

VPAT Accessibility Conformance Report

(Based on ITI VPAT®)

Name of Product	Knovel
Date Last Updated	November 19, 2024
Completed by	Jay Nemchik (Elsevier Digital Accessibility Team)
Applicable Standards/Guidelines	This document rates Knovel according to the W3C WCAG 2.1 A and AA requirements.
Contact for More Information	Elsevier Digital Accessibility Team accessibility@elsevier.com
Testing Tools and Methods	<ul style="list-style-type: none">• Hands-on keyboard operation• DevTools/Code inspection• Mozilla Firefox 115 and Chrome 124 on Windows 11 22H2• NVDA screen reader 2023.3• WAVE Browser Extension• Color Contrast Analyzer• W3C Web Accessibility Initiative (WAI) Pages• Elsevier Accessibility Checklist
Document Sections	This review document includes all WCAG 2.1 A and AA checkpoints, organized into 7 logical sections: <ul style="list-style-type: none">• Visuals• Keyboard• Headings and Structure• Labeling• Multimedia• Usability• Mobile User Experience
Pages Covered	Header, Footer, Navigation, Homepage, Search Results, Browse, Material Property Search, Unit Converter, Table of Contents, eBook Reader, Table Viewer
Terms	<ul style="list-style-type: none">• Supports: The functionality of the product has at least one method that meets the criteria without known defects or meets with equivalent facilitation.• Partially supports: Some functionality of the product does not meet the criteria.• Does not support: Majority of functionality of the product does not meet the criteria.• Supports (N/A): According to W3C on conformance, "If there is no content to which a success criterion applies, the success criterion is satisfied."
Notes/Terminology	<ul style="list-style-type: none">• "AT" stands for Assistive Technology such as screen readers, voice input, etc.

Conformance Summary

WCAG 2.1 Success Criterion	Level	Evaluation
1.1.1: Non-text Content	A	Partially supports
1.2.1: Audio-only and Video-only (Prerecorded)	A	Supports (N/A)
1.2.2: Captions (Prerecorded)	A	Supports (N/A)
1.2.3: Audio Description or Full Text Alternative	A	Supports (N/A)
1.2.4: Captions (Live)	AA	Supports (N/A)
1.2.5: Audio Description	AA	Supports (N/A)
1.3.1: Info and Relationships	A	Partially supports
1.3.2: Meaningful Sequence	A	Supports
1.3.3: Sensory Characteristics	A	Supports
1.3.4: Orientation (2.1)	AA	Supports
1.3.5: Identify Input Purpose (2.1)	AA	Supports (N/A)
1.4.1: Use of Color	A	Supports
1.4.2: Audio Control	A	Supports (N/A)
1.4.3: Contrast (Minimum)	AA	Partially supports
1.4.4: Resize text	AA	Partially supports
1.4.5: Images of Text	AA	Supports
1.4.10: Reflow (2.1)	AA	Partially supports
1.4.11: Non-Text Contrast (2.1)	AA	Partially supports
1.4.12: Text Spacing (2.1)	AA	Supports
1.4.13: Content on Hover or Focus (2.1)	AA	Does not support
2.1.1: Keyboard	A	Partially supports
2.1.2: No Keyboard Trap	A	Supports
2.1.4: Character Key Shortcuts (2.1)	A	Supports (N/A)
2.2.1: Timing Adjustable	A	Supports (N/A)
2.2.2: Pause, Stop, Hide	A	Does not support
2.3.1: Three Flashes or Below Threshold	A	Supports (N/A)
2.4.1: Bypass Blocks	A	Partially supports
2.4.2: Page Titled	A	Supports
2.4.3: Focus Order	A	Partially supports
2.4.4: Link Purpose (In Context)	A	Supports
2.4.5: Multiple Ways	AA	Supports
2.4.6: Headings and Labels	AA	Supports
2.4.7: Focus Visible	AA	Partially supports
2.5.1: Pointer Gestures (2.1)	A	Supports
2.5.2: Pointer Cancellation (2.1)	A	Supports
2.5.3: Label in Name (2.1)	A	Partially supports
2.5.4: Motion Actuation (2.1)	A	Supports (N/A)
3.1.1: Language of Page	A	Supports
3.1.2: Language of Parts	AA	Does not support
3.2.1: On Focus	A	Supports

