YOKOGAWA

Material Composition Survey and Response Manual (Supplementary Edition for Yokogawa Group)

Febraury 2010 Version 3.1

Yokogawa Electric Corporation

Contents

Material Composition Survey and Response Manual (Supplementary Edition for Yokogawa Group)

Revision History

Ver	Description
0.0	· Newly published
1.0	· Addition of check items when verifying entered data · Addition of survey tool user's manual
2.0	· Addition of "Scope and Promotion of Survey Responses" · Addition of detailed options for entry in the Scheduled Day to Answer field · Addition of a table of RoHS Exemption Numbers · Addition of a request to include surface treatment symbols in the survey response (including a table of surface treatment symbols) · Addition and correction of check items when verifying entered data · Addition of rules for naming JGP files with which survey requests are made
2.1	· Removal of MUST for Data Version and addition of supplement to Exhibit 8
2.2	· Addition of Guarantee of RoHS Compliance
2.3	· Addition of RoHS Exemption Items · Change of Surveyed Company Column 3 from "RoHS Exception NO" to "RoHS Directive Compliance Y/N"
3.0	· Response to the JGPSSI Tool Ver.3
3.1	· Addition and deletion of a table of RoHS Exemption Numbers

1. Purpose

Yokogawa Electric Corporation (hereinafter “Yokogawa”) will conduct a survey of the chemical substances contained in products, in accordance with the Green Procurement Survey Standardization Guidelines and Material Composition Survey and Response Manual prescribed by the Japan Green Procurement Survey Standardization Initiative (JGPSSI).
This document provides supplementary information with regard to the Material Composition Survey and Response Manual, as well as Yokogawa’s additional survey items.

Note: Yokogawa has changed the JGPSSI Tool format from the conventionally used Ver.2.00 to Ver.3.00. From now on, you will be required to report using the JGPSSI Survey Response Tool Ver.3.00.

2. Survey Responses

Some heading fields for Yokogawa’s own use have been independently set in the survey tool provided by the JGPSSI. Download this Yokogawa-version survey tool from the “Green Procurement Survey” on the following Environmental Management page of Yokogawa’s website.

URL: http://www.yokogawa.com/eco/green/eco-green-procurement-en.htm

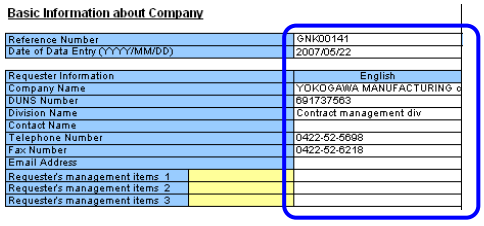
This document specifically discusses the heading fields, which were set independently for Yokogawa’s own use. For details on the survey tool input procedure, refer to the Material Composition Survey and Response Manual and the Survey Response Tools Operation Manual created by JGPSSI.

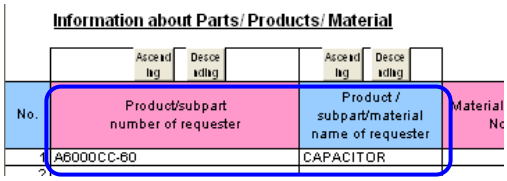
3. Response Format of the JGP File

There are two formats available for the JGB file, Format 1 (Standard Type) and Format 2 (Detailed Type). You may use any of the two formats for responding to the survey. However, it is desirable to use the detailed format, if possible.

4. Supplementary Notes on the Survey Response Tool

(1) "Reference Number," "Requester Information," and "Product/Subparts Number of Requester"
Never erase or change the "reference number," "requester information," and "product/subparts number of requester" in the JGP file from Yokogawa.





(2) Parts Numbers Included in the Survey Request
Note that "product/subparts numbers of requester" which Yokogawa states in the form when

making survey requests may slightly differ in the suffix number from those for which Yokogawa has actually issued purchase orders. (Specifically, the 9th digit of parts numbers in the *nnnnnnn-0n* format may differ.)

