



W18 Reporting

Frequently Asked Questions

Q. If raw materials of a part are sourced from two suppliers but with measurable differences, how should the material disclosure be made?

A. The weighted averaging approach is not preferred. First, any substances on the controlled list should be listed in worst case (highest value) among the two raw materials. Then, any substances on the reportable list should be listed in worst case (highest value). Next, adjust remaining non-reportable material of highest value downward as required to achieve measured part mass. This approach most correctly reports worst case for future use and avoids issues with possible noncompliance due to source raw material variations.

Q. What is the best way to analyze and report a coating film or solder on components?

A. As it is difficult to disjoin and analyze coating and solder from other material, material suppliers should provide us with data on the solder paste or paint as received. But for such materials, the exact chemical composition of the components is different before and after spraying or print application and reflow manufacture. For coating where a carrier or solvent evaporates, you may have to measure thickness with a gauge or cross section and report the actual material left after processing. This may be the same as the percent of solids used in the paint industry. If paint reacts upon curing it should be the cured state that is reported. For solder

paste, flux will be gone after reflow so report based on mass and composition of the metals in the alloy. Motorola Solutions is not looking for any greater detail than just finished part data, not part manufacturing process data. A specific example of how to analyze coatings is located in:

[How to Complete a Motorola Solutions W18 Material Disclosure for Painted or Plated Parts Using eW18](#)

Q. If the concentration of one controlled or reportable substance is below the W18 reporting threshold, do suppliers need to report that data?

A. Section 5.1.2 of the W18 specification requires the reporting of “all controlled and reportable substances with concentrations in excess of the reporting thresholds noted in Appendix A.” For example, if the concentration of Chromium VI (Cr VI) compounds in one homogeneous material is 80 parts per million (ppm) and its reporting threshold in Appendix A is 100 ppm, then should the supplier enter “80 ppm” in the eW18 form? Or, can they choose to not report the Cr VI since it is below the required reporting threshold? The supplier is not required to report any levels below the reporting thresholds in Appendix A. However, if you do report the data, it will not have any negative effect on the compliance decision.



Q. If the concentration of a substance is extremely low or can be labeled as “not detected,” how should material disclosure be made?

A. In Appendix A and C of the W18 specification, there are eight kinds of substances that are banned. However, in one testing report, if the concentration of one substance is less than 2 ppm, it will be labeled as “not detected.” How is the material disclosure made in this case? For example, if the presence of chlorofluorocarbons is listed as “not detected,” can suppliers fill in the eW18 form with “chlorofluorocarbons: 0 ppm”? What if a spot test is done and a trace amount, such as 0.1 ppm, of chlorofluorocarbons is present? Will the supplier be penalized or found noncompliant? Motorola Solutions recommends that suppliers do not need to report not-detected substances if the detection limit is low. To date, the not-detected allowable limits have not been defined but technical guidance says that anything less than 10 ppm that is not intentionally added to the material does not have to be reported. A better interpretation of this definition is being discussed. In any case, suppliers should file all test results and document the test methods since these may later provide valuable details.

Q. For unknown homogeneous materials, how can the number of tests be reduced to lower the cost of material assays?

A. Often, for unknown homogenous materials, many tests have to be conducted to know the exact concentration of banned/restricted and reportable materials. The supplier should use engineering specifications to list controlled and reportable materials known to be intentionally added. Some chemical analysis of the controlled substances is advisable if there is reason to expect they could exceed reporting or allowed limits. For example, with materials such as Chromium (Cr) III conversion coatings, a lack of proper process control could produce excessive levels of Cr VI in the coating. In this instance, testing for the level of Cr VI is well advised. Suppliers are expected to exercise their best judgment.

Q. Are engineering calculations accurate enough for reportable materials testing?

A. Reportable materials are much less critical because at this time there are not any known legal restrictions against their use. Motorola Solutions does not require a supplier to test for all substances on the reportable list at this time. Most parameters should be known by materials properties available to supplier and sub-suppliers and reported by engineering calculation.

Q. If an X-ray test returns a “not detected” result, do suppliers need to use a more accurate method to get an exact concentration?

