

TS.LB.001

TECHNICAL AND MANAGEMENT REQUIREMENTS FOR WEEE

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REVISION HISTORY

Version	Date	Brief Description of Change
0.0	04-11-2005	Launch of the first audit criteria – ERP VASP-T4 Requirements
1.0	01-07-2008	Initial Document – TS.001
0.1	01-09-2008	Update of the COLD requirements to subscribe CECEC as a reference
0.0	13-11-2009	Launch of the first TS.EW.001 (T4 Requirements)
0.1	18-11-2009	Change on the ODS Legislation and the EICC version reference
0.2	23-11-2009	Change the periodicity conditions for Mass Balance declarations
0.3	09-12-2009	Light changes for clarification of the requirements
0.4	22-02-2010	Orthographical Mistakes- Revision after Ops Meeting and GC comments
0.5	05-05-2011	Added new requirements on reuse. Changes on the insurance and security criteria
0.6	12-12-2011	Added new definitions
0.7	18-09-2012	Introduction of new WEEE Recast Directive requirements. New ERP logo
0.8	13-01-2013	Add new reference and requirements from EN 50574:2012
0.9	20-10-2014	Adaptation to the TS to the structure and document rules for IMS Goes leaner
0.10	27-07-2015	Launch of the first TS.EW.001 (Technical and Management Requirements for WEEE)
0.11	18-01-2018	Launch of first co-branded TS.HH.001 (Technical and Management Requirements for WEEE)
0.12	01-06-2018	Orthographical Mistakes- Revision after GTBST Meeting.
0.13	01-02-2021	Frequent revision for typos and clarification of requirements. BFR threshold and related management revised. Additional SR requirements. Integration of specific customers requirements. Modification of Downstream Audit Requirements.
1.0	01-06-2023	Creation of TS for the Landbell Group as a whole. Includes changes to the downstream network requirements & requirements regarding the certificate of treatment.
1.1	01-01-2025	Modification of TS for the Landbell Group to include H2 Compliance requirements, to get a unique standard for the Group.

PURPOSE

The objective of the current Technical Specification (TS) is to establish the minimum requirements to be fulfilled by any treatment operator conducting activities of WEEE transport, handling, storage and/or treatment, who is currently offering or expected to offer such services directly to LANDBELL GROUP and its customers. The requirements, herein defined, represent as well, the baseline criteria for conducting audits at the facilities of treatment operators thus allowing LANDBELL GROUP to ensure that WEEE treatment is completed in a controlled and consistent manner in accordance with applicable legal, statutory and LANDBELL GROUP requirements.

SCOPE

The guidelines described in this TS are applicable to all first tier (1T) WEEE treatment facilities belonging to the LANDBELL GROUP supply chain and for any succeeding second (2T) and third (3T) tiers output fractions treatment facilities for which LANDBELL GROUP holds a written agreement and/or elects to audit, as part of 1T downstream supply chain.

Material Scope

Applicable to any facilities which provide WEEE treatment (1T) of the following streams or on any of the resulting output fractions (2T and 3T operators):

- Temperature exchange equipment (TEE);
- Displays - Screens, monitors, and equipment containing screens having a surface greater than 100 cm²;
- Lamps;
- LDA - Large equipment with any external dimension larger than 50 cm;
- SDA - Small equipment with no external dimension larger than 50 cm;
- IT - Small IT and telecommunication equipment with no external dimension larger than 50 cm;

Geographical Scope

The current TS is applicable in any market where LANDBELL GROUP manages, or intends to manage directly, the WEEE treatment operations or delivers take-back solutions to its customers, extended, in some cases, to other countries where downstream treatment vendors are located.

RULES OF DISSEMINATION

LANDBELL GROUP encourages the dissemination of the present TS to any waste management supplier, especially the ones that are a part of LANDBELL GROUP EoL supply chain. Such distribution should not alter, in any way, the meaning and content of the TS, therefore it is not authorized to share extracts of the TS, remove content or rephrase the standard requirements. The disclosure of the TS should always be integral to avoid misinterpretation of the requirements herein.

REFERENCES

References to standards mentioned in the current TS are to be interpreted as referring to the latest version of the given standard. References to legal acts mentioned in this TS are to be interpreted in its consolidated version, including all the corrections and amendments subsequently done after its first publication.

