4 for more details.

Note: This requirement does not apply to non-fillable forms.

Fillable Form Elements How to Test

1 Inspect the document for fillable form fields:
The directions/instructions for users, combined with blank fields can be used to determine whether the form is intended to be fillable. Also try tabbing through the document (if the form is fillable, the focus will only land in fillable form fields).

Fillable Form Elements Test Results

- If the document is a fillable form, mark 22 Web (n), 31 FPC (a) and (f) as NC.
- If the document is not a fillable form, mark 21 Web (n) as Not Applicable (NA).

Applicable 508 Standards

1194.21 Web (n)

1194.31 FPC (a)

1194.31 FPC (f)





1.3. Language

Overview

Language settings allow screen reader software to select the correct synthesis engine for proper pronunciation.

Note: There is no setting for language that can be applied to the entire document in MS Word. It is only possible to set your editing language, but this setting does not get applied to the actual file containing the document. This is different to PDF documents, which do have a language setting for the entire document.

Language How to Test

Use the Reveal Formatting Pane

1 Check the settings of paragraphs of text that differ to the main language of the document:
The language setting should be English (U.S.), or Spanish (Spain, International Sort), or other language as appropriate.

Language Test Results

- If passages that differ in language to the main language of the document are not correctly set, mark 31 FPC (a) as NC.
- If language is correctly set, mark 31 FPC (a) as C.

Applicable 508 Standards

1194.31 FPC (a)





2. Color Dependence

Overview

Information provided by color must also be available in text.

Color dependency:

- Color shall not be the only method used to convey information, indicate an action, prompt a response, or emphasize text. (e.g., the red fields are required, yellow items should be selected first, or green fields can be ignored.)
- Dependency is often indicated by a specific color (e.g., Green status items to represent complete).
- Color dependency is often used in charts.
- This requirement does not imply that color cannot be used.

High Contrast Mode:

• Text must be visible when viewed in 'High Contrast' mode.

Color & Contrast How to Test

Use visual inspection, and use High Contrast Mode combined with the Reveal Formatting Pane

- 1 Visually check whether information is being presented in color: If yes, check to see if the same information is also represented textually.
- 2 Check whether text displays in High Contrast Mode: If text does not display correctly, inspect the color settings in the formatting pane for erroneous settings (a common error is to incorrectly set black text to 'black' rather than the proper setting of 'automatic').

Color & Contrast Test Results

- If information is being presented only in color, mark 22 Web (c) and 31 FPC (a) and (b) as NC.
- If information is not displaying in High Contrast Mode, mark 22 Web (c) and 31 FPC (a) and (b) as NC.
- If color is being used redundantly, and if the text renders properly in High Contrast Mode, mark 22 Web (c) and 31 FPC (a) and (b) as C.

Applicable 508 Standards

1194.22 Web (c)

1194.31 FPC (a)

1194.31 FPC (b)





3. Data Tables

Overview

Data table column and row headers must be identified.

- Simple data tables are defined as having only one level of headers, and no merged or split cells.
 Simple data tables can be made accessible in Word.
- Complex data tables have more than one level of headers, and/or contain merged or split cells. Complex tables are inherently inaccessible in MS Word, because there is no way to set row headings, and there is no way to define the links between merged and split cells with their headers. For more information, see page 5.
- Using styles to identify headers does not meet this standard.
- An image of a data table does not meet this standard.

Note: Do not check layout tables; this standard applies to data tables only.

Data Tables How to Test

Use the Reveal Formatting Pane to view table formatting. Then determine if a data table is simple or complex.

- 1 If the data table is simple and contains column headers in the first row: Check that 'Repeat Header Row' is set for the table properties in the formatting pane. (Note: for this test to work, the cursor must be placed in the first row of the table).
- 2 If complex data tables are necessary: The document must be converted to an accessible format (e.g., PDF).

Data Tables Test Results

- If the data table is simple, and does not have the first row marked as repeating, mark 22 Web (g) as NC.
- If the data table is complex, mark 22
 Web (g) and 22 Web (h) as NC.
- If the data table is simple, and has the first row marked as repeating, mark 22 Web (g) C and 22 Web (h) as NA.

Applicable 508 Standards

1194.22 Web (g)

1194.22 Web (h)





4. Non-Textual Elements

Figures, images, animations, graphs, and audio files must have equivalent descriptions for screen reader users. Multimedia files require synchronized captioning and audio descriptions.