WCAG 2.1 Success Criterion	Level	Evaluation
3.2.2: On Input	A	Supports
3.2.3: Consistent Navigation	AA	Partially supports
3.2.4: Consistent Identification	AA	Supports
3.3.1: Error Identification	A	Partially supports
3.3.2: Labels or Instructions	A	Partially supports
3.3.3: Error Suggestion	AA	Supports
3.3.4: Error Prevention (Legal, Financial, Data)	AA	Supports
4.1.1: Parsing	A	Supports
4.1.2: Name, Role, Value	A	Partially supports
4.1.3: Status Messages (2.1)	AA	Supports

WCAG 2.1 A and AA Success Criteria

Visuals

WCAG 2.1 Checkpoint	Conformance Level	Remarks
1.1.1: Non-Text Content (A) Provide text alternatives for non-text content (e.g. images)	Partially supports	Many images and icons include text equivalents. Exceptions: Homepage: Image links (e.g., within the carousel) need alt text indicative of their link destination. Table of Contents: The icons depicting what category each item within the table of contents is need alternative text. Unit Converter: The input unit keyboards do not have any alt text. eBook Reader: The PDFs are made using canvas elements, which do not communicate to AT.
1.3.3: Sensory Characteristics (A) Do not rely on sensory characteristics of components such as shape, size, visual location, orientation, or sound	Supports	Content does not rely on sensory characteristics for all content.
1.4.1: Use of Color (A) Color is not used as the only visual means of conveying info	Supports	Color is not used as the only means of conveying information.
1.4.3: Color Contrast (Minimum) (AA) Text has enough contrast with the background (4.5:1 for small text and 3:1 for large text)	Partially supports	Most text has enough contrast with its corresponding background. Exceptions: Material Property Search: The Drag and Drop gray text on white background does not have enough contrast. Table of Contents: When selecting available Tables (or other options) to view in the resource, the orange text on white background does not have enough contrast.
1.4.4: Resize Text (AA) Text can be enlarged up to 200% without loss of functionality.	Partially supports	Text can be enlarged to 200% and most content remains functional. Exceptions: Navigation: Several of the navigation options can be cut-off at 200% magnification.
1.4.5: Images of Text (AA) Text is used rather than images of text, except where the presentation of text is essential, such as logos	Supports	No images of text are used other than for Logos or essential presentation.

<p>1.4.10: Reflow (AA) Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for: Vertical scrolling content at a width equivalent to 320 CSS pixels; Horizontal scrolling content at a height equivalent to 256 CSS pixels.</p>	Partially supports	<p>Knovel uses a responsive view that properly scrolls in only one direction once width reaches low CSS pixels on nearly all pages.</p> <p>Exceptions: eBook Reader: There is no responsive view for the PDF viewer, requiring scrolling in two directions.</p>
<p>1.4.11: Non-Text Contrast (AA) User interact components and graphical objects have a contrast ratio of at least 3:1 against adjacent color(s).</p>	Partially supports	<p>Most non-text UI components and graphical objects have at least a 3:1 contrast ratio.</p> <p>Exceptions: Table Viewer: The checkboxes on the left of the table viewer do not have enough contrast at 1.98:1.</p>
<p>1.4.12: Text Spacing (AA) In content implemented using markup languages that support the following text style properties, no loss of content or functionality occurs by setting all the following and by changing no other style property:</p> <p>Line height (line spacing) to at least 1.5 times the font size; Spacing following paragraphs to at least 2 times the font size; Letter spacing (tracking) to at least 0.12 times the font size; Word spacing to at least 0.16 times the font size.</p>	Supports	<p>The site allows users to adjust the text spacing without causing loss of content or functionality.</p>

1.4.13: Content on Hover or Focus (AA) Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true: <ul style="list-style-type: none"> Dismissable Hoverable Persistent 	Does not support	There is no content that appears on hover or focus on most pages. Exceptions: Navigation: The tooltips that appear for navigation options (e.g Property Search, My Knovel, etc.) are not hoverable. Homepage: Concept Synonyms tooltip is not dismissable or hoverable. Search Results: The help tooltips are not hoverable or dismissable. Unit Converter: The help tooltips are not hoverable or dismissable.
2.3.1: Three Flashes or Below Threshold (A) No more than three flashes in a 1-second period, or the flashes are below the defined thresholds	Supports (N/A)	No flashing content exists.

