

# **[Attachment 1] Request for building environmentally hazardous substance control system**

With regard to products supplied to NTN, please manage the inclusion and incorporation of substances stipulated in the list of NTN environmentally hazardous substances (Appendix), and establish a system for reporting to NTN as well as an assurance system (particularly for non-inclusion of ELV/RoHS10 substances). The substances to be reported as requested by NTN are set out as follows.

The suppliers can make reference to guidelines for environmentally hazardous substance control published by “Joint Article Management Promotion-consortium (JAMP)” (available from our website).

## **1 Control of upstream end**

### **1.1 Supply chain**

- [1] Make a list of parts, materials, sub-materials, and packaging materials (hereinafter, simply referred to as parts, etc. and packaging materials) composing the products to be supplied to NTN and their suppliers for control.
- [2] Trace the supply chain of parts, etc. and packaging materials back to raw material manufacturers and make a list of them for control.
- [3] Provide your environmentally hazardous substance control criteria to your suppliers, request them to conform to the criteria, and understand the status of environmentally hazardous substance control performed by your suppliers by means of audit or with reference to submitted check sheets.

### **1.2 Recognition of information on substances contained in parts, etc. and packaging materials**

- [1] Obtain composition tables, analytical data, mill sheets, SDS, etc. for parts, etc. and packaging materials from your suppliers or request your suppliers to conduct an investigation to recognize information on environmentally hazardous substances contained in products to be supplied.
- [2] It is required to obtain analytical data on ELV/RoHS 10 substances.
- [3] Obtain information on environmentally hazardous substances contained in sub-materials (process materials possibly to be attached to products to be supplied to NTN)
- [4] Routinely obtain up-to-date information and inquire about unclear points, if any, to your suppliers.

### **1.3 Design and development control**

- [1] Confirm that all the parts, etc. meet the NTN Green Procurement Standard at the stages of design and development.
- [2] Specify the environmentally hazardous substance control criteria, for example, “Shall meet the NTN Green Procurement Standard” on drawings.

## **2 Process control**

### **2.1 Acceptance inspection**

- [1] Perform acceptance inspection on products to be delivered by your suppliers by a method capable of addressing their risks. For example, check the product name and product ID, make reference to information on contained environmentally hazardous substances and analytical data provided by your suppliers, perform internal sampling inspection, and so on.

### **2.2 Process control**

- [1] Differentiate between products containing environmentally hazardous substances and products containing none of these substances to prevent both kinds of products from being mixed.

- [2] Specify the ID numbers and names of some sub-materials, which may be mixed externally, on Summary of operations, etc. (e.g. permanent markers to be used for marking on products).
- [3] Because phthalate esters have high migration characteristics, make sure to recognize parts and packaging materials in the materials and the manufacturing process containing phthalate esters, and substitute them with those without phthalate as much as possible. If it is not possible, take actions to prevent migration, such as separating equipment and jigs.

### **3 Change control**

- [1] Check that the state of environmentally hazardous substances (especially ELV/RoHS 10 substances) contained in parts, etc. has not changed when the design or process is changed.
- [2] If any change is observed, report what type of change has occurred in the “application for approval of process change” and take appropriate actions in accordance with NTN instructions.

### **4 Actions to be taken in case of abnormalities**

- [1] If any abnormality in quality is observed in products to be supplied to NTN such as “NTN-prohibited substances” mixed into or adhered to these products, at delivery, immediately make contact with NTN to receive instructions. Investigate the cause for the abnormality, take actions for prevention of recurrence, and report them to NTN. The contact and reporting format depend on the cases of abnormalities in product quality.

### **5 Confirmation before shipping**

- (1) Be sure to recognize and confirm information on environmentally hazardous substances contained in products to be supplied to NTN before shipping (Establishment of traceability and sharing of information).
- (2) Confirm products to be supplied to NTN by the best method (confirmation described in sections 1 to 4, internal sampling inspection, etc.) capable of addressing the risk of mixing of environmentally hazardous substances in these products.

### **6 Disclosure of information to NTN**

- (1) Disclose information specified in the “NTN Green Procurement Standard” and information necessary for confirmation in accordance with newly added laws or customer standards immediately when requested by NTN.
- (2) If it is known that unreported “NTN-prohibited substances” and “NTN observation-requisite substances”, in particular, are contained in products to be supplied to NTN, voluntarily report it to NTN as soon as possible (**Form 5**).

