GREEN AMERICA
CLEAN ELECTRONICS PRODUCTION NETWORK
A project of the Center for Sustainability Solutions

# GUIDANCE DOCUMENT: PROCESS CHEMICALS DATA COLLECTION (PCDC) TOOL

*(VERSION 1.1)*

## Clean Electronics Production Network

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## Background

The Process Chemicals Data Collection Tool is a free standardized reporting tool developed by the Clean Electronics Production Network (CEPN)--a collaboration between brands, manufacturers, chemical suppliers, academics, non-profits, and other stakeholders, working to reduce worker exposure to toxic chemicals in electronics manufacturing.

The intent of the PCDC Tool is to provide a common and unified format for collection of information across the electronics supply chain. This standardized format supports efficient exchange of process chemicals use data between companies and suppliers and enables industry collaboration to reduce risk and respond to customer requests.

Green America hereby licenses to user, on a non-exclusive basis, the right to use the Process Chemicals Data Collection Tool solely in connection with the transfer of chemical use information (the "Licensed Rights"). The Licensed Rights do not include, however, the right for Licensee to sublicense, modify, edit, or otherwise alter the applicable materials in any manner, without prior written permission from Green America. Licensor may terminate this License immediately if Licensee breaches any of its material obligations under this License.

To learn more about CEPN, please visit www.centerforsustainabilitysolutions.org/clean-electronics/. To learn more about CEPN's other projects and opportunities to get involved, please contact CEPN@greenamerica.org.

## Confidentiality

Terms for the use and confidentiality of the collected data are between the requester and respondent.

## Feedback Welcome

The PCDC Tool and its supporting materials are updated periodically to continue to improve and refine the tool. Please send any suggestions and feedback to CEPN@greenamerica.org.

## Requested Scope

The requesting organization(s) may provide specific completion instructions to the organizations that are submitting the PCDC Tool. The requester's specific completion instructions are detailed in the "Cover Page & Requested Scope" Sheet.

Instructions that can be provided by the requester include the "Scope" of the PCDC Tool including:

- Production/Facility Scope – Single line, multiple lines or entire facility
- Product Lines - List of production line IDs included in the scope
- Scope of Chemical Product Function

The requester may also provide information and guidance on which optional data fields they are requiring. Optional fields are shown in the table below:

| Optional Fields | |
|---|---|
| **Section** | **Optional Field(s) - Can Be Designated "Required" by Requester** |
| **1. Facility information** | DUNS Number |
| **2. Chemical Product Information** | Chemical Product Manufacturer<br>Attached SDS |
| **4. Chemical Product Ingredients** | GreenScreen® – List Translator |
| **5. Use & Controls** | Production Line ID(s) |

## How to Complete the PCDC Tool

### QUALITY CONTROL

The PCDC Tool is available as a Microsoft Excel Workbook. Some fields have built in quality control checks to help prevent errors, as shown below.

= **Optional Field**. This field is optional, unless the requestor has designated it as "required" (see Requested Scope above).

= **Invalid Entry**. The response provided within this field does not meet the criteria specified for that field.

= **Response Needed**. This field still requires a response.

### DROP-DOWN MENUS

Drop-Down menus are provided for convenience, wherever possible. There are three ways to select from Drop-Down menus:

1. Select one option
2. Select all options that apply within the same field (cell)
3. Select all options that apply using separate rows

The table below summarizes where the different Drop-Down menu options occur within the PCDC Tool.

| | Drop-Down Menu Response Types | | |
|---|---|---|---|
| **Sheet** | **1. Select One Option** | **2. Select All Options that Apply** ***Within the Same Field (cell)*** | **3. Select All Options that Apply** ***Using Separate Rows*** |
| **Sheet 1: Facility Information** | Factory Country *(Column D)*<br>Production/Facility Scope *(Column F)*<br>Number of Customers *(Column H)* | Chemical Product Function Scope *(Column I)*<br>Training *(Column J)*<br>PPE Assessment *(Column K)* | |
| **Sheet 2: Chemical Product Information** | Physical State *(Column D)*<br>Units *(Column G)* | | |
| **Sheet 3: GHS** | Hazard Classification *(Column B)*<br>Hazard Category *(Column C)* | | |
| **Sheet 4: Chemical Product Ingredients** | Ingredient % (min) *(Column D)*<br>Ingredient % (max) *(Column E)* | | |
| **Sheet 5: Use & Controls** | Manual or Automated *(Column D)*<br>Manual Chemical Application Method *(Column E)*<br>Persons *(Column F)*<br>Enclosure *(Column G)*<br>Ventilation *(Column H)* | Production ID(s) *(Column I)* | Chemical Product Function *(Column B)*<br>Process Category *(Column C)* |

## Sources of Requested Information

The completion of the PCDC Tool requires in-depth knowledge of the facility's manufacturing processes and the chemical products utilized at the facility.

In addition to providing a list the chemical products utilized in the manufacturing processes, specific technical information is requested such as, but not limited to, the types/functions of chemical products utilized, the annual chemical product usage amounts, the chemical product's ingredients, the physical characteristics of the chemical products and the hazard classifications. Information is also is requested

on the organization's Health & Safety programs including the administrative and engineering controls present within the workplace to control/prevent occupational exposures to the listed chemical products.

The requested facility and chemical use information, such as how many employees work with the listed chemicals, may require consultation with the facility's operations and support organizations such as production/process engineers, line supervision, chemical purchasing departments, health and safety departments (Industrial Hygienist), shipping/logistics departments and employees who work with or handle the listed chemical products.

The requested technical information can be found in the product's Safety Data Sheet (SDS), as referenced in the following sections of this Guidance document. If an SDS is in a non-GHS format or if the SDS is missing the required information, it may be necessary to contact the chemical product manufacturer directly. Contact information for additional information on the chemical product can be found within "Section 1 Identification" of the GHS SDS.

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# Facility Information

## Fields

| | |
|---|---|
| Company Name | Factory Name |
| Factory Address | Factory Country |
| DUNS Number | Production / Facility Scope |
| Production Line ID(s) | Number of Customers |
| Chemical Product Function/Scope | Training |
| PPE Assessment | Respondent Name |
| Respondent Title and Function | Respondent Contact E-mail |
| Reporting Date | Comments |

## COMPANY NAME

Enter the name of the company affiliated with the factory for which the PCDC Tool is being completed.

## FACTORY NAME

Enter the name of the factory for whom the PCDC Tool is being completed.

If the PCDC Tool is being completed for more than one factory, enter each factory in a separate row. Factories that do not share the same business license are considered separate from each other.

## FACTORY ADDRESS

Enter the address of the factory for whom the PCDC Tool is being completed.

If the PCDC Tool is being completed for more than one facility enter each Factory Address into a separate row.

## FACTORY COUNTRY

Enter the country/countries of the factory(ies) for which this PCDC Tool is being completed.

## DUNS NUMBER

Provide the Data Universal Numbering System (DUNS) number. If the factory does not have a DUNS number, write "unknown".

This field is optional, unless designated as “required” by the requester.

## PRODUCTION / FACILITY SCOPE

Identify the reporting scope (production line(s)/facility) in this data submittal.

| Production/ Facility Scope Drop-Down Menu Options |
|---|
| Single Line |
| Multiple Lines |
| Entire Facility |

## PRODUCTION LINE ID(S)

A Production Line ID is an identifier created and/or used by the factory to distinguish between manufacturing lines (e.g. “Line 47” or “Packaging #3”).