Keyboard

WCAG 2.1 Checkpoint	Conformance Level	Remarks
1.3.2: Meaningful Sequence (A) The correct reading sequence can be programmatically determined	Supports	The correct reading sequence is logical with the DOM order matching the visual order.
2.1.1: Keyboard (A) All functionality is available from a keyboard, except for tasks such as drawing	Partially supports	Most content is keyboard operable. Exceptions: eBook Reader: Keyboard users cannot add notes, as it requires clicking a mouse. Unit Converter: The My Settings and Info links cannot be reached by keyboard. The options within the Gauge Conversions dropdown cannot be reached by keyboard. Users cannot change the significant digits input with the keyboard. All of the unit input table's content cannot be reached by keyboard. The various Unit buttons (Select Input Unit, New Unit, etc.) cannot be reached by keyboard. The help text next to each text input cannot be read by those using keyboards only.
2.1.2: No Keyboard Trap (A) The user can use the keyboard to move through page elements and is not trapped on a particular element	Supports	There are no keyboard traps on Knovel.
2.1.4: Character Key Shortcuts (A)	Supports (N/A)	There are no character key keyboard shortcuts on Knovel.

<p>If a keyboard shortcut is implemented in content using only letter (including upper- and lower-case letters), punctuation, number, or symbol characters, then at least one of the following is true:</p> <ul style="list-style-type: none"> • Turn off • Remap • Active only on focus 		
<p>2.4.3: Focus Order (A) Users can tab through the elements of a page in a logical order</p>	Partially supports	<p>Tab order is logical on the site for the most part.</p> <p>Exceptions: Closing dialog boxes should return keyboard focus to the element that activated the dialog.</p> <p>Homepage: There are many non-interactive elements that have been given tabindexes.</p> <p>Search Results: The Save To My Knovel dialog does not trap or manage focus properly.</p> <p>Table Viewer: All of the checkboxes have an unnecessary tab stop. The table header buttons should be reached before the checkboxes in the table. The table header expandable options list do not return the user's focus to the appropriate spot when closed.</p> <p>Material Property Search: Many interactive elements have two tab-stops.</p>
<p>2.4.7: Focus Visible (AA) The page element with the current keyboard focus has a visible focus indicator</p>	Partially supports	<p>Most elements use a custom visible focus. The custom focus uses a CSS border, instead of an outline, which causes some graphical issues at times.</p> <p>Exceptions: Unit Converter: The down arrow for opening the Gauge Conversion does not have a visible focus.</p>
<p>3.2.1: On Focus (A) When a UI component receives focus, this does not trigger unexpected actions.</p>	Supports	<p>Focusable elements do not cause unexpected actions when receiving focus.</p>

Headings and Structure

WCAG 2.1 Checkpoint	Conformance Level	Remarks
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1.3.1: Information and Relationships (A) Info, structure, and relationships can be programmatically determined	Partially supports	<p>There are headings used on some pages. Landmarks are used sparingly.</p> <p>Exceptions:</p> <p>Footer: Groups of related links should be in unordered lists, such as the copyright links and About Knovel links.</p> <p>Browse: The content underneath each section should be in a single unordered list.</p> <p>Table of Contents: There should be a heading with actual text before the actual table of contents. "New In..." text should be a heading.</p> <p>eBook Reader: The content of the eBook cannot be understood by AT, as no semantics are used.</p> <p>Table Viewer: The checkboxes should not in a separate table element.</p> <p>Unit Converter: Tables should not be used to structure content.</p>
2.4.1: Bypass Blocks (A) Users can bypass repeated blocks of content.	Partially supports	<p>A skip to main content link exists on all pages. Only a few headings or landmarks exist, so screen reader users could struggle to skip past blocks of content.</p> <p>Exceptions:</p> <p>The skip to main content link only works on the homepage.</p>
2.4.6: Headings and Labels (AA) Headings and labels are clear and consistent.	Supports	The headings that are used on the site are clear and consistent.
3.1.1: Language of Page (A) The language of the page is specified	Supports	The language is defined as lang="en" on all pages.
3.1.2: Language of Parts (AA) Specify the language of text passages that are in a different language than the default language of the page.	Does not support	There are books or other technical references that can be in a different language than the page default, and they are not marked with a lang attribute.
4.1.1: Parsing (A) Use valid, error-free HTML	Supports	<p>HTML and CSS passes concerning these 4 specific criteria:</p> <ul style="list-style-type: none"> (i) elements have complete start and end tags, (ii) elements are nested according to their specifications (iii) elements do not contain duplicate attributes (iv) any IDs are unique, except where the specifications allow these features.