4.1. Images, Pictures, Objects ect

Overview

Images, Pictures, Object etc.:

- Non-decorative images must contain an alternative text attribute which can be read by screen readers.
- Images that convey information must provide an equivalent description in the form of alternative
 text. If images contain text that conveys key information, the text must also be represented in the
 alternative text. For example the alternative text description for the DHS seal should be
 "Department of Homeland Security seal".
- Decorative images that do not convey information should omit descriptions so that they are not announced by a screen reader.
- Signatures and handwritten images should include descriptive alternative text

Charts, and Other Graphical Representations of Data:

- If the chart is intended only to show a trend, the alternative text content should contain a
 description of the trend.
- Charts that contain great detail should include, or link to, a compliant data table with the chart's source data.
- Alternative text for complex images such as charts, graphs and flow charts, should contain office contact information so that individuals that need additional assistance understanding the graphics can receive the help he/she needs.



Context menu (right click) > Format Picture > Alt-Text > Description field. (Word 2007: Context menu (right click) > Format > Size > Alt Text Tab)

- 1 Check that each non-decorative image has a text equivalent description: The purpose and function of the picture should be given, within the context of the surrounding information.
- 2 Check that each decorative image has no alternative text associated with it: Decorative images should show a blank description field. (A common editing error results in the image's path and/or filename populating the description field).
- 3 Check that detailed images have links to sources: A compliant data table with the chart's source data can be adjacent to, or linked from the chart. Complex images should contain office contact information.

Images Test Results

- If a non-decorative image does not have an equivalent text description, mark 22 Web (a), 31 FPC (a) and (b) as NC.
- If decorative images contain erroneous text descriptions, mark 22 Web (a) and 31 FPC (a) as NC.
- If all non-decorative images have no text description, mark 22 Web (a) and 31 FPC (a) as C.
- If detailed images do not have links to sources, mark 22 Web (a), 31 FPC (a) and (b) as NC.
- If images contain appropriate alternative text descriptions, mark 22 Web (a) as C.

Applicable 508 Standards

1194.22 Web (a)

1194.31 FPC (a)

1194.31 FPC (b)





4.2. Audio-only and Video-only Files

Overview

Audio or video only files must be accompanied with an accurate text equivalent. Audio files only play audible words or sounds and are considered non-text interface elements. Video files that only display visual information are also considered non-text interface elements. Both file types require equivalent text descriptions to describe the content. Usually, this is a transcript for audio-only files. For video files with no sound, a description of the content is sufficient. The image that represents the audio or video file must also have alternative text.

Audio or Video Players

Software players must meet 1194.21 Software standards. For assistance testing the software player for Section 508 compliance contact the Accessibility Helpdesk at Accessibility.DHS.gov or via e-mail at Accessibility@dhs.gov.

Audio or Video How to Test

Play audio or video

- 1 Check for an accurate transcript for audio-only files: Include all spoken dialogue, and all relevant audio cues (e.g., doorbell rings, car honks, etc.).
- 2 Check for an accurate text description for video-only files: Include all visual cues (e.g., driver hands license to officer).
- 3 Check that images representing audio or video files contain alternative text: See page 12 for test details.

Audio or Video Test Results

- If an audio file does not have an equivalent text transcript, or videodescription mark 31 FPC (c) and (d) as NC.
- If a video file does not have videodescription mark 31 FPC (a) and (b) as NC.
- If the image representing the file does not contain adequate alternative text, mark 22 Web (a) as NC.
- If all audio and video interface elements have an equivalent text (transcript), or video-description mark 22 Web (a), 31 FPC (a), (b), (c) and (d) as C.

Applicable 508 Standards

1194.22 Web (a)

1194.31 FPC (a)

1194.31 FPC (b)

1194.31 FPC (c)

1194.31 FPC (d)





4.3. Multimedia

Overview

Multimedia is the combination of more than one time-based medium including visuals and sound to match at the same rate and exactly together to convey information and instruction. All multimedia presentations must contain captioning for auditory information and audio descriptions for information conveyed visually only.

Multimedia software players must meet 1194.21 Software standards. For assistance testing the software player for Section 508 compliance contact the Accessibility Helpdesk at Accessibility.DHS.gov or via e-mail at Accessibility@dhs.gov.

Multimedia How to Test

Play multimedia

- 1 Manually inspect the multimedia for captioning:
 Multimedia must be synchronized with the audible sounds and dialog. Descriptions of important sounds must be included in captions.
- **Manually inspect the multimedia for audio descriptions:** If there are visual actions necessary for comprehension, check that they are adequately described in the audio track.

Multimedia Test Results

- If there are no synchronized captions, mark 22 Web (b), 24 Multimedia (c) as NC.
- If audio descriptions are needed and not provided, mark 22 Web (b), 24 Multimedia (d) as NC.
- If the multimedia includes synchronized captions and audio descriptions, mark 22 Web (b) 24 Multimedia (c) and (d) C.

Applicable 508 Standards

1194.22 Web (b)

1194.24 Multimedia (c)

1194.24 Multimedia (d)





5. Security

Word Documents that are restricted from editing are inherently inaccessible to screen reader users in MS Word. Restriction is allowed only when there is no password protection, or if all potential readers are supplied with the password. See page Error! Bookmark not defined. for more details.