List all Production Lines ID(s) this scope includes. Enter each Production Line ID into a separate row.

## NUMBER OF CUSTOMERS

Indicate whether there is a single customer or multiple customers represented within the reported production line/facility scope.

| Number of Customers Drop-Down Menu Options |
|---|
| One Customer |
| Multiple Customers |

## CHEMICAL PRODUCT FUNCTION SCOPE

Select the Chemical Product Function(s) that are included in the Scope in this PCDC Tool submittal from the Drop-Down menu options.

If the Chemical Product Scope has more than one function, select and enter all the applicable functions from the Drop-Down menu into a single field (cell).

If there are no Drop-Down menu options that describe the Chemical Product Function, select "Other" and enter an appropriate Chemical Product Function into the Comments field (Column P).

The complete list of Chemical Product Function descriptions, definitions and examples are listed in Appendix A.

| Chemical Product Function Scope Drop-Down Menu Options | |
|---|---|
| All process chemicals | Lubricating agent |
| Abrasive | pH regulating agent |
| Adhesive | Photochemical |
| Cleaning agent | Plating agent |
| Coating (paints) | Processing aid |
| Conductive agent (solder) | Propellants (blowing agent) |
| Etching agent | Reactive cleaning/ removal agent |
| Flux agent | Refrigerants |
| Heat transfer agent | Solvent |
| Hydraulic fluids | Other |
| Ink | |

## TRAINING

Select the Training topics that relevant personnel have been provided from the Drop-Down menu options. Training is considered at the production line/facility level (not at the individual chemical product use).

If the Production/ Facility has multiple Training topics, select and enter all the applicable Training topics from the Drop-Down menu into a single field (cell).

Note, the Drop-Down menu options also include “All of the above apply” and “None of the above apply”.

| Training Drop-Down Menu Options |
|---|
| Chemical Handling |
| Hazard Communication |
| Chemical Exposure Risk |
| Correct & Consistent PPE Use |
| All the above apply |
| None of the above apply |

## PPE ASSESSMENT

Select the PPE assessment(s) that apply from the Drop-Down menu options. PPE program assessment is considered at the production line/facility level (not at the individual chemical product use).

If the Production/ Facility has multiple PPE assessment topics, select and enter all the applicable PPE Assessments from the Drop-Down menu into a single field (cell).

Note, the Drop-Down menu options also include “All of the above apply” and “None of the above apply”.

| PPE Assessment Drop-Down Menu Options |
|---|
| Organization has performed a PPE assessment of the identified process |
| PPE assessments are done prior to initial chemical handling activities and if process or exposure conditions change |
| PPE assessment was based on observations of the workplace for the potential exposure for inhalation, skin contact or ingestion |
| PPE is readily available for use within the workplace |
| All of the above apply |
| None of the above apply |

## RESPONDENT NAME

Provide the name of person completing the PCDC Tool (for follow up, if needed).

## RESPONDENT TITLE AND FUNCTION

Provide the job title and job function within the company or factory of person completing the PCDC Tool.

## RESPONDENT CONTACT E-MAIL

Provide the email address for the respondent within the company or factory.

## REPORTING DATE

Provide the effective date of the PCDC Tool (YYYY-MM-DD).

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# Chemical Product Information

## Fields

| | |
|---|---|
| Chemical Product Name | Chemical Product Manufacturer |
| SDS | Physical State |
| Specific Gravity | Annual Volume / Weight Used |
| Units | Comments |

## CHEMICAL PRODUCT NAME

Provide the name of the chemical product(s) that are used on the production line(s). Use the exact name that is listed on the product's Safety Data Sheet (SDS), Section 1. Identification. Each Chemical Product Name should be unique. Do not use the same name for two chemical products if their ingredient compositions differ.

Enter each chemical product into a separate row.

## CHEMICAL PRODUCT MANUFACTURER

Provide the name of the manufacturer of the chemical product. Use the exact Supplier Name that is listed in the product's Safety Data Sheet. Section 1. Identification as the "Supplier Name".

This field is optional, unless designated as "required" by the requester.

## SAFETY DATA SHEET (SDS)

Provide a URL link to the Safety Data Sheet (SDS) for the chemical product or enter the name of the SDS file and attach it to your submittal.

This field is optional, unless designated as "required" by the requester.

## PHYSICAL STATE

Select the Physical State (solid, liquid or gas) of the product from the Drop-Down menu. A product's "physical state" can be found on the Product's Safety Data Sheet (SDS) in Section 9. Physical and Chemical Properties. If the product is a saturated wipe, list the physical state as a "solid".

| Physical State | Examples |
|---|---|
| Solid | Powders, pellets, etc. |
| | Saturated wipe |
| Liquid | Liquids |
| | Gels |
| | Slurries |
| | Paste |
| | Liquid suspensions |
| Gas | Compressed gas |
| | Liquefied gas |

## SPECIFIC GRAVITY

If the chemical product is a liquid, provide the product's specific gravity. If the product is a solid or a gas, this field should be left blank.

A product's specific gravity can be found on the product's Safety Data Sheet (SDS) in Section 9, Physical and Chemical Properties.

If the specific gravity is provided in the SDS as a range, provide the average.

If the specific gravity of a liquid is unavailable, enter "1".

The product's specific gravity allows for the conversion of volume units of liquids (liters) into mass (kilograms).

## ANNUAL VOLUME / WEIGHT USED

Provide the estimated total amount of the chemical product used in one year (12-month time frame) on the production line(s). Annual chemical product usage amount information may be obtained from reviewing chemical product purchase orders, manufacturing production records or estimates of chemical product usage based on manufacturing line specifications/operating procedures.

## UNITS

Select from the Drop-Down menu the unit of measurement that indicates the annual amount of the chemical product that is used. Use a unit associated with the physical states as shown in the table below.

| Physical State | Units |
|---|---|
| Solid | Kilograms (kg) |
| | Pounds (lbs) |
| Liquid | Liters (L) |
| | Gallons (gal) |
| Gas | Cubic Feet ($ft^3$) |
| | Cubic Meters ($m^3$) |

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# Globally Harmonized System (GHS)

## Fields

Chemical Product Name
Hazard Category
Hazard Statement
Hazard Classification
Hazard Code
Comments

## CHEMICAL PRODUCT NAME

Select from the Drop-Down menu the name(s) of the Chemical Product(s) previously entered into Sheet 2, Chemical Product Information.

Each Chemical Product should be entered into a separate row.

## HAZARD CLASSIFICATION

Select the appropriate Globally Harmonized System (GHS) "Hazard Classification" for each chemical product's hazard classification from the Drop-Down options. A product's GHS "Hazard Classification" can be found on the product's Safety Data Sheet (SDS) in Section 2, Hazard Identification. Additional information can be found in the SDS Hazard Statements.

See table below for an example of the GHS Health Hazard Classifications and Hazard Categories.