A. X-ray fluorescence (XRF) testing is useful in screening for many elements, while engineering knowledge also can help to identify others. In general, for the elements lead (Pb), mercury (Hg) and cadmium (Cd), the XRF scan is sufficient — assuming the equipment is 10 times more sensitive than the acceptance thresholds of 1000 ppm (100 ppm for Cd). However, if the result is close to the acceptance limit, a more accurate test method should be used. XRF will only reveal total chromium (Cr) and bromine (Br), used in polybrominated diphenyl (PBBs) and polybrominated diphenyl ether (PBDEs) controlled substances. The more specific methods are colorimetric (diphenylcarbazide) for Cr VI and one of high-performance liquid chromatography (HPLC), gas chromatography-mass spectrometry (GCMS) or Fourier Transform Infra Red spectroscopy (FTIR) for the PBB/PBDEs. Tests for Cr VI should be undertaken if a chromate dip finish is present. Tests for PBB/PBDEs should be undertaken if an unknown flame retardant or highly recycled and unknown thermoplastic is involved. An [International Electrochemical Commission \(IEC\)](#) standard test document that provides some guidance is available and may be consulted for further information (IEC 62321 Electrotechnical products. Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers)).

Q. Should the presence of a restricted substance in paint (prior to processing) from a supplier be reported on the W18?

A. A material safety data sheet (MSDS) obtained from a paint supplier indicates the presence of a restricted substance that exceeds Motorola Solutions’ reporting threshold. The paint, prior to spray application onto a plastic substrate, contains 2.1 percent of Ethylene Glycol Monomethyl Ether and its acetate. This exceeds the Motorola Solutions reportable limit of 5 ppm. According to the W18 specification, process chemicals and other substances that do not remain with the part received by Motorola Solutions should not be included. Often, the solvents in paint evaporate during processing and no longer remain in the paint film. So, if the substances have completely evaporated from the coating during processing, these chemicals do not have to be reported to Motorola Solutions. However, if tests of the finished part show the restricted substance is still present in the coating in an amount at or above the reportable level for that chemical, then it should be reported.

Q. For W18 reporting, what is the upper limit for lead content in alloys that is allowable per the European Union's RoHS directive?

A. Lead is a common element in many metal alloys used in electronic products. A copper (Cu) lead frame material, for example, contains 1.3 percent lead by weight as a homogeneous alloy. Motorola Solutions' W18 specification requires suppliers to report all substances, including lead (Pb), at the homogeneous material level. If lead is present in the material, then it must be reported in the eW18 spreadsheet — no exceptions. The European Union's Restriction on Hazardous Substances (RoHS) directive does allow up to 4 percent lead in a homogeneous copper alloy. In the example given above, the part would be given a "Pass with Exemption" status. Since Motorola Solutions knows the restricted material is present and it does not exceed the EU limit of 4 percent, it is permitted to ship the product with that part. In other cases, when lead is present in a non-exempted (not-allowed) use, the RoHS limit for homogeneous materials is 0.1%.

Q. How long do suppliers have to complete eW18 requests?

A. We allow 7 days from the time a supplier receives the eW18 request to the time a response is received by the Environmental Data Manager. If additional time is needed to complete the form, we expect the supplier to notify MSI at that time.

Q. Within Motorola Solutions, typically who is in charge of the W18 compliance process?

A. At Motorola Solutions, development engineering, component technology engineering, and new product sourcing managers are involved in the evaluation of new parts. However, the process for requesting, receiving, and processing W18 data is handled solely by our Environmental Data Management team in Penang, Malaysia.

Q. Where should suppliers send their completed eW18 forms?

A. Material suppliers to Motorola Solutions should send completed eW18 forms to w18submittal@motorolasolutions.com and use the Environmental Data Manager as their primary point of contact after submitting their reports.

Q. Where may I find detailed information on the data submission process?

A. The supplier disclosure process is described in detail on our [material disclosure process](#) web page. Some suppliers have noted that after submission of the data to Motorola Solutions, they are asked to resubmit it to different persons. Unless there are issues with the data collection process or the electronic transfer of the data, it will not be necessary to submit the data again. Simply reference the date of your original electronic data submission in replies to such requests.

Q. How does Motorola Solutions handle W18 reports and material certificates for electronic components from third parties?

A. In some cases, electronic components such as resistors and capacitors may not have been purchased directly from the manufacturer but instead are sourced through distributors or agents. As a result, it can be difficult to get W18 reports and material certificates. While it may be possible to send samples to the test lab, this is costly and time consuming. Try to get the data from the component manufacturer through the distributor or go straight to the component manufacturer to obtain the necessary information. Material assay can provide some information about the substance content, but engineering knowledge is the best and most accurate source of material composition data.

Q. Is a W18 required for holsters or carrying cases?

A. The carrying case or holster is part of the product and W18 data is required.

Q. Is the information provided by suppliers in the eW18 form legally binding?

A. When certified and exported, the eW18 form is a legal document. Motorola Solutions relies upon the information provided by suppliers in order to meet its reporting obligations.

