

AKASH COACHING INSTITUTE STUDY MATERIAL BIOLOGY Printable PDF

Akash Coaching Institute Study Material Biology is a comprehensive resource designed to assist aspirants preparing for competitive exams such as NEET, AIIMS, and other medical entrance tests. This study material is meticulously curated to cover the entire biology syllabus, ensuring students grasp fundamental concepts, enhance their understanding, and improve their exam performance. In this article, we will explore the features, benefits, and detailed content of the Akash Coaching Institute's biology study material, helping students make informed decisions in their preparation journey.

Overview of Akash Coaching Institute Study Material Biology

Akash Coaching Institute's biology study material is renowned for its clarity, systematic structure, and focus on exam-oriented content. It integrates theoretical concepts with practical questions, enabling students to develop both understanding and application skills. The material is regularly updated to align with the latest exam patterns and syllabi.

Key features include:

- Concise yet comprehensive content
- Well-structured chapters with logical flow
- Inclusion of diagrams, flowcharts, and tables
- Practice questions with solutions
- Previous years' question papers and mock tests
- Tips and strategies for scoring high in biology

Content Structure of the Study Material

The study material is divided into major sections aligned with the NEET syllabus:

1. Diversity of Living Organisms

Key Topics Covered:

- The Living World

- Taxonomy and Systematics
- Morphology of Flowering Plants
- Anatomy of Flowering Plants
- Structural Organisation in Animals

2. Structural Organisation in Animals and Plants

Biology Study Material Includes:

- Cell ? The Unit of Life
- Biomolecules
- Cell Cycle and Cell Division
- Tissues ? The Living Fabric
- Plant Growth and Development

3. Cell The Unit of Life

Detailed Topics:

- Cell structure and functions
- Prokaryotic and eukaryotic cells
- Cell organelles ? structure and functions
- Cell membrane and transport mechanisms

4. Plant Physiology

Includes:

- Photosynthesis in higher plants
- Respiration in plants
- Plant growth regulators
- Transport in plants
- Mineral nutrition

5. Human Physiology

Topics Covered:

- Digestion and absorption
- Breathing and exchange of gases
- Body fluids and circulation
- Excretory products and their elimination
- Locomotion and movement
- Neural control and coordination
- Chemical coordination and integration

Features of Akash Coaching Institute Biology Study Material

The effectiveness of the Akash biology study material lies in its unique features that cater specifically to the needs of competitive exam aspirants:

1. Clear and Concise Explanations

- Simplifies complex concepts for easier understanding
- Uses simple language suitable for students at various levels

2. Visual Learning Aids

- Diagrams with labels to enhance visualization
- Flowcharts for processes like photosynthesis and respiration
- Tables summarizing key points for quick revision

3. Practice Questions and Answers

- Includes multiple-choice questions, short answer, and long answer questions
- Emphasizes application-based questions to develop problem-solving skills
- Provides detailed solutions to understand mistakes and improve

4. Past Exam Papers and Mock Tests

- Offers previous years' question papers for practice
- Simulates real exam conditions through mock tests
- Helps in time management and exam strategy formulation

5. Regular Updates and Revisions

- Content aligned with the latest syllabus and exam pattern
- Incorporates recent scientific discoveries and advancements

Benefits of Using Akash Coaching Institute Study Material for Biology

Using this study material offers numerous advantages to students aiming for top scores:

- **Comprehensive Coverage:** Ensures no topic is left uncovered, providing a complete understanding of biology.
- **Structured Learning:** Logical arrangement of chapters facilitates step-by-step learning and retention.
- **Enhanced Visualization:** Diagrams and flowcharts aid in memorization and quick recall during exams.
- **Practice and Assessment:** Regular question sets and mock tests help identify strengths and weaknesses.
- **Time Management:** Practice with previous papers improves speed and accuracy.
- **Confidence Building:** Well-prepared students approach exams with confidence due to thorough preparation.