If a Chemical Product has more than one hazard classification, enter each Hazard Classification into a separate row.

| Hazard Classification | Hazard Category |
|---|---|
| Acute toxicity | 1, 2, 3, 4, or 5 |
| Skin corrosion/irritation | 1,1A,1B,1C, 2 or 3 |
| Serious eye damage/eye irritation | 1, 2/2A, or 2B |
| Respiratory sensitization | 1,1A or 1B |
| Skin sensitization | 1,1A or 1B |
| Germ cell mutagenicity | 1,1A,1B or 2 |
| Carcinogenicity | 1,1A,1B or 2 |
| Reproductive toxicity | 1,1A,1B or 2 |
| Specific Target Organ Toxicity (STOT) single exposure | 1,2 or 3 |
| Specific Target Organ Toxicity (STOT) repeated exposure | 1 or 2 |
| Aspiration hazard | 1 or 2 |

## HAZARD CATEGORY

Select the hazard category in the Drop-Down (options will appear once a Hazard Classification in Column B has been selected). A product's "Hazard Category" can be found on the Product's Safety Data Sheet (SDS) in Section 2 Hazard Identification. See table above for an example the GHS Health Hazard Classifications and Hazard Categories.

If a Chemical Product has more than one hazard category, enter each Hazard Category into a separate row.

## HAZARD CODE

This field will auto-complete based on the data entered for Hazard Classification and Hazard Category.

If a different hazard code appears in the Safety Data Sheet (SDS), enter it in the "Comments" field (Column F).

## HAZARD STATEMENT

This field will auto-complete based on the data entered for Hazard Classification and Hazard Category.

If a different hazard statement appears in the Safety Data Sheet (SDS), enter it in the "Comments" field (Column F).

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# Chemical Product Ingredients

## Fields

Chemical Product Name
CAS RN
Ingredient % (max)
GreenScreen®- List Translator
Ingredient Name
Ingredient % (min)
Ingredient % (average)
Comments

## CHEMICAL PRODUCT NAME

Select from the Drop-Down menu the name(s) of the Chemical Product(s) previously entered into Sheet 2. Chemical Product Information.

Each Chemical Product should be entered into a separate row. If the Chemical Product has multiple ingredients, select the Chemical Product for each separate row.

## INGREDIENT NAME

Provide the chemical or common name for each ingredient of the Chemical Product. If an exact chemical name is not provided, but a general descriptor is provided (e.g., surfactant), list the general descriptor provided in the Safety Data Sheet.

If a Chemical Product is a mixture and has more than one ingredient, enter each Ingredient into a separate row.

## CAS RN

The Chemical Abstracts Service Registry Number (CAS RN) is a unique number used to identify chemical elements and compounds. Enter a CAS RN for each of the product's ingredient(s) as provided on the SDS using the following format: xx-xxx-xx.

If the CAS number is unknown, enter "Unknown".

If the ingredient is withheld as Proprietary, Confidential, Intellectual Property or Trade Secret enter "IP". If a Trade Secret Registry Number is provided, enter "IP". Do not enter the Trade Secret Registry Number.

## INGREDIENT % (MIN, MAX AND AVERAGE)

For completing the Ingredient % fields, there are the following options:

- **If ingredient % composition is listed as a range** on the Safety Data Sheet (SDS), select the Drop-Down menu option for the range's lower limit for the minimum % and the range's upper limit for the maximum %. The average % will automatically be calculated based on the min and max ranges that are selected.
- **If ingredient % composition is listed as a specific number** (not a range) on the SDS, enter the percentage composition into the Ingredient % (average) field (Column F). Leave Ingredient % min and max fields blank (Columns D and E).
- **If the SDS does not provide the % composition** for the ingredient enter "Unknown" into the Ingredient % (average) field (Column F). See examples listed below.
- **If the ingredient is withheld as Proprietary, Confidential, Intellectual Property or Trade Secret** enter "IP" into the Ingredient % (average) field (Column F). See examples listed below.

| Example SDS Data | | Ingredient % (min) | Ingredient % (max) | Ingredient % (average) |
|---|---|---|---|---|
| **Methyl alcohol** | 0.4% – 0.7% | 0 – <1% | 0 – <1% | 0.5%* |
| **Isopropyl alcohol** | 5% – 25% | 1 – <10% | 20 – <30% | 15%* |
| **Ethyl alcohol** | < 10% | 1 – <10% | 1 – <10% | 5%* |
| **Butyl alcohol** | > = 98% | 90 – 100% | 90 – 100% | 95%* |
| **Water** | 23% | | | 23% |
| **Toluene** | | | | Unknown |
| **Hexane** | Proprietary | | | IP |

*Automatically calculated based on the ranges entered for Ingredient % min and % max

## GREENSCREEN® - LIST TRANSLATOR

Enter the GreenScreen score for each ingredient. If no GreenScreen score is available, enter the GreenScreen List Translator score.

More details can be found here: https://www.greenscreenchemicals.org/learn/greenscreen-list-translator.

This field is optional, unless designated as “required” by the requester.

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# Use and Controls

## Fields

Chemical Product Name
Process Category
Manual Chemical Application Method
Enclosure
Production Line ID(s)
Chemical Product Function
Manual or Automated
Persons
Ventilation
Comments

## CHEMICAL PRODUCT NAME

Select from the Drop-Down menu the name(s) of the Chemical Product(s) previously entered into Sheet 2. Chemical Product Information.

Each Chemical Product should be entered into a separate row. If the Chemical Product has multiple functions, select the Chemical Product for each separate row.

## CHEMICAL PRODUCT FUNCTION

Select the Chemical Product Function from the Drop-Down menu that best describes the purpose / function of the chemical product on the Production Line(s).

If the Chemical Product has more than one Function, enter each Chemical Product Function into a separate row.

If there are no Drop-Down menu options that describe the Chemical Product Function, select "Other" and enter an appropriate Chemical Product Function into the Comments field (Column J).

The complete list of Chemical Product Function descriptions, definitions and examples are listed in Appendix A.

| Chemical Product Function Scope Drop-Down Menu Options | |
|---|---|
| Abrasive | Lubricating agent |
| Adhesive | pH regulating agent |
| Cleaning agent | Photochemical |
| Coating (paints) | Plating agent |
| Conductive agent (solder) | Processing aid |
| Etching agent | Propellants (blowing agent) |
| Flux agent | Reactive cleaning/ removal agent |
| Heat transfer agent | Refrigerants |
| Hydraulic fluids | Solvent |
| Ink | Other |

## PROCESS CATEGORY

Select the Process Category (PROC) from the Drop-Down menu that best describes how the chemical product is used on the Production Line(s).

If the Chemical Product has more than one Process Category, enter each Process Category into a separate row.

If there are no Drop-Down menu options that describe the Process Category, select "Other" and enter an appropriate Process Category into the Comments filed (Column J).