## [Attachment 2] Reporting of no ELV/RoHS 10 substances contained in products to be supplied

Positioning non-containing of ELV/RoHS 10 substances (lead, mercury, cadmium, hexavalent chromium, PBB, PBDE, DEHP, BBP, DBP and DIBP) to be an important quality attribute, NTN makes sure that they are not contained in products to be supplied to NTN. You should report non-containing of these ten kinds of substances to NTN as apart of quality assurance.

### 1 Confirmation with reference to written non-containing of environmentally hazardous substances in the shipping inspection sheet and the evidence

- Specify “Non-containing of ELV/RoHS 10 substances confirmed” in your shipping inspection standard.
- At the first arrival of new items and the change of processes, for all components, individual and appropriate evidence is obtained from suppliers, or they are analyzed by your company (including outsourced analyses). It is recommended that you obtain evidence from raw material manufacturers in the upstream of the supply chain.)
- Substances which require evidence for each category of procured items in Table 2 of the section 5.3, of the body text, to follow **Attachment 3** for appropriateness of evidence

It should be noted that in some cases we request the suppliers to perform more rigorously confirmation of non-containing of environmentally hazardous substances depending on the risk of mixing of ELV/RoHS 10 substances in products to be supplied to NTN or as requested by our customers.

### 2 Reporting the result of non-containing confirmation written in the test result report

- Based on the result of confirmation described in the previous section, report the result of ELV/RoHS 10 substance confirmation using the test result report for each of lots. (It is not required to obtain new evidence if no change is made to the process, etc.)

[1] Record the result of non-containing confirmation based on the evidence in your test result report (attach the table shown below to the report and check in the box if applicable).

Item	Result (check in the applicable boxes and fill the names of substances in spaces).	
Result of ELV/RoHS 10 substance non-containing confirmation	<input type="checkbox"/> New <input type="checkbox"/> Existing	<input type="checkbox"/> Non-containing confirmed in all the composing parts based on the evidence <input type="checkbox"/> Non-containing confirmed based on the evidence except for _____ as instructed by NTN
	<input type="checkbox"/> Change	<input type="checkbox"/> Not changed <input type="checkbox"/> Non-containing confirmed in all the composing parts, to which change was made, based on the evidence

- \* If the test result report has no space for filling the descriptions in the table shown above, submit this table together with the report as an attachment. Alternatively, it may be accepted that only the items necessary for delivery are extracted for simplification so that they may be described in the test result report provided that the following requirements are met.
- Obtain agreement of the department, to which products are delivered, in advance.
  - Make sure that it is specified in your procedure, etc. to attach the formal table as an

attachment when you are requested to report the contents of omitted items (“new products” and “when change is made” in the example shown below).

[Example of simplification]

Item	Confirmation	
Result of ELV/RoHS 10 substance non-containing confirmation	<input type="checkbox"/> Existing	<input type="checkbox"/> Non-containing confirmed in all the composing parts based on the evidence

- [2] At the time of the first delivery of new items and process change items, attach the “List of ELV/RoHS 10 substance evidences (**Form 4**),” which is a summary of confirmation results, and the evidence which serves as a basis.

Any products to be delivered, for which no result of non-containing confirmation is described, are considered to be rejected and not accepted by NTN.

### 3 Exception for reduced description of non-containing confirmation

For products to be supplied to NTN, which meet the **requirements 1 and 2**, it is accepted that the result of non-containing confirmation is added in or attached to the test result report only when new products are initially delivered or changes are made to the design or process. (It is not required to add the result for each lot.)

**[Requirement 1]** (The description may be reduced provided that both the requirements 1 and 2 are met)

- [1] Products to be analyzed

Products to be supplied to NTN, which have been formed by any of the forging, turning, grinding, and heat-treatment steps or the combination of them from the materials/formed & fabricated materials supplied by NTN

- [2] Submission of regular report form

“Check sheet for environmentally hazardous substance control system (**Form 2**)” and “Non-inclusion certification of NTN-prohibited substances (**Form 3**)” shall be submitted to NTN once a year.

**[Requirement 2]**

As for sub-materials and process materials, submit non-inclusion certification of NTN-prohibited substances (**Form 3**), List of RoHS/ELV 10 substance evidences (**Form 4**) and evidence to support it in advance, and make sure that they are on the accepted product list created by a business site to which you deliver. (For the acceptable product list, contact the purchasing department of each business site.)