How to Make the Most of Akash Coaching Institute Study Material

To maximize the benefits of this resource, students should adopt effective study strategies:

1. Create a Study Plan

- Allocate specific time slots for each chapter
- Prioritize weak areas for targeted practice

2. Active Learning

- Take notes while studying
- Summarize concepts in your own words
- Use diagrams for visualization

3. Regular Revision

- Revise chapters periodically to reinforce concepts

- Use quick revision notes and summaries provided in the material

4. Practice Extensively

- Solve practice questions at the end of each chapter
- Attempt mock tests under timed conditions
- Review mistakes and learn correct approaches

5. Clarify Doubts Promptly

- Use the institute's doubt clearing sessions
- Refer to additional resources if needed

Additional Resources and Support

Apart from the study material, Akash Coaching Institute provides:

- Online tutorials and video lectures
- Interactive doubt clearing sessions
- Regular webinars on exam strategies
- Personalized mentorship for weak students

Conclusion

Akash Coaching Institute Study Material Biology is an invaluable asset for students aspiring to excel in biology for competitive exams. Its detailed content, visual aids, practice questions, and exam-oriented approach make it a preferred choice among aspirants. By systematically studying this material and following strategic preparation methods, students can significantly enhance their understanding, boost their confidence, and achieve excellent results in their exams.

Remember, consistent effort and disciplined study using this comprehensive resource can pave the way for success in your biological sciences journey.

Akash Coaching Institute Study Material Biology: An In-Depth Review

When preparing for competitive exams like NEET, AIIMS, or other medical entrance tests, quality study material is indispensable. Among the many resources available, Akash Coaching Institute Study Material Biology has garnered significant attention for its comprehensive content, structured

approach, and effectiveness in student preparation. This review delves into the various facets of Akash's biology study material, analyzing its strengths, weaknesses, and overall utility for aspiring medical students.

Overview of Akash Coaching Institute's Biology Study Material

Akash Coaching Institute is renowned for its extensive coaching programs tailored towards competitive exams. Its biology study material is one of its flagship offerings, aimed at simplifying complex concepts and providing students with a solid foundation.

Key features include:

- Concise yet comprehensive content
- Aligned with the latest exam syllabus
- Inclusion of diagrammatic representations
- Focused practice questions and revision notes
- Integration of exam-patterned questions

Content Quality and Coverage

Depth and Breadth

Akash's biology material covers the entire NEET syllabus thoroughly. It spans from basic biological concepts to advanced topics, ensuring students are well-prepared for every aspect of the exam.

- Class 11 and 12 Syllabi: The material is segregated based on class modules, ensuring clarity and targeted revision.

- Chapters Covered:
 - Diversity of Living Organisms
 - Structural Organisation in Animals and Plants
 - Cell: The Unit of Life
 - Plant Physiology
 - Human Physiology
 - Genetics and Evolution
 - Biology and Human Welfare
 - Biotechnology and Its Applications

Coverage Highlights:

- Detailed explanations of fundamental concepts
- Inclusion of recent scientific developments and discoveries
- Emphasis on nomenclature, classifications, and biological terminology

Clarity and Simplicity

One of Akash's strengths lies in simplifying complex biological processes without losing scientific accuracy. The language used is student-friendly yet precise, making it accessible even for those new to biology.

- Use of clear, easy-to-understand language
- Step-by-step explanations for processes like respiration, photosynthesis, and genetic inheritance
- Avoidance of unnecessary jargon that might confuse students

Visual Aids and Diagrams

Biology is a visual subject, making diagrams vital for understanding:

- High-quality illustrations: Akash's material features well-drawn diagrams that aid memorization.
- Labeled diagrams: Every diagram is properly labeled, which helps in quick revision.
- Flowcharts and tables: These simplify comparisons and sequence-based processes, like the cell cycle or enzyme actions.

Organization and Structure of the Material

Chapter-wise Segregation

The study material is organized chapter-wise, following a logical progression from basic to complex topics. This structure facilitates systematic learning and revision.

Modular Approach

- Each chapter begins with an overview and objectives.
- Concepts are broken down into smaller, digestible sections.
- Summary points and key facts are highlighted at the end of each chapter for quick revision.

Inclusion of Practice Questions

- End-of-chapter questions: Multiple-choice questions (MCQs), assertion-reason type, and subjective questions.
- Previous year NEET questions: Integrated to familiarize students with exam patterns.
- Model test papers: Designed to test conceptual clarity and exam readiness.

Revision and Practice Resources

Effective revision is key to success, and Akash's study material emphasizes this aspect:

- Summary notes: Concise points covering essential topics.
- Quick revision sheets: For last-minute preparation.
- Sample papers: Mimicking actual exam conditions.
- Question banks: Extensive collection of questions for practice.

