



Counterfeit Electronic Components in the U.S. Supply Chain

Summary of a report by
The Office of Technology Evaluation,
Bureau of Industry and Security,
U.S. Department of Commerce.



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This report summary has been prepared by **Rochester Electronics, LLC**, an **authorized distributor of semiconductors**.

Rochester offers a complete Extension-of-Life™ solution: manufacture, supply, distribution, replication and re-creation, testing and certification, procurement and storage. We extend life. And, **every** Rochester product and service is **100% guaranteed**.

The U.S. Department of the Navy is challenged to procure trusted electronic components that can keep weapon systems and platforms in top working order even when they have outlived their original end-of-life projections. More and more, these procurement efforts have succeeded in putting counterfeit parts into the supply chain. And counterfeit components can cost lives.

As a result, Naval Air Systems Command (NAVAIR) requested that the U.S. Department of Commerce Bureau of Industry and Security's (BIS) Office of Technology Evaluation (OTE) conduct a survey to assess the situation – in commercial, industrial, and defense supply chains. This survey is documented in Defense Industrial Base Assessment: Counterfeit Electronics / November 2009. All quotes in this summary are taken from this report.

General Survey Findings: Counterfeit Parts in the U.S. Supply Chain

"The number of counterfeit incidents for all electronic part types climbed dramatically from 3,868 cases in 2005 to 9,356 cases in 2008." (page 69)

"The proliferation of counterfeit parts is ... increasingly present at every level of the supply chain." (page 164)

"Data suggests that the incident rates reported by survey participants do not fully reflect the size and scope of the counterfeit parts problem." (page 78)

"The rise of counterfeit parts in the supply chain is exacerbated by demonstrated weaknesses in inventory management, procurement procedures, record-keeping, reporting practices, inspection and testing protocols, and communication within and across all industry and government organizations." (page ii)

The survey reveals that little is being done to avoid the infiltration of counterfeit parts into the U.S. supply chain:

- All segments of the supply chain have been impacted by counterfeit parts
- Organizations in the U.S. supply chain do not communicate with one another
- Organizations and companies simply assume someone else is checking for counterfeiting
- There is a common lack of traceability of parts throughout the supply chain
- Organizations do not establish a sufficient chain of accountability
- Only a limited number of organizations keep records about counterfeit incidents
- Most organizations do not know which government agencies to contact to report counterfeit incidents
- Few organizations are aware of legal requirements and liabilities related to counterfeits
- Testing protocols and quality control practices are generally insufficient

Counterfeit parts cause loss of revenue through manufacturing downtime as well as product failure. In the most regrettable scenario, counterfeit parts can cause personal injury or death. Throughout the supply chain, organizations are "unaware of the legal requirements and liabilities related to counterfeits," unaware of "the requirements for management and disposal of counterfeit product," and unaware of "liabilities related to the distribution, storage, and disposal of counterfeits." (page 187) Counterfeiting has been criminalized by the U.S. Government. (page 194)

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Best Industry Practices to Stop Counterfeits

To curtail the flow of counterfeit parts into U.S. supply chains, OTE developed the following best practices for organizations in all industry segments that deal with electronic components. See how Rochester Electronics instituted these best practices thirty years ago, and continues to build on them today.

OTE-Recommended Industry Best Practices for Companies that Deal with Electronic Parts	How Rochester Electronics' Long-Time Standing as an Authorized Distributor Assures You Security
<p>Implement <i>"institutionalized policies and procedures ... on how ... to avoid purchasing counterfeit parts; test, handle, and track incoming and outgoing parts; and manage and dispose of suspected counterfeit components."</i> (page 193))</p>	<p>Rochester guarantees every product and service 100%. We can do that because our policies provide for prudent purchasing, incoming and outgoing inspections, thorough tracking for 100% traceability, and state-of-the-art storage conditions. Documentation establishes correct procedures for the disposal of counterfeit components.</p>
<p>Train all personnel who handle electronic components (purchasing, quality assurance, and receiving) on how to inspect parts and identify possible counterfeits. (page 194) Provide <i>"clear, written guidance on what steps to take if they suspect a part is counterfeit."</i> (page 206)</p>	<p>Written procedures for handling and inspecting parts as well as dealing with possible counterfeits are provided to all relevant Rochester employees.</p>
<p>Report all suspect and confirmed counterfeit components to federal authorities and industry associations. <i>"Communication within and between industry segments is inconsistent."</i> (page 183) In 2008, only 3 percent of all incidents recorded by survey respondents were reported to the government. (page 184) This is mostly due to the fact that <i>"organizations do not know which authorities to notify."</i> (page 186) (Note: See the end of this summary for more information.)</p>	<p>Rochester works with federal authorities and industry associations every time a counterfeit incident occurs. Rochester partnered with the Semiconductor Industry Association (SIA) to create the Anti-Counterfeiting Task Force. Rochester has also created the <i>Official Manufacturers' Distributor Authorization Reference Manual</i>, a free service that lists authorized distributors by manufacturer. (www.authorizedcomponents.com) In addition, Rochester received the Chinese Reliable Electronic Component Supplier's Classification (RECS) by China's Ministry of Industry, a joint administrated program by the China Electronic Purchasing Association (CEPA) and the China Quality Association for the Electronics Industry (CQAE).</p>
<p>Maintain an internal database of suspected and confirmed counterfeit parts.</p>	<p>Rochester has always maintained a database of suspected and confirmed counterfeit incidents.</p>