The complete list of PROC Codes, descriptors, explanation and examples are listed in Appendix B.

| Process Category (PROC) Drop-Down Menu Options | |
|---|---|
| **PROC1** | Closed process without likelihood of exposure or processes with equivalent containment conditions |
| **PROC2** | Closed continuous process with occasional controlled exposure or processes with equivalent containment conditions |
| **PROC3** | Manufacture in closed batch processes with occasional controlled exposure or processes with equivalent containment condition |
| **PROC4** | Production where opportunity for exposure arises |
| **PROC5** | Mixing or blending in batch processes |
| **PROC7** | Industrial spraying |
| **PROC8b** | Transfer of substance or mixture (charging and discharging) at dedicated facilities |
| **PROC9** | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) |
| **PROC10** | Roller application or brushing |
| **PROC11** | Non industrial spraying |
| **PROC12** | Use of blowing agents in manufacture of foam |
| **PROC13** | Treatment of articles by dipping and pouring |
| **PROC14** | Tabletting, compression, extrusion, pelletisation, granulation |
| **PROC19** | Manual activities involving hand contact |
| **PROC22** | Manufacturing and processing of minerals and/or metals at substantially elevated temperature |
| **PROC23** | Open processing and transfer operations at substantially elevated temperature |
| **PROC25** | Other hot work operations with metals |
| **PROC28** | Manual maintenance (cleaning and repair) of machinery |
| **PROC0** | Other |

## MANUAL OR AUTOMATED

Select from the Drop-Down menu to indicate if the chemical is applied/used by an automated machine process or is manually applied/used by workers or is a mixture of both.

- **Automated –** An automated or mechanical application of process chemicals during manufacturing operations/processes that does not require worker interaction or involvement to apply/use the process chemicals (e.g. automated parts cleaner, automated chemical application/assembly machines, robotic application of chemicals).
- **Manual -** A manufacturing process that requires workers to physically handle/use/apply process chemicals (e.g. manual cleaning of parts with solvent saturated wipers, manual application of adhesives to parts during final assembly processes, manual painting of parts, manual mixing of chemical products).
- **Both -** A manufacturing process that includes both automated and manual process chemical handling operations (e.g. manual cleaning of automated manufacturing machines that involves the handling or contract with process chemicals).

| Manual or Automated Drop-Down Menu Options |
|---|
| Manual |
| Automated |
| Both |

## MANUAL CHEMICAL APPLICATION METHOD

If “Manual” or “Both” were chosen in the previous field, select from the Drop-Down menu the chemical application method that best describes how the chemical is manually applied.

| Manual Chemical Application Method Drop-Down Menu Options |
|---|
| Brush / swab |
| Dip / bath |
| Hand wipe |
| Spray |
| Use a syringe |

## PERSONS

Select from the Drop-Down menu the estimated total number of people that work with or handle the Chemical Product for this Process Category (e.g. process operators, maintenance technicians, chemical technicians, waste disposal technicians, etc.) per year (a 12 month period). Include all applicable workstations.

If there are no Drop-Down menu options that describe the Persons, select "Other" and enter an appropriate number into the Comments field (Column J).

| Persons Drop-Down Menu Options |
|---|
| 0 – 10 |
| 10 – 20 |
| 20 – 50 |
| 50 – 100 |
| 100 – 500 |
| 500 – 1,000 |
| 1,000 – 10,000 |
| Over 10,000: Please report the number |

## ENCLOSURE

Select from the Drop-Down menu to indicate if the chemical use/application locations (workstations) are open, closed or semi. Examples include:

- **Closed** - Engineered process enclosures that are designed to contain process chemicals within the enclosure to prevent the release of a chemical into the workspace (e.g. closed loop chemical delivery systems, sealed reactor vessels, enclosed parts cleaners).
- **Open** – Workstations with no physical enclosure at point of chemical use (e.g. chemical applications at free-standing open-air bench top workstations).
- **Semi** - Process enclosures that are not completely closed/sealed during the chemical application/use that have the potential for a chemical release into the workspace during operations or maintenance activities (e.g. open sided ventilated exhaust hood, open reactor vessel during maintenance activities).

| Enclosure Drop-Down Menu Options |
|---|
| Closed |
| Open |
| Semi |

## VENTILATION

Select from the Drop-Down menu to indicate the type of ventilation at the chemical use/application locations (workstations).

| Ventilation Drop-Down Menu Options |
| --- |
| Outdoor location with no local exhaust ventilation |
| Indoor location with no ventilation (e.g. no heating, cooling or local exhaust ventilation) |
| Indoor general room ventilation (e.g. heating, cooling or general room ventilation only) |
| Indoor or outdoor local exhaust ventilation (e.g. local exhaust present at the workstation to remove contaminant at point of use) |
| Indoor or outdoor exhausted enclosure (e.g. chemical application occurs within an exhausted enclosure) |

## PRODUCTION LINE ID(S)

Select all the Production Line ID(s) that use the Chemical Product for the specified function from the Drop-Down menu options (previously entered into Sheet 1. Facility Information).

If the Chemical Product has more than one Production Line ID, select and enter all the applicable Production Line IDs from the Drop-Down menu into a single field (cell).

This field is optional, unless designated as “required” by the requester.

# Appendix A – Chemical Product Function

Source: European Chemicals Agency Guidance (https://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf).

The ECHA Product Functions have been modified to include additional chemical functions relevant to the electronics industry.

**Descriptor List for Chemical Product Function**

| Function | Explanation | Drop-Down Menu Option |
|---|---|---|
| Ablative | Substance that is applied to a substrate to protect it from heat by dissipating heat through the process of erosion, melting, or vaporization of the material. | |
| Abrasive | An abrasive is a substance used to abrade, smooth, or polish an object. Abrasives are used to remove imperfections from a surface; used to smooth, scour, scrub, clean, wear down, or polish surfaces by rubbing against the surface; usually fine powders of hard substances. Examples include sandstones, pumice, quartz, silicates, aluminium oxides, and glass. | ✓ |
| Absorbent | Chemical substance used to retain other substances by assimilation. | |
| Adhesive | Any substance, inorganic or organic, natural or synthetic, used to join opposite surfaces to each other, promote bonding between other substances, promote adhesion of surfaces, or fasten other materials together. They are generally applied from a solvent solution and allowed to dry on the two facing surfaces. | ✓ |
| Adsorbent | Chemical substance used to retain other substances by accumulation on their surface; substance with a large surface area that can attract dissolved or finely dispersed substances from another medium. | |
| Aerating and dearating agents | Substance that influences the amount of air or gases entrained in a material. | |
| Antiadhesive | Substance that prevents or reduces the adhesion of a material to itself or to another material; prevents bonding between other substances by discouraging surface attachment; functions as the antitheses of adhesive. | |
| Alloying element | Substances that are added to metals alloys like steel to modify its properties such as strength, hardness, or to facilitate its treatment. | |