Labeling

WCAG 2.1 Checkpoint	Conformance Level	Remarks
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1.3.5: Identify Input Purpose (AA) The purpose of each input field collecting information about the user can be programmatically determined when: The input field serves a purpose identified in the Input Purposes for User Interface Components section; and the content is implemented using technologies with support for identifying the expected meaning for form input data.	Supports (N/A)	No evaluated pages on Knovel use personal input fields.
2.4.2: Page Titled (A) The page has a title describing its topic or purpose	Supports	The title changes accordingly for each page and is descriptive.
2.4.4: Link Purpose (In Context) (A) The purpose of each link can be determined from the link text or surrounding context.	Supports	Links used have an identifiable purpose from the link text or surrounding context.
2.5.3: Label in Name (A) For user interface components with labels that include text or images of text, the name contains the text that is presented visually.	Partially supports	User interface components that have visible text contain that text consistently within the accessible name. Exceptions: Header: The User menu's label does not match the visible text.
3.2.4: Consistent Identification (AA) UI components used across the web site are identified consistently on every page.	Supports	Most UI components are consistent across the site.
3.3.1: Error Identification (A) Input errors are clearly marked and described to the user.	Partially supports	Errors are given but need work in order to announce them to screen readers. Exceptions: Material Property Search: Input errors are only marked in red and do not communicate programmatically.

<p>3.3.2: Labels or Instructions (A)</p> <p>Items requiring user input are clearly labeled or have clear instructions.</p>	<p>Partially supports</p>	<p>Most input areas use titles or placeholder attributes but are missing true labels.</p> <p>Exceptions:</p> <p>Navigation: The labels for the unit inputs for Unit Conversion are missing. The button dropdown needs a label to describe what the user is selecting.</p> <p>Header: The search input's aria-label needs a clearer label.</p> <p>Homepage: The search input should let the user know there are suggested search options, and how to peruse them.</p> <p>Table Viewer: Filter Table does not have a proper label.</p> <p>Material Property Search: The dropdown for choosing the operator for each property name does not have a descriptive label. The Filter by Property Name input is missing a label. The material name search should let users know there are search options, and how to peruse them.</p> <p>Unit Converter: All of the text inputs in the unit converter do not have labels.</p>
<p>3.3.3: Error Suggestion (AA)</p> <p>When the user makes an input error, give suggestions for valid input.</p>	<p>Supports</p>	<p>The error text given is sufficient for error suggestions in most cases.</p>
<p>4.1.2: Name, Role, Value (A)</p> <p>For all UI components, the name, value, and role can be programmatically determined.</p>	<p>Partially supports</p>	<p>Most custom UI components do not have the proper ARIA attributes, and therefore, cannot communicate their state changes and roles to screen readers effectively.</p> <p>Exceptions:</p> <p>Homepage: The Engineering Newsfeed toggle does not have a descriptive label.</p> <p>Browse: Tabs need appropriate ARIA markup. Apply aria-selected="true" to the active button (All Content, My Subscription) and aria-selected="false" to the inactive button instead of aria-pressed. The chevron icons that expand/collapse the topic areas have labels that need to change upon expanding the topic list. The ARIA tree markup should only be used if the proper keyboard interaction exists.</p> <p>Table of Contents: The Expand/Collapse elements in the table of contents need labels that state what will be expanded or collapsed.</p> <p>eBook Reader: All links on the page that cause same page changes, such as the Expand/Collapse table of contents elements, should be button elements. The Expand/Collapse elements in the table of contents need aria-expanded attributes.</p> <p>Table Viewer: The Expand/Collapse elements in the table of contents should indicate which element they are expanding or collapsing.</p>

