WWP - World-Wide Procedure

Global Specification for the Environment (GSE): Workplace Emissions

WWP-751712.005

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1. Purpose

This document establishes Logitech's safety and health protection requirements for workers, suppliers and customers to prevent exposure to hazardous chemical reagents in the workplace. It provides mandatory regulations and customer requirements on prohibiting or restricting the use of chemical reagents, and explains how to eliminate or reduce harmful chemical reagents from Logitech products.

2. Scope

This document applies to:

- Logitech Suppliers, including relevant Component Suppliers and Joint Design Manufactures (JDMs).
- All Sites/Regions

3. Definitions

The following defined terms and acronyms are used in this document.

Term	Definition
Limits	It means maximum concentration value. When the threshold is reached, the further obligations will be implemented depending on the regulations.
ppm	This is an abbreviation for "parts per million" and it also can be expressed as ml/m3 in gases. This measurement is the mass of a chemical or contaminate per unit volume of water.
OELs	Occupational exposure limit values (OELs) are set to prevent occupational diseases or other adverse effects in workers exposed to hazardous chemicals in the workplace
TLV	Threshold limit value for chemical substances is defined as a concentration in air, typically for inhalation or skin exposure. ppm for gases and mg/m3 for particulates. The basic formula for converting between ppm and mg/m3 for gases is ppm = (mg/m^3) * 24.45 / molecular weight. This formula is not applicable to airborne particles.

Term	Definition
TWA	Time-weighted average. Average exposure on the basis of a 8h/day, 40h/week work schedule
STEL	Short-term exposure limit. A 15-minute TWA exposure that should not be exceeded at any time during a workday, even if the 8-hour TWA is within the TLV-TWA.
C	It means the ceiling value of TWA, The TWA value shall not over C value
MAC	It is this specific chemical agent that should not be above this maximum concentration during any time on work day at the workplace in China.

4. Procedure

4.1 Hazardous Chemical Agents

Air quality in the workplace is a critical factor in ensuring the worker's health. The employer is responsible for ensuring the safety and health of the workplace.

Many hazardous chemical reagents are used in the electronic supply chain industry. From the extraction of raw materials, synthesis, component combination, washing, cleaning, to the assembly of components and the packaging of finished products, these reagents may be applied to Logitech products.

Logitech has a responsibility to protect workers, supply chain partners and customers from adverse health effects related to occupational chemical exposures at all stages. Logitech shall meet worldwide related regulations and customer requirements in this area.

4.2 Air Quality at the Workplace

In many countries, recommended or mandatory occupational exposure limits (OELs) have been established for exposure to gases, vapors and particulate matter in the air.
These chemical agents may be found in paints, inks, resin material or raw material of resin synthesis, and are frequently used in the assembly of electronics products.

The chemical agents listed in **Table 1** may be present in the Logitech manufacturing processes or products. Logitech has identified a number of key regions in which we operate and have outlined in Table 1 the limitation values of certain substances which vary from region to region.

Logitech pays particular attention to material selection for adhesives, glues, composite materials including plywood materials, paint spray and cleaning process agents which may be used within a manufacturing process. Logitech shall request its suppliers to apply the same vigilance when assessing the use and application of these types of materials within their process.

These requirements outlined in **Table 1** are applicable to component suppliers, product suppliers and other third party supply chain partners as well as being applicable to Logitech's own internal design process and manufacturing sites under our direct control. The expectation is that the safest solution is chosen when selecting materials, to avoid potential emission of those hazardous chemical agents from process and/or products and to eliminate the risk of injury to workers involved in supply chain activities.

TABLE 1 :
Summary of Occupational Exposure Limits (OELs) of Chemical Agents at the Workplace

Substances	EU	USA	Netherlands*	Taiwan	China*
Acetone	500	1000	1210 STEL: 2420	200	300 STEL: 450
Acetaldehyde	---	200	37 STEL: 92	100	MAC: 45
Ammonia	20 STEL: 50	50	14 STEL: 36	50	20 STEL: 30
Benzene	---	1	0.7	1	6 STEL: 10

Substances	EU	USA	Netherlands*	Taiwan	China*
2-Butanone (Methyl ethyl ketone)	200 STEL: 300	200	590 STEL: 900	200	300 STEL: 600
Carbon dioxide	5000	5000	9000	5000	9000 STEL: 18000
Carbon monoxide	20	50	23	35	20 STEL: 30
Chloropicrin	---	0.1	0.7	0.1	MAC: 1
p-Dichlorobenzene	2	75	12 STEL: 60	75	30 STEL: 60
1,2-Dichloroethane	2	50	7	10	7 STEL: 15
Dichloromethane	100	25 STEL: 125	353 STEL: 706	50	200
Dimethyl benzene (Xylene)	50 STEL: 100	100	50	100	50 STEL: 100
Ethanol	---	1000	260 STEL: 1900	1000	---
Ethyl benzene	100 STEL: 200	100	215 STEL: 430	100	100 STEL: 150
Ethylene oxide	1	1	0.84	1	1
Formaldehyde	0.3	0.75 STEL: 2 (5 mins)	0.15	1	MAC: 0.5
n-Hexane	20	500	72	50	100 STEL: 180
Hydrogen cyanide	0.9	10	1 STEL: 5	10	MAC: 1
Isopropyl alcohol	---	400	650	400	350 STEL: 700
Methanol	200	200	133	200	25 STEL: 50
Methyl bromide	---	C: 20	1	5	2
Methyl cyclohexane	---	500	200	400	---
Pentane	1000	1000	1800	600	500 STEL: 1000
Phosphine	0.1 STEL: 0.2	0.3	0.14 STEL: 0.28	0.3	MAC: 0.3
Sulfuryl fluoride	---	5	10	5	20 STEL: 40
Styrene	---	100 C: 200 STEL: 600 (5 mins)	107	50	50 STEL: 100