| | |
|---|---|
| Anticaking agent | Substance that prevents granular or particulate materials from sticking or caking during transfer, storage, or use. |
| Anticondensation agent | Substance or material that is used to avoid condensation on surfaces and in the atmosphere. |
| Antifreeze agent | A substance added to fluids, especially water, to reduce the freezing point of the mixture, or applied to surfaces to melt or prevent the build-up of ice. Examples of products include antifreeze liquids, windshield de-icers, aircraft de-icers, lock release agents, ice melting crystals, and rock salt. |
| Antioxidant Substance | Substance that retards oxidation, rancidity, deterioration, and gum formation; used to maintain the quality, integrity, and safety of finished products by inhibiting the oxidative degradation of the ingredients in the formulation. Saturated polymers have greater oxidative stability and require relatively low concentrations of stabilizers. |
| Antiredeposition agent | Any substance that prevents dirt and grease from resettling on a cleaned surface or that helps keep soils from re-depositing onto clothing in the wash water after they have been removed. Antiredeposition agents are water-soluble and typically negatively charged. |
| Antiscaling agent | Substances added to products to prevent the build-up of inorganic oxide deposits. The formation of scale can be caused by the deposition of salts or minerals and may not necessarily lead to surface corrosion, therefore these chemicals are not corrosion inhibitors. Substances prevent the build-up or removes limescale and fouling. These substances are also called 'Descalers'. |
| Antistain agent | Antistain agent is a substance that provides stain blocking and soil resistance to soft surface cleaners and protectors. |
| Antistatic agent | Any substance that prevents or reduces the tendency of a material to accumulate a static charge or alters the electrical properties of materials by reducing their tendency to acquire an electrical charge. |
| Antistreaking agent | A substance that serves to enhance evaporation or reduce film formation in order |
| Barrier (Sealant) | Material designed only to fill up a space, prevent seepage of moisture or air, passage of liquid or gas. The spaces can be joints, gaps or cavities that occur between two substrates. |
| Binder | Any cementitious material that is used to hold dry powders or aggregate together; added to compounded dry powder mixtures of solids to provide adhesive qualities during and after compression to make tablets or cakes; is soft at high temperatures and hard at room temperature. |

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| Biocide | Substance intended for preventing, neutralizing, destroying, repelling, or mitigating the effects of any pest or microorganism; that inhibits the growth, reproduction, and activity of organisms, including fungal cells; decreases the number of fungi or pests present; deters microbial growth and degradation of other ingredients in the formulation. | |
| Bleaching agent | A bleaching agent is a material that lightens or whitens a substrate through chemical reaction. The bleaching reactions usually involve oxidative or reductive processes that degrade colour systems. Bleaching and decolourization can occur by destroying one or more of the double bonds in the conjugated chain, by cleaving the conjugated chain, or by oxidation of one of the other moieties in the conjugated chain. | |
| Brightener | Substance that is used to brighten, whiten, or enhance the appearance of colour of fabric and paper, usually by absorbing light in the ultraviolet and violet region (340-370 nm) of the electromagnetic spectrum, and re-emitting light in the blue region (420-470 nm). This causes a "whitening" effect by increasing the overall amount of blue light reflected. Optically colourless on the substrate and do not absorb in the visible part of the spectrum. | |
| Catalyst | Substances that increase the efficiency of a chemical reaction e.g. reaction needs less energy. Catalysts take part in the reaction but are not consumed during the process. | |
| Chain transfer agent | Substance that terminates the growth of a molecular chain and forms a new radical that can act as the initiator for a new chain. | |
| Chelating agent | A substance that has the ability to complex with inactivate metallic ions; used to remove ions from solutions and soils by forming a type of coordination complex so that the ions usual precipitation reactions are prevented; material that cleans oxide films from metals by stabilizing metal ions through complexing heterocyclic rings around each ion. They contain two or more electron donor atoms that can form coordinate bonds to a single metal atom. After the first such coordinate bond, each successive donor atom that binds creates a ring containing the metal atom; this cyclic structure is called a chelation complex or chelate. | |
| Cleaning agent | Substance or material used to remove dirt or impurities from surfaces; acts to loosen and remove dirt and grease from surfaces. | ✓ |
| Cloud-point depressant | Substance that depresses the temperature at which solids begin to separate from a liquid, at a temperature lower than that normally allowed. | |
| Coating (paints) | A coating is a covering that is applied to the surface of an object, usually referred to as the substrate. The purpose of applying the coating may be decorative, functional, or both. The coating itself may be an all-over coating, completely covering the substrate, or it may only cover parts of the substrate | ✓ |

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| Coalescing agent | Ingredients that decrease the minimum film-forming temperature (MFT) and, upon evaporation, yield a hard film. In polishes, the most common coalescing agent is glycol ether however, pyrrolidines and benzoates are also used. |
| Compatibilizer | Enables a reaction between two or more dissimilar polymers, allowing them to become more intimately mixed than before. |
| Conductive agent (solder) | Material used to conduct electrical current. |
| Corrosion inhibitor | Chemical substance used to prevent or retard corrosion metallic materials. They are needed in many products packaged in metal containers (such as aerosol products) and also used in such products as lubricants and other metal treatment products to provide protection to the substrates or surfaces on which the lubricants are used. |
| Crystal growth modifiers (nucleating agents) | Substance used to reduce or increase crystal growth. |
| Deflocculant | Substance used to fluidize concentrated slurries to reduce their bulk viscosity or stickiness in processing or handling. |
| Defoamer | Chemical that is used to control foam; prevents foam from forming; breaks down any foam that does form; reduces foaming from proteins, gases, or nitrogenous materials. They reduce the tendency of finished products to generate foam on shaking or agitation. The ability of a material to act as an antifoam depends on its tendency to concentrate on the surface of existing or forming bubbles and to disrupt the continuous films of liquid surrounding them. As process aid, it improves filtration, dewatering, washing, and drainage of many types of suspensions, mixtures, and slurries. |
| Demulsifier | Substance used to destroy an emulsion or prevent its formation. |
| Density modifier | Substance that modifies the density of a material. |
| Deodorizer | Substance that reduces or eliminates unpleasant odour and protects against the formation of malodour on body surfaces. Counteraction, sometimes referred to as neutralization, occurs when two odorous substances are mixed in a given ratio and the resulting odour of the mixture is less intense than that of the separate components. |
| Diluent | Substance that serves primarily to reduce the concentration of the other ingredients in a formulation; volatile liquid that is added to modify the consistency or other properties. The term is most often used for liquid formulations, with the term filler used for solid or powder formulations. |

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| Dispersing agent | Substance added to a suspending medium or suspension to improve the separation of particles; to ensure proper dispersion; to prevent settling or clumping; to encourage uniform and maximum separation of individual, extremely fine solid particles or liquid droplets, often of colloidal size. A typical use is dispersal of dyes to ensure uniform coloration. | |
| Drier | These substances, which speed the drying of paint, ink, etc., are often organometallic compounds. | |
| Durability agent | Durability agents are ingredients added to increase the durability and therefore the functional life of a material. | |
| Dust suppressant | Substance used to control finely grained solid particles to reduce their discharge into the air. | |
| Dusting agent | Substance that is dusted onto the surface of a material (e.g., rubber) to reduce surface tack. | |
| Dye | Substance used to impart colour to other materials or mixtures; added to a material to add colour; soluble. Molecularly dispersed within a liquid, transferred to a material, and bound to that material through intermolecular forces. Typically an organic substance, although exceptions do exist. A dye requires some degree of solubility that allows it diffuse into the polymeric matrix of a textile fibre. | |
| Elasticizer | Substance that increases the elasticity of a material. | |
| Embalming agent | Substance used for the preservation of biological tissue. | |
| Energy releasers (explosives, motive propellant) | Substance characterized by chemical stability, but may be induced to undergo rapid chemical change without an outside source of oxygen, rapidly producing a large quantity of energy and gas accompanied by a large increase in volume and an explosion, bursting, or expansion. | |
| Etching agent | Etching Agent is a substance that removes unprotected areas of metal or glass surfaces. Etching agents are usually acids or bases. | ✓ |
| Explosion inhibitor | Substance used to reduce the explosion potential of flammable materials. | |
| Fertilizers (soil amendments) | Chemical substance used to increase the productivity and quality of farm crops, including plants, animals, and forestry; added to soil to supply chemical elements needed for plant nutrition. | |
| Filler | Ingredient added to fill out a dry product formulation and to lower the concentration of other ingredients; used to provide bulk, increase strength, increase hardness, or improve resistance to impact; used to extend a material and to reduce its cost by minimizing the amount of more expensive substances used in the production of articles; used to fill cavities or tighten joints; relatively inert and normally non-fibrous, finely divided substance added usually to extend volume and sometimes to improve desired properties, such as whiteness, consistency, lubricity, density or tensile strength. | |