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<p><i>"Buy parts directly from OCMs and authorized distributors, rather than from parts brokers, independent distributors, or the gray market."</i> (page 198) This policy may not be practical for organizations <i>"that work on systems that require out-of-production or obsolete parts."</i> (page 198)</p>	<p>Rochester purchases directly from original component manufacturers. All of Rochester's stock is 100% traceable. And Rochester is an authorized dealer – authorized by more than 50 original manufacturers.</p>
<p>Require suppliers to trace parts back to OCMs – certificate of conformance.</p>	<p>Every Rochester component is 100% traceable back to the original manufacturer.</p>
<p>Establish a list of trusted suppliers – use the following criteria: (page 200)</p> <ul style="list-style-type: none"> • Number of years in business • References from past/present customers • Counterfeit screening, tracking, and testing procedures • Adherence to industry and government standards • Membership in industry associations • Previous problems recorded • Quality of warehouse/storage facilities • Existing counterfeit avoidance policies 	<p>As an authorized dealer, Rochester belongs on everyone's list of trusted suppliers:</p> <ul style="list-style-type: none"> • 30 years in the semiconductor business • Satisfied past and present customers • Procedures and equipment screen, track, and test for counterfeit components • Rochester adheres to all standards and works to improve them • Active member of SIA* • Rochester reports all counterfeit incidents • Rochester's facilities are all state of the art • Rochester's counterfeit avoidance policies are aggressive <p>* Semiconductor Industry Association</p>
<p>Use a third-party escrow service to hold payment while parts are tested for authenticity.</p>	<p>Because all of Rochester's products and services are 100% guaranteed, escrow service is not often requested; however, we willingly work with any customer's requirements.</p>
<p>Ensure that procurement schedules are realistic.</p>	<p>Rochester has developed a number of proven, customizable programs that help customers plan for future component needs.</p>
<p>Establish contracts with suppliers that include improved notices for final life-time part purchase opportunities and of termination when electronic components will no longer be manufactured. <i>"Organizations should also have proactive obsolescence management plans when parts go out of production."</i> (page 200)</p>	<p>Rochester's Bill of Materials (BOM) program analyzes customers' requirement lists and provides a report on products that have delivery or EOL issues. Customers can then quickly develop a plan for the continuing supply of needed parts, greatly reducing the risk of non-availability and increased costs.</p>
<p>Physically destroy all defective, damaged, and substandard parts.</p>	<p>Rochester ensures that all suspect parts are reported to authorities and the original manufacturer and then are properly disposed of by a bonded recycling facility so they can't re-enter the supply chain.</p>

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<p>Increase the use of authentication technologies by part manufacturers and/or their distributors. <i>"Organizations trust the integrity of the supply chain and the products that flow through it."</i> (page 182) Therefore, no one is checking!</p>	<p>Rochester' 30,000-square-foot, state-of-the-art facility is staffed by experienced engineers who provide electrical, environmental, and burn-in testing. At Rochester, we're always checking!</p>
<p>Before placing components into inventory, screen and test them for authenticity (especially returns and buy backs): surface testing, X-ray analysis, destructive physical analysis, electrical testing, temperature or thermal cycling, burn-in. <i>"Organizations should establish internal testing capabilities."</i> (page 205)</p>	<p>Rochester is proud to promise a 100% guarantee. The only way to maintain that promise is to consistently, appropriately, and thoroughly inspect and test all components, whether purchased for distribution or manufactured.</p>
<p>Employ testing protocols that conform to the latest industry standards.</p>	<p>Rochester uses original test programs and equipment when they are available, or develops new programs using the most recent technical information. Testing is performed to 100% of the original manufacturer's specifications.</p>
<p>Verify the integrity of test results from contract testing houses.</p>	<p>At Rochester, we rely on the test results from our own superior in-house testing facilities.</p>
<p>Perform supplier site audits; evaluate product return, buy back, and inventory control practices, and quality processes. <i>"Inventory should be kept under strict control. Parts for different customers should be kept separate... Parts purchased from different suppliers should not be co-mingled."</i> (page 205)</p>	<p>No other company has passed as many stringent audits as Rochester has – performed by original manufacturers, government agencies, audit specialists, and customers.</p>

In addition, OTE proposed recommendations that the U.S. Government should institute to inhibit the circulation of counterfeit electronics.

Not All "Authorized Distributors" Are the Same!

