

## Guidelines for Management of Manufacturing Process Chemicals

To further our commitment to safeguard human health and safety and the environment, Dell has formed the Manufacturing Process Chemicals (MPC) Program to monitor, address, and mitigate risks associated with the use of chemicals in Dell product manufacturing.

### Application of the Guidelines

Dell has issued Guidelines for Management of Manufacturing Process Chemicals (referred to as “the Guidelines” hereafter) to address risks associated with using chemicals in the manufacturing process. These guidelines are applicable to all facilities with manufacturing operations that produce Dell branded products and supply components and materials incorporated into Dell branded products. The Guidelines are to be followed in addition to the [Dell's Chemical Use Policy](#), [Dell Inc's Materials Restricted for Use](#), the [Electronic Industry Citizenship Coalition \(EICC\) Code of Conduct](#) and all other applicable laws that address the use of chemicals in manufacturing processes.

### Guidelines to Managing Manufacturing Process Chemicals

Dell supports the implementation of best practices in order to manage manufacturing process chemicals. To prevent and reduce potential harm that could result from exposure to manufacturing process chemicals, Dell encourages suppliers to follow the [Hierarchy of Controls](#) and to exercise precautionary measures<sup>1</sup> wherever possible during the manufacturing process. Dell expects suppliers to maintain up to date and accurate chemical inventory records, have a traceable chemical approval process, and conduct thorough reviews of each use of the chemical including health, safety, and environmental risk assessments.

Dell expects suppliers to be able to demonstrate a traceable decision process for evaluating human and environmental risks and selecting the appropriate method(s) of controls before use or modification in use of all chemicals in manufacturing processes. If reasonable scientific grounds indicate that the use of the substance could pose significant environmental or human health risks, then the supplier is expected to avoid using the substance. Should potential environmental or human health risks change due to a modification in the manufacturing process, the supplier shall re-evaluate the appropriate use of the chemical in the modified process. When the full extent of harm is not definitive, suppliers should take precautionary measures to safeguard the environment and human health.

When workers are exposed to chemicals after other reasonable controls have been implemented, suppliers shall provide suitable and well-maintained Personal Protective Equipment (PPE) and appropriate training for the effective and consistent use of PPE prior to worker exposure and regularly thereafter. Suppliers shall also communicate and provide information to workers regarding hazardous chemical risks through industry standard protocols such as through Material Safety Data Sheets (MSDSs or SDSs) in a language that workers comprehend and in a location that is easily accessible. SDSs include at minimum, the chemical ingredients listed by CAS# and the potential hazards to human health and the environment.

### Specification on Substances Used in Manufacturing

Dell has chosen to specify the use or restriction of certain substances throughout its organization and supply chain beyond regulatory requirements. In addition to restricting the use of chemicals in particular processes, Dell will monitor the use of certain chemicals in manufacturing operations and recommend substances for phase out.

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<sup>1</sup> Refer to Act Responsibly section on page 1 of [Dell's Chemical Use Policy](#)

**Specification on Substances Restricted for Use in Manufacturing**

The substances listed in this table are not to be used in the manufacturing processes specified under “Restricted Applications”.

Substance Name	CAS Number	Restricted Applications	References <sup>2</sup>	Declaration Method
Ozone Depleting Substances	Refer to <a href="#">Table C, E</a>	All manufacturing processes	<a href="#">Dell Inc’s Materials Restricted for Use</a>	SDoC <sup>3</sup>
Fluorinated Greenhouse Gases	Refer to <a href="#">Table Q</a>	All manufacturing processes	<a href="#">Dell Inc’s Materials Restricted for Use</a>	SDoC <sup>4</sup>
Benzene	71-43-2	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">EPA</a>	By request from Dell MPC Program
Chloroform (Trichloromethane)	67-66-3	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">OSHA</a>	By request from Dell MPC Program
n-Hexane	110-54-3	Cleaning and degreasing processes	<a href="#">OSHA</a>	By request from Dell MPC Program
Methylene Chloride	75-09-2	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">OSHA</a>	By request from Dell MPC Program
Pentachloroethane	76-01-7	Cleaning and degreasing processes	<a href="#">IARC volumes</a>	By request from Dell MPC Program
1,1,1,2- Tetrachloroethane	630-20-6	Cleaning and degreasing processes	<a href="#">IARC volumes</a>	By request from Dell MPC Program
1,1,2,2- Tetrachloroethane	79-34-5	Cleaning and degreasing processes	<a href="#">IARC volumes</a>	By request from Dell MPC Program
Tetrachloroethylene	127-18-4	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">EPA</a>	By request from Dell MPC Program
Toluene	108-88-3	Cleaning and degreasing processes	<a href="#">IARC volumes</a>	By request from Dell MPC Program
Trichloroethylene (TCE)	79-01-6	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">EPA</a>	By request from Dell MPC Program