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| Film former | Any component of a material that aids the material in forming a thin continuous sheet on its substrate. This sheet will act as a barrier between the environment and its substrate. Silicone is a good filmformer in furniture polishes because of its ease of application, soil removal, and depth of glossiness. Polymers are the most commonly used film formers. | |
| Finishing agents | Chemical substances used to impart such functions as softening, staticproofing, wrinkle resistance, and water repellence. Substances may be applied to textiles, paper, and leather. | |
| Fire extinguishing agent | Any agent incorporated or applied to slow down combustion once started; Removes heat faster than it is released; separates the fuel and oxidizing agent; dilutes the vapour phase concentration of the fuel and oxidizing agent below what is needed for combustion. | |
| Fixing agent (mordant) | Substance used to interact with a dye on fibres to improve fastness. | |
| Flame retardant | Flame retardation is a process by which the normal degradation or combustion processes of polymers have been altered by the addition of certain chemicals. They are substances used on the surface of or incorporated into combustible materials to reduce or eliminate their tendency to ignite when exposed to heat or a flame for a short period of time; used to raise its ignition point; used to slow down or prevent combustion. | |
| Flocculating agent | A flocculating agent is a chemical or substance that facilitates flocculation of suspended solids in liquid. Flocculating agents are chemical additives, which, at relatively low levels compared to the weight of the solid phase, increase the degree of flocculation of a suspension. They act on a molecular level on the surfaces of the particles to reduce repulsive forces and increase attractive forces. The principal use of flocculating agents is to aid in making solid–liquid separations. | |
| Flotation agent | Substance used to concentrate and obtain minerals from ores. | |
| Flow promoter | Substance that reduces drag in fluids in motion and between a fluid and a conduit surface. | |
| Flux agent | Substance used to promote the fusing of minerals or prevent oxide formation; for casting or joining materials. | ✓ |
| Foamant | Any substance that promotes or enhances formation of a lather or foam (i.e., a dispersion of a gas in a liquid or solid); used to form physically, by expansion of compressed gases or vaporization of liquid, or chemically, by decomposition evolving a gas, a foam or cellular structure in a plastic or rubber material. | |
| Food flavouring and nutrient | Substance used in food or animal feedstuffs to produce or enhance taste or odour or nutritional value. Flavour compounds are molecules that stimulate the human taste chemical senses. | |

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| Fragrance | Substances used to impart control odours or impart pleasing odours. Fragrance compounds are molecules that stimulate the human olfactory chemical senses. | |
| Freeze-thaw additive | These synthetic resin emulsions or synthetic lattices enable paints, coatings, and other products to retain original consistency and to resist coagulation when exposed to freezing and thawing prior to application. | |
| Friction agent | Materials used to enhance friction between two objects. | |
| Fuel | Chemical substance used to create mechanical or thermal energy through chemical reactions; used to evolve energy in a controlled combustion reaction. | |
| Fuel additive | Substances added to a fuel for the purpose of controlling the rate of reaction or limiting the production of undesirable combustion products; provide other benefits such as corrosion inhibition, lubrication, or detergency. | |
| Gelling modifier | Substance that influences the formation or destruction of a gel. | |
| Hardener | Increases the strength, hardness, and abrasion resistance of coatings, adhesives, sealants, elastomers, and other products | |
| Heat stabilizer | Substance that protect polymers from the chemical degrading effects of heat or UV irradiation. | |
| Heat transfer agent | Substance used to transmit or to remove heat from another material. | ✓ |
| Humectant | Humectant is a substance that is used to retard moisture loss from the product during use. This function is generally performed by hygroscopic materials. The efficacy of humectants depends to a large extent on the ambient relative humidity. | |
| Hydraulic fluids | Liquid or gaseous chemical substances used for transmitting pressure and EP-additives. Transfer power in hydraulic machinery. | ✓ |
| Impregnation agent | Substance used to admix with solid materials that retain their original form. | |
| Incandescent | Substance that is used to emit electromagnetic radiation at high temperature. | |
| Ink | A colored fluid or viscous substance used for writing, drawing, printing, stenciling or duplicating | ✓ |
| Insulators | Substances used to prevent or inhibit the flow of heat, electrical current, light, and the transmission of sound between two media. (acoustic, electrical, and thermal insulators). | |
| Intermediate (precursor) | Chemical substances consumed in a reaction in order to manufacture other chemical substances at an industrial processing facility. | |

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| Ion exchange agent | Chemical substances, usually in the form of a solid matrix, that are used to selectively remove targeted ions from a solution. In ion exchange, ions of a given charge (either cations or anions) in a solution are adsorbed on a solid material (the ion exchanger) and are replaced by equivalent quantities of other ions of the same charge released by the solid. | |
| Leaching agent | Substance that, when added to a solvent, aids in the dissolution of a component of an insoluble solid mixture. | |
| Lubricating agent | Substance introduced between two moving surfaces or adjacent solid surface to reduce the friction between them, improve efficiency, reduce wear, and reduce heat generation; enhance the lubricity of other substances. These lubricating films are designed to minimize contact between the rubbing surfaces and to shear easily so that the frictional force opposing the rubbing motion is low. | ✓ |
| Luminescent agent | Substance that emits visible radiation upon absorption of energy in the form of photons, charged particles, or chemical change. | |
| Magnetic element | Substance added into materials in order to make them magnetic. | |
| Monomers | Substance usually containing carbon and of a low molecular weight and simple structure that is capable of conversion to polymers, synthetic resins, or elastomers by repetitive combination with itself or other similar molecules. | |
| No technical function | To be used in the cases where the substance does not fulfil any particular technical function during the use described (e.g. case where a processing aid remains in the matrix of an article without fulfilling any technical function during service life) | |
| Opacifier | Substance that renders solutions opaque; reduces transparency or the ability of light to pass through solution; added to finished products to reduce their clear or transparent appearance. | |
| Oxidizing agent | Oxidizing agent is a substance that gains electrons during their reaction with a reducing agent. Oxidizing agents commonly contribute oxygen to other substances. | |
| pH regulating agent | Maintains the desired pH range of a substance; used to alter, stabilize, or control the pH (hydrogen ion concentration). Substances used to alter or stabilize the hydrogen ion concentration (pH). | ✓ |
| Photochemical | Chemical substance used for its ability to alter its physical or chemical structure through absorption of light, resulting in the emission of light, dissociation, discoloration, or other chemical reaction; used to create a permanent photographic image. | ✓ |