While OTE's report recommends that the best defense against counterfeit parts is to buy from the original manufacturer or an authorized dealer, their investigation also revealed that "authorized distributors" operate under varying sets of standards; therefore, not all "authorized distributors" can be trusted to provide product that is 100% guaranteed.

Less-than-desirable Practices of "Authorized" Distributors	Why Rochester Electronics' is an Authorized Distributor You Can Trust
<p><i>"51 percent of authorized distributors ... said that they restock or re-circulate returns and buy backs. Only a small number of these distributors ... require these parts to undergo quality control and screening before they are re-circulated."</i> (page 55)</p>	<p>Rochester consistently, appropriately, and thoroughly inspects and tests all components, whether purchased for distribution or manufactured. Rochester is proud to promise a 100% guarantee of all products and services.</p>

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<p><i>"The low levels of testing by authorized distributors are surprising considering industry concerns about the reliability of parts supplied by brokers and independent distributors."</i> (page 57)</p>	<p>Experienced engineers in Rochester's 30,000-square-foot, state-of-the-art facility provide electrical, environmental, and burn-in testing using the most recent technical information available. Testing is performed to 100% of the original manufacturer's specifications.</p>
<p><i>"Many [authorized distributors] do not have any protocols for identifying counterfeits beyond packaging and documentation."</i> (page 72)</p>	<p>Rochester employees are provided with the inspection and testing protocols, training, and equipment necessary to expose any counterfeit product.</p>
<p><i>"Only 29 percent of authorized distributors ... conduct inventory audits specifically to check for counterfeits."</i> (page 59)</p>	<p>Rochester inventory is guaranteed 100% traceable and authentic. Any counterfeit devices are detected in the screening process before they reenter stock.</p>
<p><i>"Authorized distributors ordered considerably less testing than unauthorized distributors in 2008 ... Even fewer authorized distributors ordered more comprehensive electrical or physical [destructive] testing."</i> (page 61)</p>	<p>At Rochester's in-house testing facilities, specialized engineers conduct state-of-the-art electrical, environmental, and burn-in testing. All of Rochester's products and services are 100% guaranteed.</p>
<p><i>"36 percent of authorized distributors do not take any steps after being notified of a counterfeit incident [i.e., that they have shipped counterfeit parts]."</i> (page 64)</p>	<p>Rochester's policies and procedures guarantee that no counterfeit part is ever shipped to a customer.</p>
<p><i>"Only 29 percent of authorized distributors ... notify industry associations about counterfeits."</i> (page 65)</p>	<p>Rochester continually works with industry associations to combat the counterfeit problem. Rochester partnered with the Semiconductor Industry Association (SIA) to create the Anti-Counterfeiting Task Force.</p>
<p><i>"Only 36 percent of authorized distributors ... check at least one database for counterfeits information." [in an ongoing effort to keep abreast of current information]</i> (page 66)</p>	<p>Rochester stays on top of all information available about counterfeits. In addition, Rochester has been a leader in encouraging consumers and government agencies worldwide to establish practices and laws that will eliminate counterfeit electronics from the supply chain.</p>
<p><i>"Authorized distributors do not have any information sharing networks or industry associations exclusive to their segment of the industry for counterfeit electronics."</i> (page 67)</p>	<p>Rochester, working with SIA, has created <i>Official Manufacturers' Distributor Authorization Reference Manual</i> which lists authorized distributors by manufacturer. (www.authorizedcomponents.com)</p>

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Overview of the Survey Purpose and Method

The purpose of the survey was three-fold:

- To discover the extent of counterfeit infiltration into the U.S. military and industrial supply chains
- To understand how government and industry practices enable the counterfeit problem
- To establish best practices and recommendations for handling and preventing counterfeit electronics

OTE conducted independent research, field interviews, and surveyed five segments of the U.S. supply chain (387 companies and organizations participated):

- original component manufacturers (OCMs)
- distributors and brokers
- circuit board assemblers
- prime contractors and subcontractors
- Department of Defense agencies

Each industry segment was asked to provide information on the following topics for the period from 2005 to 2008:

- How many suspected/confirmed counterfeit parts are making their way into inventory?
- What types of devices are being counterfeited?
- What procurement and management practices are employed?
- What record-keeping and reporting practices are in place to track counterfeit components?
- What techniques are used to determine if parts are counterfeit?
- What best practices can be employed to prevent counterfeit parts from entering the supply chain?

Where to Report Suspected and Confirmed Counterfeit Incidents

Defense-related counterfeits: Defense Criminal Investigative Service (DCIS)
(800-424-9098 — <http://www.dodig.mil/hotline>).

Aviation counterfeits: FAA Suspected Unapproved Parts Program
(800-255-1111 — 9-awa-avs-aai-safetyhotline@faa.gov)

Commercial counterfeits: FBI
(find your local FBI office at <http://www.fbi.gov/contact/fo/fo.htm>)

Also, visit **Cybercrime.gov** to learn more on reporting counterfeit incidents.