Security How to Test

- 1 Stop any restrictions given when opening the document: A 'Restrict Formatting and Editing' pane automatically opens with the document to describe any restrictions that are in place. Select the 'Stop Protection' button at the bottom of the pane.
 - If a password is required: Check with the author and/or requesting component to determine whether the password will automatically be given to *all* potential readers.

Security Test Results

- If the document is password protected and the password will not be automatically available to all a potential readers, mark 31 FPC (a) and (b) as NC.
- If the document is unrestricted, or restricted without the need for a password, mark 31 FPC (a) and (b) as C.

Applicable 508 Standards

1194.31 FPC (a) 1194.31 FPC (b)





6. Accessible Version

Overview

Alternative versions for accessibility are only permitted when the primary content cannot be made compliant.

Check for a Text only or Alternative Version of Content:

- If the primary content is not compliant but can be made compliant, then it must be remediated.
- Text only files must be maintained and updated with the primary content.
- Text-only versions of documents are not acceptable.

Accessible Version How to Test

Use manual inspection

Manually check that the primary content cannot be made accessible. Check that the text only or alternative version contains identical information as the primary source.

Accessible Version Test Results

- If there is no alternative version(s), mark 22 (k) as NA.
- If the primary document can be made compliant, mark 22 (k) as NC.
- If the alternative accessible version is not compliant, mark 22 (k) as NC.
 The alternative version must be fully tested.
- If the primary content cannot be made accessible, and the alternative version contains equivalent accessible information, mark 22 (k) as C.

Applicable 508 Standards

1194.22 Web (k)





MS Word 2010 Accessibility Checker results and test process cross-references

The MS Word Automated Accessibility Checker can be used to automatically locate some of the items in this test process. The checker can be a useful tool to get a guick first impression of the level of accessibility in a document. It can also be used to help authors systematically address each instance of certain types of accessibility errors in their document.

The checker is useful for identifying images that have no alternative text, or that erroneously contain filenames in place of alternative text. (Note that decorative images that should have no alt-text will be flagged by the checker.)

The checker is also useful for identifying where hyperlinks should have a meaningful name, instead of just a URL.

The checker can find merged and split cells in complex tables. Because MS Word cannot handle merged and split cells, the advice contained in the checker is to remove such formatting. DHS's advice is to convert the files to an accessible format (e.g., PDF).

Note: in order for the checker to work, the document must be saved in the ".docx" format, and saved from within MS Word 2010. When saving, the "Maintain compatibility with previous versions of Word" must be unchecked.

Accessibility checker error (alphabetical order)	Related 508 test process section
Blank Table Rows or Columns	N/A
Check Reading Order	N/A
Heading is Too Long	N/A
Infrequent Headings	N/A
Merged or Split Cells	3. Data Tables
Missing Alt Text: Picture, Text Box, Other Elements	4.1. Images
Missing Alt Text: Tables	N/A
No Header Row Specified	3. Data Tables
Objects Not Inline	1.1. Content
Repeated Blank Characters	N/A
Skipped Heading Level	1.1. Content
Unclear Hyperlink Text	1.1. Content
Unstructured Document	1.1. Content
Using Image Watermark	N/A



Section 508 Standards Mapped to DHS MS Word Test Process

The <u>Seciton 508 standards (http://section508.gov/index.cfm?fuseAction=stdsdoc)</u> of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d), are mapped to DHS test process in the following way:

Section 1194.n, Standard		DHS	MS Word test process
& subsection	Standard	Diis	word test process
22 Web (a)	Images	4.1. 4.2.	Images Audio-only and Video-only Files
22 Web (b)	Multimedia	4.3.	Multimedia
22 Web (c)	Color	2.	Color
22 Web (g)	Data table headers	3.	Data Tables
22 Web (h)	Data table cells	3.	Data Tables
22 Web (k)	Text-only alternative	6.	Accessible Version
22 Web (n)	Forms	1.2.	Fillable Form Elements
24 Multimedia (c)	Captions	4.3.	Multimedia
24 Multimedia (c)	Audio descriptions	4.3.	Multimedia
31 FPC (a)	Operable without vision	1.1. 1.2. 1.3. 4.1. 4.2. 4.3. 5.	Content Fillable Form Elements Language Images Audio-only and Video-only Files Multimedia Security
31 FPC (b)	Operable with low vision	2. 4.1. 4.2. 4.3.	Color Images Audio-only and Video-only Files Multimedia
31 FPC (c)	Operable without hearing	4.2. 4.3.	Audio-only and Video-only Files Multimedia
31 FPC (f)	Operable without fine motor control	1.2.	Fillable Form Elements