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| Pigment | Any substance, usually in the form of a dry powder, that imparts colour to another substance or mixture by attaching themselves to the surface of the substrate through binding or adhesion; may contribute towards opacity, durability, and corrosion resistance. Must have positive colorant value; larger than molecular particle size and held in place by corresponding low mobility; scatter and absorb light. Pigments differ from dyes in that they are insoluble in the vehicle and exist as dispersed compounds in paint rather than as a solute. | |
| Plasticizer | An organic compound that softens synthetic polymers; added to a high polymer to facilitate processing and to increase flexibility, plasticity, fluidity and toughness of the final product by internal modification (solution) of the polymer molecule. Plasticizers may be added internally or externally. A rigid polymer can also be externally plasticized by addition of a plasticizer, which imparts the desired flexibility but is not chemically changed by reaction with the polymer. | |
| Plating agent | Substances/materials used as a source for a layer of metal deposited on another surface, or that aid in such a deposition. These are used in processes such as electroplating, galvanization or coating. | ✓ |
| Pressure transfer agent | Lubricating oil and grease additive that prevents metal to metal contact at high temperatures or under heavy loads where severe sliding conditions exist. Functions by reacting with the sliding metal surfaces to form oil-insoluble surface films. | |
| Process regulator | Chemical substance used to change the rate of a chemical reaction, start or stop the reaction, or otherwise influence the course of the reaction. May be consumed or become part of the reaction product. | |
| Processing aid | Chemical substances used to improve the processing characteristics or the operation of process equipment or to alter or buffer the pH of the substance or mixture, when added to a process or to a substance or mixture to be processed. Processing agents do not become a part of the reaction product and are not intended to affect the function of a substance or article created. | ✓ |
| Propellants (blowing agents) | Substance that is used for expelling products from pressurized containers (aerosol products); used to dissolve or suspend other substances and either to expel those substances from a container in the form of an aerosol or to impart a cellular structure to plastics, rubber, or thermo set resins; provides the force necessary to expel the contents of aerosol containers; liquefied or compressed gas within which substances are dissolved or suspended and expelled from a container upon discharge of the internal pressure through expansion of the gas. The formulated product in the pressurized container may be solution, emulsion, or suspension. | ✓ |
| Reactive cleaning/remov | Substance that reacts with and removes surface contaminants and is generally consumed, e.g., oxides, sulfides. | ✓ |

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| al agent | | |
| Reducing agent | Substance that during reactions with oxidizing agents lose electrons; commonly contributes hydrogen to other substances; used to remove oxygen, hydrogenate or, in general, acts as electron donor in chemical reactions. | |
| Refrigerants | Substances used within machines such as air conditioning units, refrigerators, and walk in freezers to cool indoor air and reduce temperatures. | ✓ |
| Resins (prepolymers) | Usually high molecular weight polymers that lower viscosity. Thermoplastic resins soften when exposed to heat and return to original form at room temperature, and thermosetting resins solidify irreversibly when heated due to cross-linking. | |
| Semiconductor and photovoltaic agent | Substance that has resistivity between that of insulators and metals; usually changeable by light, heat or electrical or magnetic field; generates electromotive force upon the incidence of radiant energy. | |
| Sizing | agent Substance applied to substrates such as fabric, yarn, paper products, or plaster to increase abrasive resistance, stiffness, strength, smoothness, or reduce absorption. | |
| Softener | Substance used for softening materials to improve feel, to facilitate finishing process, or to impart flexibility or workability; used in textile finishing to impart superior "hand" to the fabric and facilitate mechanical processing; has the capability of imparting softness and pliability to washable textile fabrics. | |
| Solids separation (precipitating) agent | Chemical substances used to promote the separation of suspended solids from a liquid. | |
| Solubility enhancer | A chemical additive that prevents chemicals or materials from separating or falling out of solution. Solubility enhancers are often used in concentrated formulations. | |
| Solvent | Any substance that can dissolve another substance (solute) to form a uniformly dispersed mixture (solution) at the molecular or ionic size level; provides dissolving capability required for a stable formulation; dissolves certain components of the formulation to aid dispersion of components; aids oil cleansing power and controls film drying rate; allows the product to solubilize soils on surfaces and facilitate removal; used to dissolve, thin, dilute, and extract. | ✓ |
| Stabilizing agent | A substance that tends to keep a compound, solution, or mixture from changing its form or chemical nature; renders or maintains a solution, mixture, suspension, or state resistant to chemical change; used to prevent or slow down spontaneous changes in and ageing of materials. | |

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| Surface modifier | Substance that may be added to other ingredients to adjust the optical properties associated with the surface of a material. These substances are designed to affect the luster, increase gloss, and alter the reflectance exhibited by a surface. |
| Surfactant | A surface active agent (surfactant), which, when added to water, causes it to penetrate more easily into, or to spread over the surface of another material by reducing the surface tension of the water (see detergent). |
| Swelling agent | Substance added to a material to cause that material to increase in volume and become softer. |
| Tackifier | Provides stickiness |
| Terminator/Blocker | Substance that reacts with the end of a growing polymer chain, stopping further polymerization (terminator) or a substance used to protect a reactive moiety on a precursor during organic synthesis of a product that is subsequently removed regenerating the reactive moiety (blocker). |
| Thickener/Thickening agent | Any of a variety of hydrophilic substances used to increase the viscosity of liquid mixtures and solutions and to aid in maintaining stability by their emulsifying properties. Four classifications are recognized: 1) Starches, gums, casein, gelatin and phycocolloids; 2) semisynthetic cellulose derivatives (e.g. carboxymethyl-cellulose); 3) polyvinyl alcohol and carboxy-vinylates (synthetic); and 4) bentonite, silicates, and colloidal silica. |
| Tracer Substance | Substances that possess a readily detectable radioactive/isotopic label or chemical moiety that is added to biological/environmental media or chemical reactions to elucidate the transformation/transportation processes that are occurring. |
| UV stabilizer | Substance that protects the product from chemical or physical deterioration induced by ultraviolet light; absorbs UV radiation, thereby protecting varnishes and pigments against UV degradation. |
| Vapour pressure modifiers | Substance added to a liquid to modify its vapour pressure (e.g., to reduce evaporation). |
| Vehicle (carrier) | The vehicle dissolves or disperses solid components of a substance, allowing even dispersion throughout application. The vehicle carries the other particles within a substance. |
| Viscosity modifier | Substance used to alter the viscosity of another substance; used to decrease or increase the viscosity of finished products; used to modify the flow characteristics of other substances, or mixtures, to which they are added; controls the deformation or flow ability of a wax product. Resins generally lower viscosity while thickeners (e.g., gums and hydroxyethyl cellulose) increase viscosity |

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| Waterproofing agent | A water repellent material functions by lowering the surface energy to protect surfaces against water by making water bead. | |
| X-Ray Absorber | Substance use to block or attenuate X-rays. | |
| Other | | ✓ |

# Appendix B - Process Categories (PROC)

Source: European Chemicals Agency Guidance (https://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf).

The ECHA PROCs 1 - 4 Descriptors and Explanations and Examples have been modified to be relevant to all industry sectors.