Example: The actual parts number stated in the purchase order: A1000RQ-09

↓

The parts number used when making survey request: A1000RQ-19

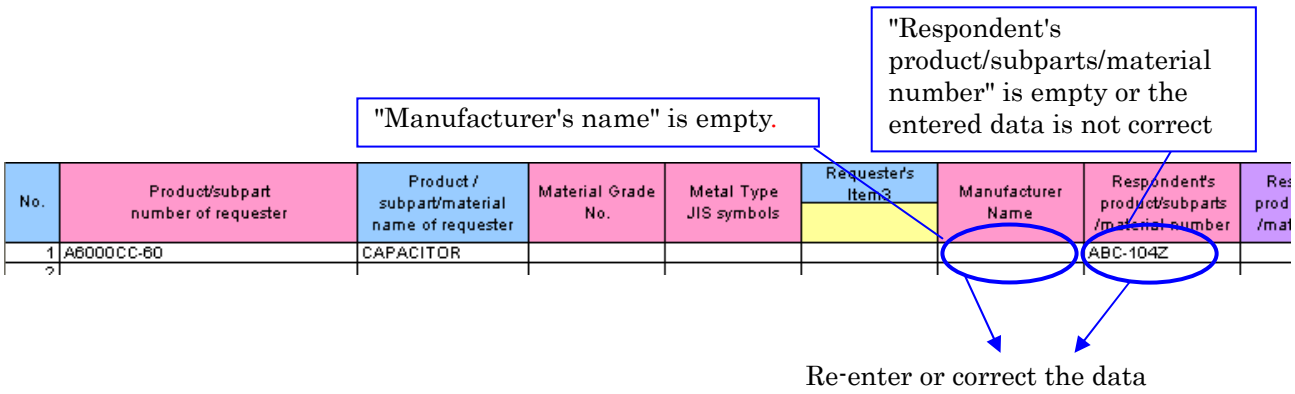
This procedure is taken for reasons of data processing by Yokogawa. However, the parts number used at the surveyed company agrees with the one for which Yokogawa has actually issued a purchase order.

Furthermore, some parts numbers are enclosed in half-angle double quotation marks (“) for facilitating data processing by Yokogawa. (Example: “955-123456789”)

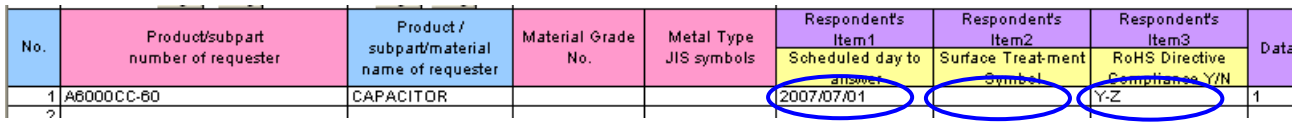
In addition, the Surveying Company Column 1 “Parts numbers ordered (application made for alteration/discontinuation)” may include, as reference information, a part number for which the purchase order was issued or a part number for which application for alteration/discontinuation was submitted (at the time of survey of alteration/discontinuation).

(3) Manufacturer's Name and Parts Number

If the " Manufacturer's Name" and "Respondent's product/subparts/material number" columns for the parts number are empty, or the entered data is not correct, re-enter or correct the data.



(4) Surveyed Items



(a) Surveyed Company Column 1 “Scheduled Day to Answer”

If you fail to respond regarding some of the multiple parts under survey and wish to answer later, enter the estimated date of response.

* If it is not possible to respond to the survey, please let us know the reason by e-mail or fax.

(b) Surveyed Company Column 2 “Surface Treatment Symbol”

For mechanical components (screws, washers, bolts, nuts, etc.), principally, you also need to enter the mass and content data for the surface treatment area in the JGP file. If, however, it is impossible to calculate the content on the surface treatment area, enter an appropriate surface treatment symbol according to the following table of surface treatment symbols based on the Yokogawa Engineering Standards. In this case, if any substances not included in the table are used for pre-treatment or in-work processes, report accordingly using attachments. The format of such attachments is optional. However, the inclusion of such attachments should be stated in the Confirmation Note for the Submitted Documents that will be presented together with the

response JGP file.
In this case, it is acceptable to only enter the mass and content data related to the base materials of such mechanical parts in the JGP file.