<sup>2</sup> Provides some background on the source of the substance restriction

<sup>3</sup> Refer to [Dell Inc’s Materials Restricted for Use](#) for guidance on how to declare conformance

<sup>4</sup> Refer to [Dell Inc’s Materials Restricted for Use](#) for guidance on how to declare conformance

### Specification on Substances Monitored for Use in Manufacturing and Recommended for Phase Out

The substances listed are to be monitored for use and are under consideration for restriction. In the spirit of Dell's Precautionary Measures<sup>5</sup>, Dell recommends these substances to be phased out of manufacturing operations. These chemicals may be subject to restrictions in future revisions of the Specification.

Substance Name	CAS Number	Restricted Applications	References <sup>6</sup>	Declaration Method
Bis (chloromethyl) ether	542-88-1	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">OSHA</a>	By request from Dell MPC Program
Cyclohexane	110-82-7	Cleaning and degreasing processes	<a href="#">OSHA</a>	By request from Dell MPC Program
N-Methylpyrrolidone (NMP)	872-50-4	Cleaning and degreasing processes	<a href="#">OSHA</a>	By request from Dell MPC Program
Pentachlorophenol	87-86-5	Cleaning and degreasing processes	<a href="#">IARC volumes</a> ; <a href="#">OSHA</a>	By request from Dell MPC Program

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<sup>5</sup> Refer to Act Responsibly section on page 1 of [Dell's Chemical Use Policy](#)

<sup>6</sup> Provides some background on the source of the substance restriction

## **Demonstrating Conformance to the Guidelines and Specifications on Substances Used in Manufacturing**

The Dell Manufacturing Process Chemicals Program monitors production facilities for conformance to these Guidelines. Suppliers shall demonstrate conformance to the Guidelines upon request by providing evidence that sufficient management systems are in place to manage and mitigate chemicals related risks to human health and the environment. At the beginning of Dell's 2019 fiscal year (starting February 1, 2018), suppliers shall be able to demonstrate conformance to the Specification on Substances Used in Manufacturing upon request.

Substances that are specified by [Dell Inc's Materials Restricted for Use](#) shall continue to be declared via Dell's Supplier Declaration of Conformity in the Agile PG&C module. All others shall be disclosed to the Manufacturing Process Chemicals Program via the data collection format specified at the point of collection.

### **Waiver Process**

Suppliers may seek a waiver of restrictions or exemption to the Specification on Substances Used in Manufacturing by writing to the Manufacturing Process Chemicals Program at [SCSustainability@dell.com](mailto:SCSustainability@dell.com). This may include suppliers that are concerned about achieving conformance at the expense of product quality or performance. Waivers may only be granted by the Manufacturing Process Chemicals Program.

### **Chemical Substitutions and Alternatives**

When substituting a chemical with an alternative, the supplier must be able to demonstrate a traceable decision process that shows the alternative's potential to reduce risk to the environment or human health while conforming to Dell's criteria for product cost, quality, and performance.

If in order to demonstrate conformance to the Specification on Substances used in Manufacturing suppliers choose to make a chemical substitution, suppliers may request guidance from Dell on alternative substances and how to demonstrate conformance to Dell's criteria for product cost, quality, and performance. Dell encourages suppliers to conduct thorough chemical reviews using industry tools such as [GreenScreen®](#) or [IC2 Alternatives Assessment Guide](#) before implementing a chemical alternative.

### **Risk Mitigation Activities and Corrective Actions**

In addition to monitoring conformance to the Guidelines and the Specification, Dell's Manufacturing Process Chemicals Program will engage suppliers through surveys, risk assessments, on-site visits, and capability-building activities targeted towards improving chemical management systems and their implementation in manufacturing operations. Suppliers will be requested to engage in activities as relevant to demonstrate their ability to meet Dell's expectations. Suppliers that face challenges in conformance will be asked to develop corrective action plans and to demonstrate continuous improvement.

## **Revision History**

Version 1.0, May 2017