This multi-layered approach ensures students can reinforce learning, identify weak areas, and build confidence.

Strengths of Akash Biology Study Material

- Comprehensive and Up-to-Date Content

The material is regularly updated to align with the latest syllabi and exam trends, ensuring relevance.

- Clarity and Simplicity

Complex biological concepts are explained in an easy-to-understand manner, suitable for students at different learning levels.

- Visual Learning Aids

Diagrams, flowcharts, and tables make information memorable and facilitate quicker recall.

- Structured and Organized

Clear chapter divisions, objectives, summaries, and practice questions streamline the learning

process.

- Exam-oriented Approach

Emphasis on previous year questions, sample papers, and pattern-based questions improves exam readiness.

- Supplementary Resources

Additional online modules, quizzes, and doubt clearing sessions enhance understanding.

Weaknesses and Areas for Improvement

While Akash's biology material is robust, some limitations are worth noting:

- Volume of Content: The extensive material might be overwhelming for some students, especially beginners, leading to information overload.
- Lack of Interactive Content: As primarily printed material, it lacks interactive digital features that modern learners prefer.
- Variability in Depth: Some advanced topics may lack depth for students aiming for top percentile scores, necessitating supplemental resources.
- Design and Layout: The formatting could be more engaging; a more colorful and visually appealing layout might enhance focus.

User Experience and Student Feedback

Students generally find Akash's biology material reliable and effective. Common feedback includes:

- Positive Aspects:
 - Clear explanations that simplify difficult topics
 - Well-organized chapters for systematic revision
 - Accurate and relevant practice questions
 - Good quality diagrams aiding visual memory
- Negative Aspects:
 - Some students find the volume of content daunting

- Desire for more digital and multimedia content
- Occasional repetition of concepts across chapters

Overall, the material is appreciated for its quality and exam-focused approach, making it a favorite among many NEET aspirants.

Complementary Resources and Study Strategies

To maximize the benefit of Akash's biology study material, students should consider:

- Combining printed material with online modules or video lectures for varied learning stimuli.
- Regular self-assessment using practice questions and mock tests.
- Creating personalized revision notes from the material.
- Participating in group discussions to clarify doubts and reinforce concepts.
- Maintaining a consistent study schedule to cover all chapters thoroughly.

Conclusion: Is Akash Biology Study Material Worth It?

Akash Coaching Institute Study Material Biology stands out as a comprehensive, well-structured, and exam-oriented resource. Its strengths lie in simplifying complex biological concepts, providing ample practice opportunities, and aligning content with the latest exam syllabi. While it might benefit from incorporating more interactive digital features and refining its layout, the overall quality makes it a valuable tool for NEET aspirants.

For students aiming for a strong foundational understanding coupled with exam readiness, Akash's biology material is undoubtedly a commendable choice. Pairing it with consistent practice, doubt clearing, and supplementary resources can significantly enhance one's chances of success in competitive medical exams.

Question What makes Akash Coaching Institute's biology study material stand out for students preparing for competitive exams? Akash Coaching Institute's biology study material is renowned for its comprehensive coverage, updated content aligned with latest exam patterns, concise explanations, and extensive practice questions that help students build strong conceptual understanding and exam readiness. **Answer** Are the biology notes provided by Akash Coaching Institute suitable for NEET preparation? Yes, Akash Coaching Institute's biology study material is specifically designed to cater to NEET syllabus, offering in-depth topics, high-yield points, and practice questions that are crucial for scoring well in the exam. How can students access Akash Coaching Institute's biology study material for self-study? Students can access the study material through the official Akash Institute app, online portal, or by purchasing physical books and notes available at authorized centers, ensuring flexible study options. Does Akash Coaching Institute update its

biology study material regularly to reflect the latest exam trends? Yes, Akash Coaching Institute routinely updates its study material to incorporate recent syllabus changes, exam trends, and new research, helping students stay current and well-prepared. What additional resources does Akash Coaching Institute offer along with their biology study material? Along with their study material, Akash Coaching Institute provides mock tests, question banks, video lectures, doubt-solving sessions, and revision modules to enhance students' understanding and performance.