# [Attachment 3] Conducting analysis of ELV/RoHS 10 substances and preparing evidences

## 1 Considerations in conducting analysis

- Analysis of ELV/RoHS 10 substances is conducted in accordance with the latest version of IEC 62321\* in principle. Any alternative methods may be accepted provided that they are appropriate for analysis.
- If the products to be supplied to NTN are formed of more than one member or are composite materials, each of homogeneous materials of the composing element shall be measured.
- An analytical instrument to be used shall be optimized in advance. The standard specimens (selected specimens suitable for measurement, sample constitution/shape, etc.) shall be measured to obtain the working curve and checked for any variation in instrument ( $\sigma$  value), etc. Make sure that certificate for NTN threshold measurement may be given to the instrument based on the result of checking.

\*IEC 62321: “Electrotechnical products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polybrominated biphenyl ethers)”  
International standards established by International Electrotechnical Commission (IEC) regarding test measurement for RoHS analysis.

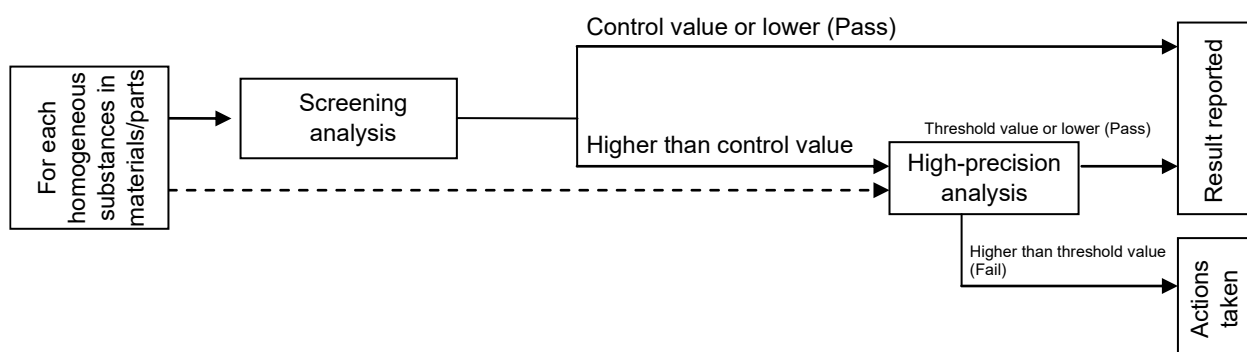
## 2 Analysis flow and analysis method

The analysis flow is shown in **Fig. 1** and the analysis method in **Table 1**.

First, conduct a screening analysis, and further perform a high-precision analysis for samples that have higher values than the control value to determine the final acceptance. (Alternatively, perform a high-precision analysis in the first place.)

Make sure that the quantification limit of your analytical method is lower than the controlled value in **Table 1**.

It should be noted that for the model numbers for specific customers, data from high-precision analysis is required because data from screening analysis is not allowed. The data shall be submitted as requested by NTN.



**Fig. 1 Analysis flow**

(When our company separately specifies the method of analysis, follow the instructions)

**Table 1 Target substances and analysis methods**

Target substance	Main screening analysis method	High-precision analysis method	Control value	Threshold value*2
Lead (Pb)	Fluorescent X-ray analysis (XRF)**1	(1) Inductively coupled plasma atomic emission spectrometry (ICP-OES)	500 ppm Resins: 100 ppm	1000 ppm
Mercury (Hg)			500 ppm	1000 ppm
Cadmium (Cd)		(2) Inductively coupled plasma mass spectrometry (ICP-MS)	75 ppm Resins: 20 ppm	100 ppm
			(3) Atomic absorption spectrometry (AAS)	
Hexavalent chromium (Cr <sup>6+</sup> )		Diphenylcarbazide absorptiometry	500 ppm	1000 ppm
Two types of specific brominated flame retardants PBB, PBDE		Thermal desorption – Gas chromatography mass spectrometry (TD-GC/MS)	Solvent extraction – Gas chromatography mass spectrometry (GC/MS)	500 ppm
	500 ppm			1000 ppm
Four type of phthalic acid esters DEHP, BBP, DBP, DIBP			500 ppm	1000 ppm

\*1 Confirm the total amount of chromium in the case of hexavalent chromium; confirm the total amount of bromine in the case of PBB and PBDE; and perform a separate high-precision analysis for the sample with a value higher than the control value.