**Descriptor List for Process Categories (PROC)**

| Code | Descriptor | Explanations and Examples | Drop-Down Menu Option |
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| PROC1 | Closed process without likelihood of exposure or processes with equivalent containment conditions. | Describes the general nature of processes taking place in sectors where the manufacture takes place or processes with closed process conditions. The closed transfers inherent to the process including closed sampling are included. Open transfers to charge/discharge the system are not included. | ✓ |
| PROC2 | Closed continuous process with occasional controlled exposure or processes with equivalent containment conditions | Describes the general nature of processes taking place in sectors where the manufacture takes place (continuous processes that involve limited manual interventions), or processes with equivalent closed process conditions. The closed transfers inherent to the process including closed sampling are included. Open transfers to charge/discharge the system are not included. | ✓ |

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| PROC3 | Manufacture in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | Describes the general nature of processes taking place in sectors where takes place (batch processes that involve limited manual interventions) or processes with closed process conditions. The closed transfers inherent to the process including closed sampling are included. Open transfers to charge/discharge are not included. | ✓ |
| PROC4 | Production where opportunity for exposure arises | Describes the general nature of processes taking place in sectors where the manufacture takes place (processes where the nature of the design does not exclude exposure). The closed transfers inherent to the process including closed sampling are included. Open transfers to charge/discharge the system are not included. | ✓ |
| PROC5 | Mixing or blending in batch processes | Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use. Charging/discharging of the blending vessel and sampling are considered separate activities and are not included in this PROC. | ✓ |
| PROC6 | Calendering operations | Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper. | |
| PROC7 | Industrial spraying | Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders. Spraying for surface coating, adhesives, polishes/cleaners, air care products, blasting. The reference to 'industrial' means that workers involved have received specific task training, follow operating procedures and act under supervision. Where engineering controls are in place, they are also operated by trained personnel and regularly maintained according to procedures. It is not meant that the activity can only take place at industrial sites. | ✓ |
| PROC8a | Transfer of substance or mixture (charging and discharging) at nondedicated facilities | Covers general transferring operations of large quantities of chemicals from/to vessels, containers, installations or machinery without dedicated engineering controls in place for reducing exposure. Transfer includes loading, filling, dumping, bagging and weighing. | |

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| PROC8b | Transfer of substance or mixture (charging and discharging) at dedicated facilities | Covers general transferring operations from/to vessels or containers with provision of dedicated engineering controls in place for reducing exposure: it addresses operations where material transfers are undertaken at locations that are specifically designed and operated for the transfer of larger quantities (tens of kilos and higher) of chemicals and where the exposure is primarily related to the un-coupling/coupling activity rather than the transfer itself. Such situations include tanker loading bays and drum filling. Transfer includes loading, filling, dumping, bagging. | ✓ |
| PROC9 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage. This PROC can also be used to cover sampling operations. | ✓ |
| PROC10 | Roller application or brushing | This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes. This PROC can also be assigned to tasks such as cleaning of surfaces using long-handle tools. | ✓ |
| PROC11 | Non industrial spraying | Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders. Includes spraying of substances/mixtures for surface coating, adhesives, polishes/cleaners, air care products, blasting. The reference to 'non-industrial' is to differentiate where conditions mentioned in PROC7 cannot be met. It is not meant that the activity can only take place at non-industrial sites. | ✓ |
| PROC12 | Use of blowing agents in manufacture of foam | Use of substances to facilitate the process of production of foams by forming gas bubbles in a liquid mixture. It can be either a continuous or a batch process. | ✓ |
| PROC13 | Treatment of articles by dipping and pouring | Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; Includes handling of treated objects (e.g. from/to treatment basin, after drying, plating). The service life of the article after the treatment needs to be reported separately. | ✓ |
| PROC14 | Tabletting, compression, extrusion, pelletisation, granulation | This covers processing of mixtures and/or substances into a defined shape for further use. | ✓ |

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| PROC15 | Use as laboratory reagent | Use of substances at small scale in laboratories (less than or equal to 1 l or 1 kg present at workplace). Larger operations in laboratories and R+D installations should be treated as industrial processes. This includes the use in quality control processes. | |
| PROC16 | Use of fuels | Covers the use of (solid and liquid) fuel (including additives), including transfers via the closed system, where limited exposure to the product in its unburned form is expected. Assignment of PROC 8 or PROC 9 not needed in this case. The exposure to exhaust gases is not covered. | |
| PROC17 | Lubrication at high energy conditions in metal working operations | Covers metal working processes where the lubricants are exposed to high temperature and friction e.g. metal rolling/forming processes, drilling and grinding, etc. Transfers for refilling or discharging from/to reservoirs are not covered. | |
| PROC18 | General greasing /lubrication at high kinetic energy conditions | Use of lubricant or greasing agents in high kinetic energy conditions, including manual application. It does not refer to any filling operation. | |
| PROC19 | Manual activities involving hand contact | Addresses tasks, where exposure of hands and forearms can be expected; no dedicated tools or specific exposure controls other than PPE can be put in place. Examples are manual mixing of cement and plasters in construction works or mixing of hair dyes and bleaches. | ✓ |
| PROC20 | Use of functional fluids in small devices | Includes the filling and emptying of systems containing functional fluids (including transfers via the closed system) e.g. heat and pressure transfer fluids; takes place on routine basis Example: charging and discharging of motor and engine oils, brake fluids, home appliances. Assignment of PROCs 8-9 not needed in this case. | |
| PROC21 | Low energy manipulation and handling of substances bound in/on materials or articles | Cover activities such as manual cutting, cold rolling or assembly/disassembly of material/article. It can also be used for handling/transfer of massive (metal) objects. | |
| PROC22 | Manufacturing and processing of minerals and/or metals at substantially elevated temperature | Describes the general nature of processes taking place at smelters, furnaces, refineries, ovens, excluding casting, tapping and drossing operations. When the temperature has decreased , the handling of the cool material can be covered by PROC21 or PROC26. | ✓ |

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| PROC23 | Open processing and transfer operations at substantially elevated temperature | Describes certain processes taking place at smelters, furnaces and ovens: casting, tapping and drossing operations. Covers also hot dip galvanising raking of melted solids in paving and water granulation. When the temperature has decreased, the handling of the cold material can be covered by PROC21 or PROC26. | ✓ |
| PROC24 | High (mechanical) energy work-up of substances bound in /on materials and/or articles | Substantial thermal or kinetic energy applied to substance by e.g. hot rolling/forming, grinding, mechanical cutting, drilling or sanding, stripping. | |
| PROC25 | Other hot work operations with metals | Welding, soldering, gouging, brazing, flame cutting. | ✓ |
| PROC26 | Handling of solid inorganic substances at ambient temperature | Transfer and handling of ores, concentrates, metals and other inorganic substances in solid (but not massive) potentially dusty form. Assignment of PROC8a, PROC8b or PROC9 not needed in this case. The handling of massive objects should be addressed with PROC21. | |
| PROC27a | Production of metal powders (hot processes) | Production of metal powders by hot metallurgical processes (atomisation, dry dispersion). | |
| PROC27b | Production of metal powders (wet processes) | Production of metal powders by wet metallurgical processes (electrolysis, wet dispersion). | |
| PROC28 | Manual maintenance (cleaning and repair) of machinery | Covers maintenance activities for uses where the maintenance is not already included in any of the other process categories. The category covers for example: • activities when closed systems are opened and potentially entered for cleaning • generally dedicated/separate cleaning tasks conducted on a shift or less frequent basis (e.g. between individual production batches) • removal of splashes around the machinery removal of filters or material from filters • cleaning of floors that are not directly around the machinery, but still need cleaning for instance because of dust deposition when handling a dusty product. | ✓ |
| PROC0 | Other | | ✓ |