Related keywords: Akash coaching institute, biology study material, Akash coaching biology notes, NEET biology preparation, Akash biology syllabus, coaching institute biology resources, NEET study guides, Akash coaching materials, biology revision notes, competitive exam biology content

Autodesk revit 2014 material library metric

autodesk revit 2014 material library metric is an essential component for architects, engineers, and construction professionals who rely on Revit for Building Information Modeling (BIM). The material library in Revit 2014 provides a comprehensive set of predefined materials that facilitate realistic visualizations, accurate simulations, and efficient documentation workflows. Understanding how to effectively utilize and customize the material library is crucial for optimizing project outcomes, especially when working with metric units, which are standard in many countries around the world.

In this article, we will explore the details of the Autodesk Revit 2014 material library metric, including its structure, how to access and modify materials, best practices for managing materials, and tips for leveraging the library to enhance your BIM projects.

Understanding the Revit 2014 Material Library

What is the Material Library?

The material library in Revit 2014 is a collection of predefined materials that can be applied to different elements within a project. These materials define the visual appearance, physical properties, and rendering characteristics of objects such as walls, floors, furniture, and structural components. The library helps streamline the modeling process by providing ready-to-use materials that can be customized further.

Metric Units in the Material Library

Revit 2014's material library supports metric units, making it suitable for projects in regions where the metric system is standard. This includes measurements such as millimeters (mm), centimeters

(cm), and meters (m). When working with metric units, it is essential to ensure that your project units are correctly set, and materials are configured to reflect real-world dimensions accurately.

Accessing and Navigating the Material Library

How to Access the Material Library

To access the material library in Revit 2014:

- Open your Revit project.
- Navigate to the **Manage** tab on the ribbon.
- Click on **Materials** in the Settings panel.
- The Materials dialog box will open, displaying the library's contents.

Within this dialog, you can browse existing materials, create new ones, or duplicate and modify existing ones.

Structure of the Material Library

The material library in Revit 2014 is organized into categories such as:

- Wood
- Concrete
- Metal
- Glass
- Fabric
- Paint
- Plastics

Each category contains multiple predefined materials with specific visual and physical properties.

Working with Materials in Revit 2014

Applying Materials to Elements

Applying materials is straightforward:

- Select the element in the model.

- In the Properties palette, find the **Material** parameter.
- Click the drop-down menu and choose an existing material from the library.
- Alternatively, click **Manage Materials** to create or modify materials.

Creating Custom Materials

To create a custom material tailored to your project needs:

- Open the Materials dialog box.
- Click **New** to create a new material.
- Name your material appropriately.
- Adjust the appearance settings, including color, texture, reflectivity, and transparency.
- Configure physical properties such as thermal conductivity and density, especially important for energy analysis.
- Save your custom material for reuse in your project.

Modifying Existing Materials

Existing materials can be fine-tuned to match specific design requirements:

- Select the material from the library.
- Click **Edit** to open the Material Editor.
- Adjust the visual and physical parameters accordingly.
- Save changes to update all instances of that material in your project.

Best Practices for Managing the Material Library

Organizing Custom Materials

As your project progresses, you may accumulate numerous custom materials. To maintain organization:

- Create a dedicated category or subcategory for your custom materials.
- Name materials clearly to indicate their purpose or finish.
- Use consistent naming conventions to facilitate quick searching.

Sharing Materials Across Projects

Revit allows you to export and import material libraries, enabling consistent material usage across multiple projects:

- Export your custom materials by saving the Material Library file (.adsk) from the Materials dialog.
- In a new project, import the library to access the same materials.

Keeping the Library Up-to-Date

Regularly review and update your materials to reflect changes in product specifications or design preferences. This ensures visual consistency and accurate physical properties.

Leveraging the Material Library for Better Visualizations and Analysis

Realistic Renders

The material library's appearance settings can be fine-tuned to produce photorealistic renderings:

- Adjust reflectivity, glossiness, and transparency.
- Apply textures and bump maps for surface detail.
- Use the rendering settings in Revit or export to external rendering software for higher quality visuals.

Energy and Structural Analysis

Physical properties assigned to materials influence energy modeling and structural performance:

- Define thermal conductivity, specific heat, and density for energy analysis.
- Ensure materials are accurately represented for structural simulations.

Compliance and Documentation

Using standardized materials from the library helps in maintaining compliance with building codes and in preparing precise documentation for procurement and construction.