- Electroplating

Surface Treatment	Surface Treatment Name	Surface Treatment Symbol
Zinc plating	Zinc plating – light yellow chromate	Zn
	Zinc plating – light blue chromate	ZnW
	Zinc plating – black chromate	ZnB
Nickel plating	Plating after polishing base material is polished	Ni2
	Plating without polishing base material	Ni3
	Plating without polishing base material Thin plating on copper base material	Ni4
Chromium plating	Glossing after polishing copper base material	Cr2
	Plating without polishing base material	Cr3
	Black chromium plating	BCr
Industrial (hard) chromium plating	Industrial (hard) chromium plating	HCr
Tin plating	Tin plating	Sn
Solder plating	Solder plating	SnPb
Copper plating	Copper plating	Cu
Silver plating	Silver plating	Ag
Gold plating	Gold plating	Au3
Rhodium plating	Rhodium plating	Rh
Platinum plating	Platinum plating	PtB

- Chemical Plating

Surface Treatment	Surface Treatment Name	Surface Treatment Symbol
Chemical nickel plating	Chemical nickel plating	CNi
Chemical gold plating	Chemical gold plating	CAu

- Anodic Treatment

Surface Treatment	Surface Treatment Name	Surface Treatment Symbol
Colorless alumite	Colorless alumite	AL-O
Clear anodized	Clear anodized	AL-W
Black alumite	Black alumite	AL-B
Yellow alumite	Yellow alumite	AL-Y
Colored alumite	Colored alumite	AL-Colored
Hard alumite	Hard alumite	HAL

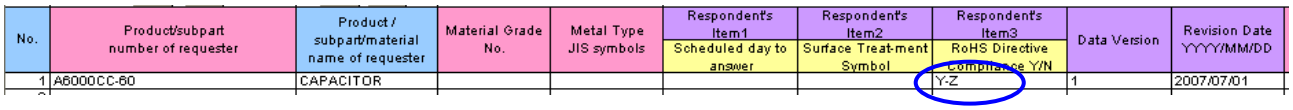
- Conversion Treatment

Surface Treatment	Surface Treatment Name	Surface Treatment Symbol
Phosphate coating	Phosphate coating	P-F
Chromate	Zinc chromate	C-Z
	Aluminum chromate	C-A

Colorless chromate	Colorless chromate	C-AO
White chromate	White chromate	C-AW
Ferromite	Ferromite	F
Black oxide	Black oxide	BO
Passivation	Passivation	FD
Weak-acid pickling	Weak-acid pickling (solid acid)	K
Strong-acid pickling	Strong-acid pickling/copper and copper alloys	J
	Strong-acid pickling/stainless steel and other alloys	JS
Alkali cleaning	Alkali cleaning	AC
Cleaning of nuclear power-related equipment	Cleaning of nuclear power-related equipment	GS
Oil-prohibited use treatment	Oil-prohibited use treatment	KU
Copper removal treatment	Copper removal treatment	KD
Ultrasonic cleaning	Ultrasonic cleaning	UC
Degreasing cleaning	Degreasing cleaning	DG
Simple degreasing cleaning	Simple degreasing cleaning	DGW
Oil immersion treatment	Oil immersion treatment	US

(c) Surveyed Company Column 3 "RoHS Directive Compliance Y/N"

As shown below in the [Entry Form], symbols for [RoHS Directive Compliance Y/N] and for [Handling of Empty Content Column] that are linked by a hyphen (-) are all required to be entered in **half-angle**. **This is required.**



No.	Product/subpart number of requester	Product / subpart/material name of requester	Material Grade No.	Metal Type JIS symbols	Respondent's Item1 Scheduled day to answer	Respondent's Item2 Surface Treat-ment Symbol	Respondent's Item3 RoHS Directive Compliance Y/N	Data Version	Revision Date YYYY/MM/DD
1	A6000CC-60	CAPACITOR					Y-Z	1	2007/07/01

[Entry Form]

[RoHS Directive Compliance Y/N] — [Handling of Empty Content Column]

Category	Entry Form
If RoHS Directive compliance is yes	"Y"
If RoHS Directive compliance is no	"N"
If RoHS exemption is applicable	Enter an exemption number from the "RoHS exemption list." If multiple exemption numbers are applicable, enter only one main number.