		<p>Material Property Search: The Remove 'X' button for removing properties should be specific about which property it will remove.</p> <p>Unit Converter: The currently selected button for notation should be given aria-selected="true", and the others given aria-selected="false". The Select Input/Output Unit and New Unit buttons need to be given aria-expanded attributes. The downward arrow to open Gauge Conversions does not have any button text. The Flip Units and Clear All buttons in the unit converter need button text.</p>
4.1.3: Status Messages (AA) In content implemented using markup languages, status messages can be programmatically determined through role or properties such that they can be presented to the user by assistive technologies without receiving focus.	Supports	<p>When saving preferences or search results, a status message appears that does not communicate to assistive technology.</p>

Multimedia

WCAG 2.1 Checkpoint	Conformance Level	Remarks
1.2.1: Audio-only or Video-only (Prerecorded) (A) Provide alternatives for pre-recorded audio-only or video-only content.	Supports (N/A)	There is no pre-recorded audio-only or video-only content.
1.2.2: Captions (Prerecorded) (A) Provide captions for pre-recorded audio	Supports (N/A)	There is no pre-recorded audio or synchronized media in the applications.
1.2.3: Audio Description or Media Alternative (Prerecorded) (A) Provide alternatives for pre-recorded synchronized audio/video	Supports (N/A)	There is no synchronized media in the applications.
1.2.4: Captions (Live) (AA) Provide captions for live audio in synchronized audio/video.	Supports (N/A)	There is no live audio in synchronized audio/video.

1.2.5: Audio Description (Prerecorded) (AA) Provide an audio description of pre-recorded video.	Supports (N/A)	There is no pre-recorded video in the applications.
1.4.2: Audio Control (A) Audio can be paused and stopped, or the audio volume can be changed.	Supports (N/A)	There is no automatically playing audio on the site.
2.2.2: Pause, Stop, Hide (A) Users can stop, pause, or hide moving, blinking, scrolling, or auto-updating information.	Does not support	There needs to be a way to stop the constantly changing placeholder text in the Material Property Search field.

Usability

WCAG 2.1 Checkpoint	Conformance Level	Remarks
2.2.1: Timing Adjustable (A) Users are warned of time limits shorter than 20 hours and time limits can be turned off or extended	Supports (N/A)	There does not appear to be a session timeout.
2.4.5: Multiple Ways (AA) More than one way is available to navigate to other web pages.	Supports	All pages can be accessed in multiple ways.
3.2.2: On Input (A) Changing the setting of a checkbox, radio button, or other UI component does not trigger unexpected changes in context.	Supports	User inputs do not cause unexpected actions.
3.2.3: Consistent Navigation (AA) Navigation menus are in the same location and order on every web page.	Partially supports	Navigation menus are consistently in the same place and in same order in most areas. Exceptions: On some pages, such as My Profile or the eBook Reader, the user menu in the header has options in a different order.
3.3.4: Error Prevention (Legal, Financial, Data) (AA)	Supports	There are no submissions which require legal or financial commitments.

For web pages with legal or financial commitments, input can be reviewed and corrected before final submission, and submissions can be reverted.		
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Mobile User Experience

WCAG 2.1 Checkpoint	Conformance Level	Remarks
1.3.4: Orientation (AA) Content does not restrict its view and operation to a single display orientation, such as portrait or landscape, unless a specific display orientation is essential.	Supports	Knovel does not restrict its view to a single orientation.
2.5.1: Pointer Gestures (A) All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture, unless a multipoint or path-based gesture is essential.	Supports	Knovel does not use any multipoint or path-based gestures.
2.5.2: Pointer Cancellation (A) For functionality that can be operated using a single pointer, at least one of the following is true: <ul style="list-style-type: none"> • No Down-Event • Abort or Undo • Up Reversal • Essential 	Supports	All interactive content functions through the Up-Event, allowing users to potentially move their pointer off the component to cancel.
2.5.4: Motion Actuation (A) Functionality that can be operated by device motion or user motion can also be operated by user interface	Supports (N/A)	There is no content on Knovel that utilizes device or user motion.

<p>components and responding to the motion can be disabled to prevent accidental actuation, except when:</p> <ul style="list-style-type: none"> • Supported Interface • Essential 		
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