Tips and Tricks for Using the Revit 2014 Material Library Metric

- **Use Templates:** Create project templates with predefined materials to streamline workflows.
- **Leverage Material Overrides:** For specific elements, override default materials without altering the library.
- **Utilize Material Libraries from Manufacturers:** Import manufacturer-specific materials for greater accuracy.
- **Regular Backups:** Save copies of your custom material libraries regularly to prevent data loss.
- **Documentation:** Keep documentation of material properties for future reference or project handovers.

Conclusion

The Autodesk Revit 2014 material library metric is a powerful tool for creating visually appealing, physically accurate, and efficiently managed building models. Understanding how to access, customize, and organize materials ensures that your BIM projects are not only aesthetically compelling but also compliant and functional. By leveraging the full capabilities of the material library, professionals can significantly enhance their modeling workflows, produce high-quality visualizations, and perform precise analyses. Whether you're working on a small residential project or a large commercial development, mastering the Revit 2014 material library is an essential step toward achieving your design and documentation goals.

Autodesk Revit 2014 Material Library Metric: An In-Depth Exploration

Introduction

Autodesk Revit 2014 Material Library Metric stands as a cornerstone for architects, engineers, and BIM professionals seeking to streamline their design processes and enhance their project realism. As a pivotal component within Revit's comprehensive Building Information Modeling (BIM) environment, the Material Library provides users with an extensive repository of predefined materials, enabling accurate visualization, analysis, and documentation of building components. In this article, we delve into the intricacies of the Revit 2014 Material Library in the metric system, exploring its features, practical applications, and how it empowers professionals to create more realistic and data-rich models.

Understanding the Revit 2014 Material Library: An Overview

What is the Material Library?

The Material Library in Autodesk Revit 2014 is a curated collection of materials that can be assigned to various elements within a building model. These materials define the appearance, physical properties, and behavior of surfaces and objects, such as walls, floors, roofing, and furnishings. They serve multiple purposes, including:

- Visualization: Providing realistic renderings and visual styles.
- Documentation: Supporting accurate schedules and specifications.
- Analysis: Enabling performance simulations like thermal or energy analysis.

Metric System Integration

Revit 2014's Material Library is designed with a focus on the metric system, catering to projects in regions where metric units are standard. This integration simplifies the process of creating, editing, and applying materials with measurements in meters, centimeters, and millimeters, ensuring that the model's physical dimensions align precisely with real-world specifications.

Features of Revit 2014 Material Library Metric

Extensive Material Database

The Material Library comes with a vast array of predefined materials covering common construction materials such as:

- Concrete
- Brick
- Wood
- Metal
- Glass
- Ceramics
- Plastics

Each material is detailed with properties that influence visual appearance and physical characteristics.

Customization and Creation

Revit allows users to customize existing materials or create new ones from scratch. This flexibility is essential for:

- Modeling unique or proprietary materials.
- Adjusting visual attributes like color, texture, and reflectivity.
- Defining physical properties such as thermal conductivity or density.

Material Types and Categories

Materials are organized into categories, making it easier to locate and assign appropriate textures. These categories include:

- Structural Materials
- Finish Materials
- System Materials
- Imported Materials

This organization streamlines the workflow, especially in large projects with diverse material requirements.

Navigating the Material Editor: Practical Tips

Accessing the Material Browser

In Revit 2014, the Material Browser is the primary interface to explore and manage materials. To access it:

- Navigate to the Manage tab.
- Click on Materials in the Settings panel.

The browser displays a list of default and custom materials, along with their properties.

Editing Material Properties

Within the Material Editor, users can modify:

- Graphics: Color, pattern, transparency, and surface patterns.
- Appearance: Render appearance settings, including reflectivity, glossiness, and bump maps.
- Physical: Thermal properties, density, and other physical parameters.

Adjustments here influence both visual realism and analytical accuracy.

Applying Materials to Elements

Materials can be assigned directly to model elements via:

- The Properties palette.
- Material override options.
- Drag-and-drop in the visual model.

Proper assignment ensures consistency across documentation and visualization.

Practical Applications in Metric Projects

Architectural Visualization

Using the metric material library allows architects to produce highly realistic renderings that accurately represent real-world materials. This includes:

- Precise color matching.
- Material textures scaled appropriately to dimensions.
- Realistic reflections and transparency settings.