\*2 As for the packaging materials, the total amount of lead, mercury, cadmium and hexavalent chromium is 100 ppm or lower, and the amount of the phthalic acid esters is 1000 ppm or lower, respectively.

### 3 External analysis organization

If the analysis is outsourced, request the analysis to the analysis organization certified to **ISO 17025 [JIS Q 17025]**. Some of the customers shall accept only the evidence that are analyzed by certified organizations. If not analyzed by such an organization, we may have to ask you for re-measurement.

### 4 Preparing evidences

As for all components, obtain individual appropriate evidence from the supplier, or analyze them according to **sections 2 and 3** described above (including external request analysis). (To reduce the burden of expense in your company, it is highly recommended that you obtain the evidence of raw material manufacturers in the upstream of the supply chain.)

The format of the evidence may be that obtained from the suppliers and analysis organizations and that output from the software of the analysis device of its own company. However, be aware that we may ask you to re-submit the evidence when the information is insufficient.

Summarize the evidence information for each of those components in **Form 4** as the information for each product. The procedure and example of how to fill out the form are shown below.

Procedure and example of how to fill out form

To: Product purchasing department

Prepared on: \_\_\_\_\_,  
 Company name: OO Company  
 Division: xx Department

[Form 4] List of ELV/RoHS 10 substance evidences

Approved by:	Checked by:	Prepared by:
Author's contact (TEL):		

Product No./name		Seal (6800LU)							
Composing elements		Rubber	Cored bar	Fill the quantitative/qualitative analysis report No.					
Material name		NBR	SPCC						
Report No.		OO-xx	OO-xx						
Purchasing method		[3]	[1]						
Supplier		Company A	Company B	Fill an applicable number in the columns. [1] Parts to be purchased [2] Sub-materials to be purchased [3] Materials to be purchased [4] Interior parts to be purchased [5] NTN-supplied products [6] Other					
Target environmentally hazardous substances (measured value, 3σ is expressed in ppm)	Lead	Measured value	50	40					
		3σ	20	15					
		Measuring method	XRF	XRF					
	Mercury	Data source	[3]	[3]					
		Measured value	18	30					
		3σ	10	20					
	Cadmium	Measuring method	XRF	XRF					
		Data source	[1]	[3]	Fill the supplier (manufacture) for supplied products in the column.				
		Measured value	2	15					
	Hexavalent chrome	3σ	-	10	Be sure to fill 3σ for fluorescent X-ray analysis.				
		Measuring method	ICP-AES	XRF					
		Data source	[3]	[3]					
	PBB	Measured value	100	30					
		3σ	-	-					
		Measuring method	Absorptiometry	AAS	Fill an applicable abbreviation. • EDX (Energy dispersive X-ray spectrometry) (3σ value required) • WDX (Wavelength dispersive X-ray spectrometry) (3σ value required) • ICP-AES (Inductively coupled plasma emission spectrometry) • ICP-MS (Inductively coupled plasma mass spectrometry) • AAS (Atomic absorption spectrometry) • GC/MS (solvent extraction gas chromatography mass spectroscopy) • TD-GC/MS (thermal desorption gas chromatography mass spectroscopy) • Absorptiometry (Diphenylcarbazide absorptiometry)				
	PBDE	Data source	[1]	[3]					
		Measured value	1	-					
		3σ	-	-					
DEHP	Measuring method	GC/MS	-						
	Data source	[3]	-						
	Measured value	64	-						
BBP	Measuring method	TD-GC/MS	-	Fill the applicable number in the column. [1] Internal measurement [2] External measurement (by ISO 17025 certified organization) [3] External measurement (by ISO 17025 non-certified organization) [4] Measurement by your supplier (by ISO 17025 certified analysis organization) including 2nd- and lower-order suppliers [5] Measurement by your supplier (by ISO 17025 non-certified analysis organization) including 2nd- and lower-order suppliers [6] Converted value of measured value of material					
	Data source	[1]	-						
	Measured value	103	-						
DBP	Measuring method	TD-GC/MS	-						
	Data source	[1]	-						
	Measured value	78	-						
DIBP	Measuring method	TD-GC/MS	-						
	Data source	[1]	-						
	Measured value	56	-						
Acceptance (Ox)		O	O						

Check before submission	O, x
1) Filled in all columns concerning all composing elements (parts, materials, sub-materials, process materials, and packing/packaging materials).	O
2) Filled the results of checking of all the composing elements in the column Acceptance.	O

Fig. 2 Procedure and example of how to fill out Form 4