

The DHS Advanced and High Performance Materials Database

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Objectives for this Talk

- What is the DHS Advanced and High Performance Materials Database?
 - Why is DHS developing this tool?
 - What is the tool
- What is the value of the database to the University researcher and developer?
- Who can put their materials onto the database?
- How do you access the database?



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Why is DHS developing a materials database?

- This project is a part of the Department of Homeland Security's High-Performance – Integrated Design Resilience Program. A program that is being developed in the Directorate of Science and Technology by the Infrastructure & Geophysical Division (IGD)
- There are really three reasons that DHS is developing their Advanced and High Performance Materials Database:
 - The federal government, as a whole, is looking at developing greener, more energy-efficient, high performance facilities now and for the future.
 - The Department of Homeland Security is tasked to protect the public. This includes security within government and private facilities of all kinds from airports to theme parks.
 - The ability to protect buildings and infrastructure would be enhanced by:
 - Knowing what materials are available and their likely performance parameters when utilized in construction.
 - Lowering the risk (cost) of enabling future materials towards commercialization through focused development of those materials.



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What is the DHS Advanced and High Performance Materials Database

- The DHS Advanced Materials Database will be a repository for materials that have the **potential** to be useful in assuring higher performance attributes of the built environment. These attributes include
 - Security from man-made dangers
 - Safety from natural hazards
 - Energy efficiency and environmental considerations.
- The DHS Advanced Materials Database will be openly accessible through the Internet so that non-classified features of a material or material system will be searchable by DHS and outside sources including other funding agencies, venture capitalists, contractors and others who have interest in these materials.
- This tool is being developed and managed through the National Institute of Building Sciences (<http://www.nibs.org>)



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Is there value in yet another database?

- **I am convinced that there is!**
- This database is focused very specifically towards construction industry needs. As an industry, they are the largest user of materials. The data needed for this database is tailored to be used by that industry.
 - Materials that may not otherwise be known to the construction industry will be available for comparison by that industry.
 - The construction industry will understand better what is both available and on the drawing board for current and future materials palettes for construction of facilities and infrastructure.
 - There is a greater potential to team with people who have focused funds and need to complete development and actual deployment of materials.



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Who can submit materials?

- Anyone can submit materials.
- DHS wants the data – just remember two things:
 - This database is primarily for materials that have potential to be used in improving the built environment so there needs to be a way to tie these materials into developing safer, more secure and energy efficient products for that environment.
 - The database is intended to get a possible head start on the early development of a material and so although you may not know where it might be used, it will give you a chance to talk about why you think it can be usable in a built environment system.



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Accessing the database

- It is very easy to access the database – it is available on-line at <http://advmat.org/>.
- At this point in time, each material that you enter shall be unique.
- The material database has the capability for you to enter multiple materials.



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What if I don't have all the right data?

- That really isn't a problem as one of the goals of the database is to help you, the materials researcher/developer, focus on parameters that are important to these industries.
- It is understood that the road for materials development will have more information as a material under research becomes more developed.
- To help foster this, the DHS is using the Materials Readiness Levels (MRLs) that are in place for activities in other agencies.
- Materials at lower MRLs inherently will have less standardized data available.
- Knowing what data is interesting to the industry for these materials can help you develop your material towards meeting their needs.
- As your material becomes more developed (a higher MRL) it is expected that more data will be generated.



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The home page of the database

The screenshot shows the homepage of the Advanced and High-Performance Materials Database. At the top left is the Department of Homeland Security logo. The title is "Advanced and High-Performance Materials Database", developed by the Science and Technology Directorate / Infrastructure and Geophysical Division / DHS and managed by the National Institute of Building Sciences. A navigation bar includes links for "ADVANCED MATERIALS", "TESTING PROTOCOLS", "PUBLICATIONS", "CASE STUDIES", "COMMITTEES", and "SEARCH". Below the navigation bar is a "Sample Material" section with a placeholder image and text: "A brief description of pictured material exists here." The main content area is divided into three columns. The left column contains a paragraph about the database's purpose. The middle column, titled "NEW MATERIALS", lists "Casing Material 2" (dated 01/05/2010, researcher Construct Sheets, Inc., category Metals and Alloys) and "Micro Material 1" (dated 01/04/2010, researcher Valley Science Lab, category Nanomaterials). The right column, titled "FEATURED CASE STUDY", features "Home Depot House" (dated 12/30/2009, location Durham, NC USA, type Residence Hall Construction, material Insulation 4A). Below this is a "NEW PUBLICATIONS" section listing two documents: "CRD-C166-92 Standard Test Method for Static Modulus of Elasticity of Concrete in Tension (Testing Protocol, PDF)" and "FED. TEST METHOD STD. NO. 372 Test for Critical Radiant Flux of Carpet Flooring Systems (Testing Protocol, PDF)". The footer contains contact information for the National Institute of Building Sciences and a copyright notice for 2010.

Advanced and High-Performance Materials Database
developed by the Science and Technology Directorate / Infrastructure and Geophysical Division / DHS
managed by the National Institute of Building Sciences

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Sample Material
A brief description of pictured material exists here.

The Advanced and High-Performance Materials Database allows for the overall coordination of the research and development of advanced and high-performance materials research and provide the Department of Homeland Security with the capability to review, understand and promote the adoption of advanced high performance materials for enhanced infrastructure protection in a cost effective manner.

NEW MATERIALS

Casing Material 2
01/05/2010
Researcher: Construct Sheets, Inc.
Category: Metals and Alloys

Micro Material 1
01/04/2010
Researcher: Valley Science Lab
Category: Nanomaterials

FEATURED CASE STUDY

Home Depot House
12/30/2009
Location: Durham, NC USA
Type: Residence Hall Construction
Material: Insulation 4A

NEW PUBLICATIONS

- CRD-C166-92 Standard Test Method for Static Modulus of Elasticity of Concrete in Tension (Testing Protocol, PDF)
- FED. TEST METHOD STD. NO. 372 Test for Critical Radiant Flux of Carpet Flooring Systems (Testing Protocol, PDF)

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Information of Interest



Advanced and High-Performance Materials Database

developed by the Science and Technology Directorate / Infrastructure and Geophysical Division / DHS
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[BROWSE BY SECTOR](#)

[Home](#) / [Advanced Materials](#)

Advanced Materials

Materials within the database are classified by material categories and sectors (infrastructure resource areas). Click on the links to the left to begin or choose from one of the options below:

CATEGORIES

- [Bioproducts](#)
- [Cement-Based](#)
- [Ceramics](#)
- [Composites](#)
- [Fabrics](#)
- [Fluids](#)
- [Foam](#)
- [Geomaterials](#)
- [Glasses](#)
- [Metals and Alloys](#)
- [Polymers](#)
- [Wood](#)
- [Other](#)

SECTORS

- [Agriculture/Food](#)
- [Banking & Finance](#)
- [Chemical](#)
- [Commercial Facilities](#)
- [Communications](#)
- [Critical Manufacturing](#)
- [Dams](#)
- [Defense Industrial Base](#)
- [Emergency Services](#)
- [Energy](#)
- [Government Facilities](#)
- [Healthcare & Public Health](#)
- [Information Technology](#)
- [National Monuments & Icons](#)
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For more information

- The charter issue of the Journal of Advanced and High-Performance Materials (JMAT), an edited non peer-reviewed journal is planned to be available shortly, you can either from me or check at the <http://advmat.org/> website for its availability.
- E-mail me (gfishman@futurestrategysolutions.com) or NIBS (Drew Rouland– drouland@nibs.org)



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