Compliance With Military Labeling Standards

Department of Defense
MIL-STD-130 & Unique Identification
## Compliance With Military Labeling Standards

<table>
<thead>
<tr>
<th>Table of Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>UID Requirements</td>
<td>2</td>
</tr>
<tr>
<td>What is a UID?</td>
<td>3</td>
</tr>
<tr>
<td>UID Serialization Construction</td>
<td>4</td>
</tr>
<tr>
<td>Do I Need UID?</td>
<td>5</td>
</tr>
<tr>
<td>The Data Matrix Code</td>
<td>6</td>
</tr>
<tr>
<td>The DOD Compliance Workflow</td>
<td>7</td>
</tr>
<tr>
<td>The Label - Marking Your Product</td>
<td>8</td>
</tr>
<tr>
<td>MIL-STD-130 Compliance Solutions</td>
<td>9</td>
</tr>
<tr>
<td>Print and Verify With Label Printing Systems</td>
<td>10</td>
</tr>
<tr>
<td>Managing the Data Workflow</td>
<td>11</td>
</tr>
<tr>
<td>The Complete Solution with ID Technology</td>
<td>12</td>
</tr>
<tr>
<td>How Do I Stay Current With Regulations?</td>
<td>12</td>
</tr>
</tbody>
</table>
Better inventory management is one way to protect our armed forces and save billions of dollars in military supplies, weapons, and mission-critical equipment costs.

As of 2004, government contracts began including mandate for unit level marking and labeling to be used to track parts throughout the supply chain for efficient inventory control, quality control, and maintenance scheduling. This Standard is known as MIL-STD-130 and may include Unique Identification (UID) labeling and marking.

MIL-STD-130 is evolving and will continue to change. Deadlines have been placed on suppliers to comply. These changes are expected to occur at an increased rate over the coming years and the US Government is committed to enforcing the deadlines with strict penalties for noncompliance.

A General Accounting Office (GAO) study estimated the DoD could have saved $2 billion in Desert Storm inventory, from a $2.7 billion total inventory through better information about available inventory.

When you or your customers have to comply with the Department of Defense Military Labeling Standards, specifically MIL-STD-130, your labels must be 100% compliant and you must manage the related data as it is transmitted back to the DoD via iRAPT or UID Registry. When the original contract includes DFARS 252.211-7003 which calls for UID (Unique Identification), your labels must also comply with the UID component of the mandate.
UID Requirements

MIL-STD-130 requires suppliers of goods supplied to the DoD to identify these items (which may include a Unique Identification Number (UID)) used for tracking & efficiency purposes.

DFARS (Defense Federal Acquisition Regulation Supplements) include the details for exactly what is included under MIL-STD-130. If your contract has a clause that refers to DFARS 252.211-7003: Item Identification and Valuation, then you need to comply to the UID part of MIL-STD-130N.

DFARS 211.274-2 Policy for Unique Item Identification.

(a) It is DoD policy that DoD unique item identification, or a DoD recognized unique identification equivalent, is required for—

(1) All delivered items for which the Government’s unit acquisition cost is $5,000 or more;

(2) Items for which the Government’s unit acquisition cost is less than $5,000, when identified by the requiring activity as serially managed, mission essential, or controlled inventory;

(3) Items for which the Government’s unit acquisition cost is less than $5,000, when the requiring activity determines that permanent identification is required; and

(4) Regardless of value—

(i) Any DoD serially managed subassembly, component, or part embedded within a delivered item; &

(ii) The parent item (as defined in 252.211-7003(a)) that contains the embedded subassembly, component, or part.

Effective for all DoD contracts after January 2004:

• Every supplier of parts to DoD is required to comply.

Every DoD Contractor with GFP/PIPC:

• Each DoD Agency.

• Over 400M legacy parts still need to be marked.

On April 28, 2006 the NATO Asset Tracking Interservice Working Group (ASTWG) approved the ratification draft of STANAG 2290 “Unique Identification (UID) of Items".
What is a UID?

UID is a “unique” part identifier that can be used to link products to their histories.

A UID is formed by combining the manufacturer’s identification, part identification numbers with formatting and data transmission characters.

DoD regulations require that a 2D Data Matrix Symbol be permanently marked on the part using a label or direct parts marking.

- Manufacturer Identifier (CAGE Code) = 0ZPZ3
- Part Number = X308FF97
- Serial Number = 12345

Example of UID Mark Using Data Matrix Code

The formatted data is called a Unique Item Identifier (UII). The UII is a globally unique and unambiguous identifier that distinguishes an item from all other like and unlike items. The Data Matrix symbol is a machine-readable representation of the UII.

