

NAV  AIR

Environmental Program



**The Materials Substitution
Database**



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<https://www.enviro-navair.navy.mil>

New Database Finds Environmentally Friendly Substitutes for Hazardous Materials

The Lead Maintenance Technology Center for the Environment (LMTCE) has developed a database to support the search for intelligent, appropriate and environmentally friendly substitutes for hazardous materials.

Material substitution is one of the principal means of pollution prevention (P2) related source reduction established by the Pollution Prevention Act of 1990. The Materials Substitution Database will provide Naval Air Systems Command (NAVAIR) engineers, chemists, process specialists, and Environmental, Safety, and Occupational Health (ESOH) coordinators with a tool to determine whether viable substitutes exist for particular materials and/or specifications.

Material Types for Which Substitutes Can Be Found

- Solvents
- Paints and primers (substitutes that are non-chromated)
- Paint thinners
- Paint removers (substitutes that are non-HAPS (Hazardous Air Pollutants))
- Adhesives
- Sealants
- Aqueous cleaners (substitutes for solvent cleaning)

The database is populated with data from General Series (GS) manuals, and includes material nomenclature, the relevant specification(s), current use, possible replacements and links other relevant data sources. These links include the Shipboard Hazardous Materials List (SHML) and Acquisition Streamlining and Standardization Information System (ASSIST).

While the concept of substituting an environmentally friendly material for one that generates pollution, hazardous waste, or other contaminants is simple, the practice of source reduction can be complicated. Complications arise from the need to demonstrate and validate the technical feasibility of substitute products. This process can be costly and time-consuming, but is vital to ensure that new materials are safe and effective for their intended use.

NAVAIR Cherry Point and NAVAIR Jacksonville are leading the development of computer-based tools to speed the identification of obsolete materials and specifications in manuals. NAVAIR's goal is to create a common methodology for reviewing Technical Publications to provide the Fleet with up-to-date, accurate materials and processes while minimizing the need for multiple types of materials for common processes. Updating and improving NAVAIR Technical Publications is currently receiving special attention within the NAVAIR community.

The Materials Substitution Database allows NAVAIR engineers and ESOH coordinators to share knowledge gained in the environmental and material worlds and prevent the duplication of effort. This database will help to communicate and standardize material use throughout NAVAIR thereby promoting the most effective use of scarce resources.

The Materials Substitution Database allows searches on part numbers and specifications from a vast knowledge base of suitable substitutes. Users simply enter a material's part number or the relevant specification, and the viable substitutes are displayed. The user is also informed if no approved substitutes exist.

The Materials Substitution Database contains many of the substitutes or "workarounds" that have been discovered during the course of countless manual reviews conducted across the NAVAIR community. Making a material substitute can have serious performance implications. All of the potential impacts of a material substitute must be understood before the decision to substitute is made. Before any material substitute is made, a final verification must be performed to ensure that the substitute is appropriate. Just because a substitute is listed in the Materials Substitution Database does not

NOTE: ALL SUBSTITUTION OF MATERIAL MUST BE APPROVED BY THE COGNIZANT ENGINEER.

Putting the Materials Substitution Database to Good Use

Just as quickly as the Materials Substitution Database was developed, a team of environmental professionals has been using it to support the obsolescence and environmental review of the type:model:series manuals associated with the nine programs.

The first step to completing an obsolescence and environmental review is to obtain a listing of all of the hazardous materials referenced in a particular manual.

HAT (or the Hazardous Material Authorized Use List (HMAUL) Analysis Tool) is an automated software program that identifies hazardous material references in maintenance manuals. Personnel from the Naval Air Systems Command (NAVAIR) Lakehurst in conjunction with the Lead Maintenance Technology Center for the Environment (LMTCE) Working Integrated Product Team (WIPT) developed HAT to identify hazardous materials by analyzing available ingredient data in products supplied to a specified list of National Stock Numbers (NSNs) and/or military specifications. The list of specified NSNs/specifications constitutes the manual or platform HMAUL.

The purpose of an obsolescence and environmental review is to:

1. Replace cancelled or inactive specifications,
2. Identify specific environmental management issues that need to be addressed.
3. Conduct analyses on emerging environmental issues
4. Identify opportunities to insert environmentally friendly technologies, and
5. Identify maintenance and environmental compliance conflicts without a known solution.

NAVAIR has formed a Process Environmental Review Team to complete the obsolescence and environmental reviews. In addition to members of the LMTCE WIPT, the team is comprised of environmental experts from the following organizations:

1. NAVAIR Lakehurst,
2. Naval Air Depot Cherry Point,
3. Naval Air Depot Jacksonville,
4. Naval Air Technical Data and Engineering Service Command (NATEC), and
5. The NAVAIR Environmental Competency.

So far, the Process Environmental Review Team has reviewed approximately 75 thousand pages from various platform-specific (type:model:series) manuals in the course of their obsolescence and environmental reviews. The following programs and functional areas have already benefited from the team's using of the Materials Substitution Database:

Program	# of Manuals Reviewed
EA6B	12
AV8	42
H1	32
H3	22
H46	30
C130	40
Gas Turbine Compressors	3
Propellers	8
Crew Systems	2

mean that the substitute is appropriate for use in every situation—substitutes are context-specific. If a substitute recommended by the Materials Substitution Database is not within your area of expertise, you are responsible for obtaining the appropriate technical authority and knowledge necessary to determine the suitability of any particular substitute.

A beta version of the database/website is up and running, and has become a primary resource for the collection, assessment, and tracking of material uses, substitutions, and testing for NAVAIR engineers and ESOH coordinators. The database is available on the LMTCE information portal. Given the sensitivity of the data contained in the Materials Substitution Database as well as the expertise required to interpret the results of database queries, access to the database is restricted.

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For more information about the NAVAIR environmental program, please visit our web site at <https://www.enviro-navair.navy.mil>.

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