Substances	EU	USA	Netherlands*	Taiwan	China*
Toluene	50 STEL: 100	C: 300 STEL: 500 (10 mins)	150 STEL: 340	100	50 STEL: 100

Remark:

All limits values are TWA by ppm value (ml/m^3) if no specific assigned or marked.

*is the limit value displayed by mg/m3 in China and the Netherlands. These values had been converted to ppm. The following formula may be used to convert concentrations of gases and vapors in units of ppm to mg/m3. Concentration in mg/m3 = (Molecular Weight × Concentration in ppm)/24.5

4.3 High Risk Material in Electronic Products

Basically, the electronic parts of electronic products would not emit chemical gases, no matter internal printed circle board and electronic parts, and external plastic parts don't contain solvent according to their ingredients. But we found adhesive and glue that apply on electronic products.

Partial adhesive's formula includes solvent – 1, 2-Dichloroethane, Formaldehyde, Toluene and other substances. Any solvent of adhesive would possibly release chemical impurities into the workplace and isolated space. These air impurities may enter our body through inhalation and skin contact. When the exposure to air impurities exceeds the level that the body can tolerate, people's health may be adversely affected.

We suggest related products suppliers avoid using "solvent based adhesive" for product assembly. If this concern adhesive could not be removed after evaluation, the supplier should define a proper management mechanism, including drying time, oven heating or other methods to reduce residual solvent inside products. Speciality for the specific material /part must apply large quantity adhesive on the product.

4.4 How to Eliminate Hazardous Chemical Gases Emission

In addition to already existing local legislation and requirements outlined to control and eliminate gas emissions, below are the primary methods used to reduce and eliminate hazardous chemical agent emission from process and products.

- Methodic risk assessment of raw materials and any auxiliary materials that may be used during the manufacturing process.
- Focus on areas of high concern and investigate the risks associated with those materials and processes impacted. Emphasis should be on substances which are volatile and sufficient process time should be given to ensure adequate off-gassing, drying and/or curing during the manufacturing process.

- Investigate or test for gases emitted by hazardous volatile chemicals for specific materials and/or processes. This investigation should include potential gas testing after manufacture and after transport of the product (including packaging/pallets used in the transport).
- Select lower or non hazardous chemical agent materials and auxiliary materials wherever possible. The related PPE (personal protection equipment) should be prepared well for workers if concerned agents could not avoid use in the workplace. And the inspection result of concentration of concern gases at the workplace should meet local regulation requirements.
- Accelerate the phase in / phase out of known substances like glues containing Toluene and similar VOCs with alternatives.
- Specify properly the drying time required, under specific conditions, to remove and/or reduce the residual chemical agent levels for material or sub-assemblies.
- Setup efficient air exchange equipment and environment for workers at the workplace. If necessary, regularly check by testing for the effectiveness of these measures taken where known substances of concern are used or where known products or components potentially containing such substances are stored or manipulated.
- Check the ventilation vents of the container and turn off the engines of the truck before loading the products.

5. Reference

5.1 Documents referenced by this document

Doc ID	Document Title
WWP-750779-0000	Logitech GSE Requirements

5.2 External Documents

- 2000/39/EC - Establishing a first list of indicative occupational exposure limit values in
  implementation of Council Directive 98/24/EC on the protection of the health and safety
  of workers from the risks related to chemical agents at work, 8 June 2000

- 2006/15/EC- Establishing a second list of indicative occupational exposure limit values in
  implementation of Council Directive 98/24/EC and amending Directive, 91/322/EEC and
  2000/39/EC, 7 February 2006
- Occupational Safety & Health Administration, Department of Labor, USA. Regulation
  (Standard -29 CFR). Part-1910 - Occupational Safety and Health Standards.
  SubPart Z-Toxic and Hazardous Substances
- REACH (EC No 1907/2006)- Registration, Evaluation, Authorisation and Restriction of
- Chemicals (REACH), 18 December 2006
- GESTIS International Limits Values https://limitvalue.ifa.dguv.de/WebForm_gw2.aspx
- Occupational Safety and Health Administration
  https://www.osha.gov/annotated-pels/table-z-1
- The Social and Economic Council (SER)
- https://www.ser.nl/nl/thema/arbeidsomstandigheden/Grenswaarden-gevaarlijke-stoffen/Grenswaarden
- Ministry of Labor (Taiwan)
  https://laws.mol.gov.tw/FLAW/FLAWDAT01.aspx?id=FL015016
- GBZ 2. 1 -2019 Occupational exposure limits for hazardous agents in the workplace (China)