UID (Unique Identification) The UII Sometimes referred to as IUID (Item Unique Identification)
UID Serialization Construction

There are two basic methods of constructing the UID for an item;

Choose Construct #1 for serialization if:
1. You can uniquely identify the item within your Enterprise Identifier. (Each serial # can only be used one time in your organization.)
2. You can include the Part # within the Serial # to provide uniqueness.

Choose Construct #2 for serialization if:
1. You manufacture many different part types.
2. You desire keeping the Part Number and Serial Number separate.
3. This construct fits your current data structure best.

The one you use depends on your company and your manufacturing process. Construct #2 is the most commonly used format.

Globally Unique Items using Data Matrix

IUID is physically marked on tangible items or assets using a two-dimensional (2D) Data Matrix symbol with the data formatted in accordance with specified standards. The encoded data is identified by the use of data identifiers, application identifiers or text element identifiers. The choice of which identifier to use is based upon normal industry practices of the organization assigning the serialization.

Examples of Levels of Identification:

Universal Product Code (UPC):
Two cans of Coke from the same plant will show the same data on the UPC.

Serial Number Tracking:
Serial numbers are unique, but not outside of their enterprise. The serial numbers from one company can be the same as another company.

Unique Identification:
Each item has its own Globally Unique Identifier (UID). There is not another item with that number no matter where in the world the item comes from, or how long it survives.
Do I Need UID?

Each qualifying item must be marked with a permanent 2-dimensional data matrix encoded with the CAGE Code, Serial Number, Part Number and other data elements necessary to construct a Unique Item Identifier (UID). The UID identification must last the expected life of the product or until it comes back to be refurbished.

Not all items will require a UID identification. Use this chart to help you determine what needs to be marked.

- DoD serially managed embedded items require marking of parent items
- Legacy items may qualify for virtual UID
The Data Matrix Code

The Data Matrix code is a two-dimensional matrix symbology containing dark and light square data modules making up a larger square or rectangular shaped symbol. It has a finder pattern of two solid lines and two alternating dark and light lines on the perimeter of the symbol.

A two dimensional imaging device such as a charge-coupled device camera is necessary to scan the symbology. Data Matrix is designed with a fixed level of error correction capability. It supports industry standard escape sequences to define international code pages and special encoding schemes. Data Matrix is used for item marking applications using a wide variety of printing and marking technologies.

The Data Matrix code can withstand a fair amount of destruction and have the encoded data remain readable. This means that a whole section of the code can be scratched or completely gone and the mark will still read.

The other feature of the Data Matrix code is the ability to be read from different angles. This makes it easier and far more efficient to scan marked objects without the worry or effort to align them in one direction.

How Do I Know The Data Matrix Code Passes?

To satisfy the requirement of MIL-STD-130, the contract owner must be able to prove the Data Matrix marks are readable and contain the correct information. This is done by “verifying” the data.

With a table top model, the label is placed under the reading light of the verification machine which is in turn connected to your computer. A report on your screen will indicate if the Data Matrix mark “passes” or “fails.” If it fails, you will need to correct the problem reprint, and retest. If it passes, this report will need to be saved as evidence of compliance should your DCMA request proof.

The labels shown on the left are the preferred layout and contains linear bar codes with human-readable text along with the Data Matrix Code. If space is a limitation, then the alternate layout may be used. The Data Matrix Code will be the only source of scannable data.
The DOD Compliance Workflow

A good compliance plan to meet MIL-STD-130 includes the steps you need to take to meet your labeling or marking needs and manage the associated data.

You need to know you are in compliance before your DCMA representative arrives for inspection. Once you are in compliance, be sure you "stay" in compliance as Standards change.

Getting the Government Contract

To apply for a government contract, contact the Procurement Technical Assistance Program (PTAP) in your area.

The New Hampshire Procurement Technical Assistance Program (NH-PTAP) is sponsored and brought to you by the State of New Hampshire Business Resource Center and the Defense Logistics Agency. This national program provides specialized and professional assistance to individuals and businesses seeking to learn about contracting and subcontracting opportunities with Department of Defense (DoD), other federal agencies, or state and local governments.

If you are interested in learning more about this program, please visit the Procurement Technical Assistance Centers website for your state.


Entering Your Contract Data

For many companies, when your DoD contract arrives in the mail or by fax, the person(s) responsible for entering the data gets to work. They are familiar with the manual process of entering the pertinent information such as the shipping address, the receiving address, how many, what class, shipping methods, methods of preservation, and much more; too many to list here. This includes all the information per standard, per item, that you will need to ship via the WAWF.

To save time, go back to the contract contact person and request the contract data be sent electronically in EDI 850 Data Format. For those who subcontract, this may mean going back to your customer.

Producing Your Labels

If you are labeling your product, there are two ways to get your labels - print your own, or buy them preprinted.