Category	Entry Form
If the empty Content column is regarded as having zero content (including the case where there is no empty column)	"Z" *
If the Content column is empty because the content has not been surveyed	"N" *

[Entry examples]

・If the RoHS Directive compliance is yes, and the empty Content column is regarded as having zero content: “Y-Z”

・If the RoHS exemption is applicable and the RoHS Exemption Number is 8 (lead in alloy up to 4%wt copper material), but Content column is empty because the content has not been surveyed: “8-N”

* When you enter the content, be careful to make sure the entry of "regarded as having zero content" and the entry of "empty because the content has not been surveyed" are not both present at the same time. If there are the entry of "regarded as having zero content" and the entry of "empty because the content has not been surveyed," be sure to enter "N" for the entry of "regarded as having zero content" or "0" for the entry of "empty because the content has not been surveyed."

The following table shows the RoHS Exemption List. If any of mercury, lead, cadmium, and hexavalent chromium is contained for any of the uses listed below, they are not deemed as content for the purpose of the RoHS Directive.

- RoHS Exemption List

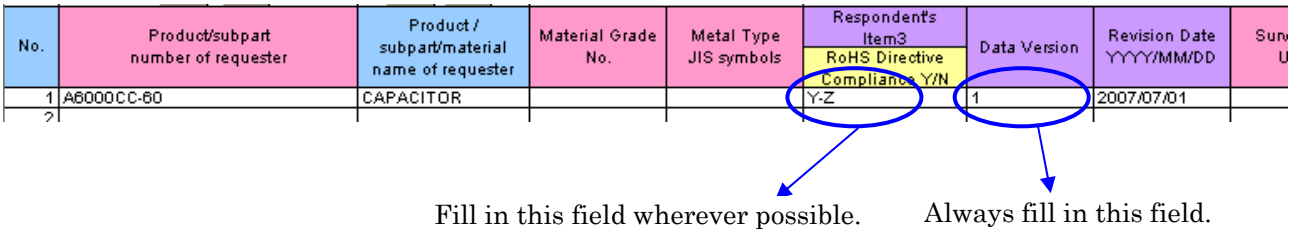
Exemption No.	Exceptions for use of prohibited substances
1	Mercury in compact fluorescent lamps not exceeding 5 mg per lamp
2	Mercury in straight fluorescent lamps for general purpose not exceeding: halophosphate : 10 mg triphosphate with normal lifetime : 5 mg triphosphate with long lifetime : 8 mg
3	Mercury in straight fluorescent lamps for special purposes.
4	Mercury in lamps other than small and straight fluorescent lamps.
5	Lead in glass of electronic components, fluorescent tubes, and cathode ray tubes.
6	Lead as an alloying element in steel containing up to 0.35 wt%.
7	Lead as an alloying element in aluminum containing up to 0.4 wt%.
8	Lead as an alloying element in copper containing up to 4 wt%.
9	Lead in high melting temperature type solders (tin-lead solder alloys containing more than 85 wt%).
10	Lead in electronic ceramic parts (e.g., piezoelectronic device).
~~11~~	~~Cadmium surface treatment for electrical contact points that require high reliability.~~
12	Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC12, which amends Directive 76/769/EEC11 relating to restrictions on the marketing and use of certain dangerous substances and preparations
13	Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators

14	Lead in solder for servers, storage and storage array system, network infrastructure equipment for switching, signaling, and transmission, as well as network management for telecommunications
~~15~~	~~Deca-BDE in polymeric applications~~
16	Lead in lead-bronze bearing shells and bushes
17	Lead used in compliant pin connector systems
18	Lead as a coating material for the thermal conduction module c-ring
19	Lead in optical and filter glass
20	Cadmium in optical and filter glass
21	Lead in solder consisting of more than two elements for connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight
22	Lead in solder to complete a viable electrical connection between a semiconductor die and carrier within integrated circuit Flip Chip packages
23	Lead in linear incandescent lamps with silicate coated tubes
24	Lead halide as a radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications
25	Lead as an activator in fluorescent powder (1% lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP ($BaSi_2O_5$:Pb), as well as when used as speciality lamps for diazo-printing reprography, lithography, insect traps, photochemical, and curing processes containing phosphors such as SMS ($(Sr,Ba)_2MgSi_2O_7$:Pb)
26	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact Energy Saving Lamps (ESL)
27	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Display (LCD).
28	Lead and cadmium in printing inks for the application of enamels on borosilicate glass.
29	Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fiber optic communications systems
30	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead frames
31	Lead in solder for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors
32	Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring, as well as in print pastes
33	Lead oxide in the glass envelope of Black Light Blue (BLB) lamps
34	Lead alloys as solder for transducers used in high-powered (designated to operate for

	several hours at acoustic power levels of 125 dB SPL and above) loudspeakers
~~35~~	~~Hexavalent chromium in corrosion preventive coatings of unpainted metal sheets and fasteners used for corrosion protection and Electromagnetic Interference Shielding in equipment falling under category three of Directive 2002/96/EC (IT and telecommunications equipment). Exemption granted until 1 July 2007~~
36	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC
37	Cadmium alloys as electrical/mechanical solder joints to electrical conducers located directly on the voice coil in transducers used in high-powered loudspeaker with sound pressure levels of 100 dB（A） and more
38	Lead in soldering materials in mercury free flat fluorescent lamps （which e.g. are used for liquid crystal displays , design or industrial lighting ）
39	Lead oxide in seal frit making windows assemblies for Argon and Krypton laser tubes ）

(5) Data Version and Revision Date

The Data Version field should be filled in wherever possible, and the Revision Date field must be filled in. In each field of the Revision Date column, enter the date when the data version was created.



Note: There may be a case, for example, when two JGP files share the same name but differ in some of the hazardous substance contents. In this case, it becomes impossible to determine which JGP file is latest. Use of a data version makes it possible to identify the latest JGP file. Enter the manufacturer's control code number, if there is one. If there is no such code, create a control registry at your company and enter the corresponding code number.

(6) Unit

Select the appropriate unit for each substance from pieces, kilograms (kg), meters (m) and grams (g). Although the tool shows other unit options, such as liters (l) and units of area, do not select them.

5. Check Items before Submitting the JGP File

Be sure to check errors in the survey response tool before you submit the JGP file. You can carry out a check in the survey response tool by pressing the SAVE JGP button and by pressing the Error Check button.

In addition to the items you need to check in the survey response tool, this section discusses the items that require extra care when entering data. Should any error be found in your response, we will be obliged to verify the entered data again. Your assistance with the verification work is appreciated.

Check Items before Submission (Items other than Error Check Items in Research Response Tool)

No.	Check Item	Points to be Checked
1	Reference number, requester information, product/subparts number of requester	Never erase or change these items. In particular, the reference number is used for association with the Confirmation Note, so particular care is needed.
2	If there are parts being surveyed, the responses for which will be given later	Are the scheduled days to answer entered? When responding later in regard to such parts, erase these dates.
3	Unit	Is the unit selected from pieces, kg, m and g? Do not select any other units.
4	Data version	Is this item entered? Enter this wherever possible.
5	RoHS Directive compliance Y/N	Is this item entered? This is Yokogawa's unique item and is mandatory. Are symbols entered in half-angle and in the “?-?” form?
6	Revision date	Is this item entered?
7	Output of response JGP file	Is the JGP file always saved from the survey tool by clicking the SAVE JGP button?

6. Saving the Entered Data in the JGP File

When you finish entering data in the JGP file and want to save the file, press the SAVE JGP button. Never change the file name when you save the file.