Structural Analysis and Performance Simulation

For structural engineers, materials with defined physical properties enable simulations such as:

- Structural load calculations.
- Thermal performance analysis.
- Energy modeling.

Having materials in metric units ensures that calculations are based on real-world measurements.

Construction Documentation and Specifications

Accurate material definitions assist in generating precise schedules and specifications, critical for procurement and construction management.

Challenges and Best Practices

Ensuring Consistency Across Models

In projects with multiple team members or phases, maintaining uniform material definitions is crucial. Best practices include:

- Creating shared parameter files for materials.
- Documenting custom material properties.
- Regularly updating the Material Library.

Managing File Sizes and Performance

A comprehensive material library can increase project file size and impact performance. To optimize:

- Use linked or referenced material libraries when appropriate.
- Archive unused or outdated materials.
- Regularly audit materials for relevance and accuracy.

Compatibility and Version Control

While the discussion centers on Revit 2014, users should be aware of compatibility issues when upgrading or sharing files across different Revit versions. Maintaining a standardized material library mitigates discrepancies.

Enhancing the Material Library Experience

Utilizing External Resources

Many professionals supplement Revit's default material library with:

- Custom textures and materials created in external software like Photoshop or Substance Designer.
- Imported materials from manufacturer catalogs.

These additions can increase realism and project specificity.

Automating Material Assignments

Using Revit's tools and plugins to automate material assignments based on parameters or templates can improve efficiency, especially in large projects.

Future Outlook and Evolving Features

Although Revit 2014 is now several versions old, its Material Library laid the foundation for

continued enhancements in subsequent releases. Modern Revit versions offer:

- Improved rendering capabilities.
- More detailed physical property settings.
- Enhanced library management tools.

Understanding the 2014 material system provides valuable insights into the evolution of BIM workflows.

Conclusion

The Autodesk Revit 2014 Material Library in metric units remains an essential tool for professionals aiming for precise, realistic, and data-rich building models. Its extensive database, customization options, and integration with Revit's powerful environment enable users to craft detailed visualizations, conduct meaningful analyses, and produce accurate documentation. By mastering the features and best practices associated with the material library, BIM practitioners can significantly elevate the quality and efficiency of their projects, ensuring that designs are not only visually compelling but also grounded in real-world physical properties. As BIM technology continues to evolve, a solid understanding of these foundational tools remains vital for adapting to future innovations in architectural and engineering workflows.

Question How do I access the Material Library in Autodesk Revit 2014 Metric version? In Revit 2014 Metric, you can access the Material Library by going to the Manage tab, clicking on 'Materials,' and then selecting 'Material Browser.' From there, you can browse and load materials from the library. Can I customize or add new materials to the Revit 2014 Metric Material Library? Yes, you can create custom materials or duplicate existing ones within Revit 2014. To add new materials, open the Material Browser, click 'Create New Material,' and define its properties. To include external library materials, import them via the Material Browser options. What are the differences between the Revit 2014 metric material library and the imperial version? The primary difference lies in the units and material standards. The metric library uses SI units and compatible material properties, while the imperial version uses imperial units. Material appearance and physical properties may also vary accordingly. How can I load additional material libraries into Revit 2014 Metric? You can load additional libraries by importing material files (.adsklib) into the Material Browser. Use the 'Manage Materials' option, then 'Import Material Library,' and select the desired library files to add them to your project. Are there any common issues with the Revit 2014 Material Library in metric projects? Common issues include missing materials after library import, mismatched units, or materials not displaying correctly. These can often be resolved by reloading libraries, checking unit settings, or updating graphics drivers. How can I ensure accurate material representation in Revit 2014 metric projects? Ensure that the materials are correctly assigned with proper physical and visual properties, and that the project units are set to metric. Preview materials

in the Material Browser to confirm appearance and properties before applying them. Is it possible to export Revit 2014 metric materials for use in other software? Direct export of materials from Revit 2014 is limited, but you can export material appearance as images or use the material library files (.adsklib) to share materials with compatible software or Revit versions. For full material data, consider exporting the project or using IFC files.

Related keywords: Autodesk Revit 2014, material library, metric units, Revit materials, BIM materials, Revit families, Revit textures, Revit 2014 tutorials, material parameters, Revit material libraries

Read the full article online: [Autodesk Revit 2014 Material Library Metric](#)