Purchasing your UID labels pre-printed is perfect when you need your labels fast, or you are not sure of the exact formatting requirements and need to prove your labels are 100% compliant with MIL-STD-130. Some prefer this method for low volume labeling or infrequent demands, or they do not have or want to invest in a thermal transfer printing system.

Should your volume increase or you require more control over your compliance labeling process then printing your own labels on-demand and verification system may be advantageous.

How Do I Know What Label To Use?

Many items can be marked using a label. Durable labels are available to withstand exposure to some of the harshest environments such as freezing temperatures, grease, oil, blood, chemicals, sunlight, extreme heat as on engines, moisture, abrasion, and more.

All parts of a label will need to be considered in accordance use to ensure the highest performance and reliability.

Some of the most popular label materials are Kapton™ or polyester material. Both come in different varieties to cover a wide range of applications.

In addition to the label material, the adhesive used needs to be considered to meet the usage that the label is expected to endure. A more aggressive label adhesive is used if the item is exposed to harsh environments such as but not limited to sea water, desert conditions, long-term warehousing, rusty or irregular surfaces, or is located where it is handled a lot as compared to an item that lives in a more protected environment. A labels that falls off has failed, and you can be held accountable for the damages or incur penalties.
The Label - Marking Your Product

The identifying mark must last the life of the product. How you choose to mark your parts will have to do with the structure of the part, and the environment the part will be exposed to.

Labels are a cost-effective and readily available way to apply the identifying mark and required data to comply with MIL-STD-130 including the UID. Marking directly on the part is another option.

Marking parts using a laser places a permanent 2-D Data Matrix Code mark directly into the part. It is virtually indestructible.

This is commonly found on metal parts, plastics, and sturdy materials especially when the item will be exposed to harsh environments such as contact with chemicals, sea water, moisture, abrasion, and more.

The US Navy uses LCAC to transport tanks from carriers to land for repairs.

MIL-STD-130 calls for Durable Labels tough enough to withstand this wet, salty environment. ID Technologies provided durable Labels with a special high-strength aggressive adhesive stick to any oily, wet or rough surface and remain in place despite the salty waters, rain, and extreme temperatures.

Acrylic coatings will further protect the labels and valuable information under harsh environmental use.

Lastly, be sure your thermal transfer ribbon is matched to the label material, topcoat, and is rated to withstand the labels environment to ensure printing on the label remains readable throughout the life of the product.

Always keep in mind, that no matter what method you choose to use to comply with MIL-STD-130, that direct mark, dataplate or label must survive the expected life of the product.

Dataplates are also used to comply with MIL-STD-130 unit marking. The most common application for dataplates is on larger machinery, aircraft, tanks, and when exposure to the elements is expected.
MIL-STD-130 Compliance Solutions

Fast and Easy Compliance - Label Printing Service

Using a Preprinted Label Service is a fast, easy way to get in compliance with MIL-STD-130 and UID requirements. Simply provide some basic information. Each label is printed and verified. A verification report for each label acts as the Certificate of Compliance for hassle-free compliance.

MIL-STD-130 Label Printing Service

Preprinted UID labels - DFARS 252.211-7003 compliant.

You provide quantity, size, material, cage code, part number and serial number. We do the rest.

Available to match Construct 1 or Construct 2.

Durable materials: Polyester, aluminum, steel, and other durable materials to withstand the harshest environments while meeting/exceeding standard requirements.

Durable Labeling Solutions

As an expert label manufacturer, ID Technology will help you select the right label material for all your UID needs. MIL-STD-130 requires labels be durable enough to last the expected life of the product even under the harshest environments of water, sand, salt-spray, grease, high temperatures, abrasion, sunlight, chemical exposure, and other elements. Choosing the right adhesive, material, top coat and printing ribbon can all make a difference in the label’s performance and lowering the cost of your labels.
Print and Verify With Label Printing Systems

For larger volume, or frequent requests for UID labels, printing your own MIL-STD-130 and UID labels may be the way to go. Complete printing systems include high-resolution thermal transfer printers, durable labels, label design software with preset templates, scanners and verifiers to help avoid unnecessary delays at a DCMA inspection. Make sure you select the right blank or preprinted labels, durable label materials and matching ribbons as your label and the print must be readable for the expected life-cycle of the product.

Suppliers to the Department of Defense must be able to prove that their labels meet the requirements of MIL-STD-130, with regard to both Data Matrix Code quality and data accuracy. The UID Compliance Verifier is simple to use and provides a quick pass/fail check. In addition, it logs and archives the information to support audit needs. A printable compliance report is also produced. UID verification should be performed at each label run and compliance reports should be kept in a safe place and available for DCMA inspection. Choose between a table top unit or handheld verifier.

Optional installation and training can be available to maximize your staff productivity and ensure 100% compliance with DoD MIL-STD-130.

Available Compliance Kits and Components include:

- Barcode/RFID Thermal Transfer Printers.
- Handheld or Tabletop Verifier
- Blank or Preprinted labels with matching ribbons for full compliance, durability and quality output.
- Mobile Workstations to bring your DoD labeling to the source of production.
- On-site service for repairs and maintenance.
Managing the Data Workflow

As part of the compliance process, the data associated with each UID mark such as Cage Code, Serial Number, and identifiers must be reported back to the DoD. At this point, you may be looking at both MIL-STD-130 unit level and UID labeling data in conjunction with MIL-STD-129 and RFID shipment data.

Complex UID hierarchies may exist when using subassemblies. It may be that the embedded UIDs are sealed up within the parent product or the product is already shrink wrapped, but for whatever reason, the user needs to have explicit knowledge of the UID hierarchy without taking the product apart.

This parent/child relational data including UID data and RFID shipping labels can be very complex, time-consuming and prone to errors when handled manually.

**UID Registry Data Submission:** The UID registry is a software system created by the Department of Defense that acts as a repository for information on all items that meet UID criteria. The UID registry allows the DoD to gain increased visibility into their vast network of assets. In order to comply with the DoD mandate for UID, you must submit all UID information to the UID registry directly or via the iRAPT.

The iRAPT (formerly WAWF or Wide Area Workflow) is an essential communication tool for every business that supplies inventory to the DoD. Submission to iRAPT replaces the manual DD250 document. It helps expedite payments and is now required by the DoD.

Suppliers can submit their shipments through the WAWF e-Business Suite web site or direct electronic submission. The choice is yours. You should look at all the costs to decide including your time and error rates.

A good compliance plan to meet MIL-STD-130 includes the steps you need to take to meet your labeling or marking needs and manage the associated data ...

Once your labels are done, there is still much to do to be in compliance. The DoD requires information about the units, shipping containers and pallets to be sent back to the DoD via iRAPT or UID Registry so they can track goods in the supply chain and inventory.
The Complete Solution with ID Technology

ID Technology (IDT) has unique qualifications to help you meet the requirement of MIL-STD-130, UID and other DoD Military Labeling. Why makes ID Technology different?

- IDT is a label manufacturer that understands the aspects of the label to meet and exceed longevity, performance and formatting requirements.
- IDT has been designing bar code and labeling systems for over 25 years in many different industries. We understand the challenges of the most demanding client applications.
- IDT partners with industry manufacturers and suppliers that enables us to deliver quality products and service to fit our customer’s needs.

How Do I Stay Current With Regulations?

Keeping up with Standards and updates can be a daunting task. The penalty for noncompliance can be more than the profits on a shipment, or result in loss of contracts. Some larger companies have individuals assigned to tracking these changes.

Here is a partial list of sources where Standards are outlined, or updated. You will need to be familiar with these to produce fully-compliant labels and stay current with any changes. ID Technology is fully versed to help you get in compliance and stay in compliance.

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<tr>
<th>Source</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>DFARS</td>
<td>DFARS 252.211-7003 Item Identification and Valuation</td>
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<tr>
<td>DFARS</td>
<td>DFARS 252.211-7007 Item Unique Identification of Government Property</td>
</tr>
<tr>
<td>MIL-STD</td>
<td>MIL-STD-130N – DoD Item Unique Identification Standard</td>
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<tr>
<td>UID Program Office Guide</td>
<td>Guide to Uniquely Identifying Items v1.6</td>
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<tr>
<td>Validation Standard</td>
<td>ISO 15434 – String Semantics</td>
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<tr>
<td>Data Matrix Standard</td>
<td>ISO 16022 – Data Matrix Specification</td>
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<tr>
<td>Verification Standards</td>
<td>SAE AS9132 - Data Matrix Verification</td>
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<td>ISO 15415 – Data Matrix Verification</td>
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<tr>
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<td>AIM DPM 1-2006 Direct Part Mark Quality Guidelines</td>
</tr>
</tbody>
</table>

If you have to comply with MIL-STD-129 and your contract calls for RFID, download your copy of our MIL-STD-129 eBook at http://www.labelingnews.com/PDF/ebook_130UID_v1.pdf.
Nationwide Service & Support

We pride ourselves in providing responsive nationwide customer service and support from any of our 17 regional sales, service and stocking facilities.

ID Technology technicians are PMMI Certified Trainers to ensure the highest standards of quality training are being met and unparalleled value is being given to the customer.

Our field service personnel are factory trained to service and support our full range of labeling, coding and marking equipment.

In addition to the field service team, ID Technology employs factory trained bench service technicians to accommodate timely depot service.

ID Technology boasts six label converting plants across the US and Canada that produce top quality labels and tags with local support.

Complimentary Limited Lifetime Equipment Warranty

For customers using ID Technology labels with our labeling systems, we provide a lifetime limited equipment warranty free of charge. Just ask us for details!