Reference	Description
EN 50614:2020	Requirements for the preparing for re-use of waste electrical and electronic equipment
EN 50625 – 1:2014	Collection, logistics & treatment requirements for WEEE. General treatment requirements
EN 50625-2-1:2014	Collection logistics and treatment requirements for WEEE. Treatment requirements for Lamps
EN 50625-2-2:2015	Collection logistics and treatment requirements for WEEE. Treatment requirements for WEEE containing CRT and FPD
EN 50625-2-3:2017	Collection, Logistics & Treatment requirements for WEEE. Treatment requirements for temperature exchange equipment and other WEEE containing VFC and/or VHC
EN 50625-2-4:2017	Collection logistics and treatment requirements for WEEE. Treatment requirements for photovoltaic panels.
TS 50625-3-1:2015	Collection logistics and treatment requirements for WEEE. Specification for de-pollution. General
TS EN 50625-3-4:2017	Collection, logistics and treatment requirements. Specification for de-pollution – temperature exchange equipment
e-Stewards Standard	Standard for ethical and responsible reuse, recycling, and disposition of electronic equipment and information technology
R2 Standard	Responsible Recycling standard for electronics recyclers
ISO 9001:2015	Quality Management Systems – Requirements
ISO 14001:2015	Environmental Management Systems – Requirements with guidance for use
ISO 45001:2018	Occupational, Health and Safety Management Systems – Requirements with guidance for use
TS.LB.003	Technical and Management Requirements for WBA
BASEL Convention	On the control of transboundary movements of hazardous waste and their disposal
Stockholm Convention	On persistent organic pollutants
Rotterdam Convention	On the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade
Directive 2008/98	On waste
Directive 2012/19/EU	On waste electrical and electronic equipment (WEEE) (recast)
Regulation 1257/2024	On shipments of waste (amendment)
Regulation 1013/2006	On Shipment of waste (repealed, but continues to apply until 21 of May 2026)
Regulation 1005/2009	On substances that deplete the ozono layer (recast)
Regulation 1102/2008	On the banning of exports of metallic mercury compounds and mixtures and the safe storage of metallic mercury
Regulation 2019/1021	On persistent organic pollutants

DEFINITIONS

De-Contamination	Selective treatment (manual, mechanical and/or thermal) during which hazardous components, preparations and substances and other selected components, preparations and substances are removed from WEEE.
Disposal	Any operation besides recovery operations even where the operation has, as a secondary consequence, the reclamation of substances or energy (e.g. landfill, incineration without energy recovery).
Downstream Operators	Operators to whom the output fractions, resulting from the treatment of WEEE, are sent to, independently of the treatment process and the tier on the supply chain.
Electrical and Electronic Equipment (EEE)	Any equipment which is dependent on electric currents or electromagnetic fields to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1 000 volts for alternating current and 1 500 volts for direct current.
End of Waste Status	Waste that has undergone a recovery (including recycling) operation and complies with all the following specific criteria: <ul style="list-style-type: none"> ▪ the substance or object is commonly used for specific purposes (e.g. can be used as a secondary raw material) ▪ there is an existing market or demand for the substance or object ▪ the substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products the use will not lead to overall adverse environmental or human health impacts.
Energy Recovery	Processing of materials to generate and collect energy, such as through incineration of material to create steam and drive electrical turbines.
First Treatment Site	Permitted treatment site, which treat waste for the first time and send down stream fractions to Downstream Treatment Operators.
Materials of Concern	Any WEEE and/or its components (intact, broken, or shredded) containing or consisting of Printed Circuit Boards, ODS, CRT and CRT glass, Batteries, Mercury containing lamps and devices (e.g. switches, LCDs, backlighting and gas discharge lamps), PCB containing devices (e.g. capacitors), BFR plastics and any other items containing lead, cadmium, asbestos, hexavalent chromium, beryllium, radioactive substances and refractory ceramic.
Output Fractions	Any components, materials or substances which were removed either during de-contamination phase and/or resulting from WEEE treatment independently of the treatment process and the tier on the supply chain.
Ozone Depleting Substances (ODS)	Substances which deplete the ozone layer and are widely used in refrigerators, air conditioners, fire extinguishers, in dry cleaning, as solvents for cleaning, electronic equipment and as agricultural fumigants, including, for instance chlorofluorocarbons (CFC)/hydrochlorofluorocarbons (HCFC).
Persistent Organic Pollutants (POP)	Chemical substances that persist in the environment, bioaccumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. This group of pollutants include pesticides (such as DDT), industrial chemicals (such as polychlorinated biphenyls, PCB) and unintentional by-products of industrial processes (such as dioxins and furans).
Preparation for Reuse	Checking, cleaning, or repairing operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.
Qualified Electronics Recycling Standard (QERS)	Means any of the following standards: <ul style="list-style-type: none"> ▪ EN 50625 series (EN 50625-1; EN 50625-2-1; EN 50625-2-2; EN 50625-2-3; EN 50625-2-4 and EN 50614) ▪ R2 Standard ▪ The e-Stewards Standard The scope of the QERS certification should be aligned with the scope of services that the WEEE treatment operator is providing to LANDBELL GROUP.
Recovery	Any waste management operation that diverts a waste material from the waste stream and which results in a certain product with a potential economic or ecological benefit. Recovery includes material recovery, i.e. recycling energy recovery and re-use.
Recycling	Any recovery operation by which waste materials are reprocessed into products, materials, or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.
Refurbishment/Repair	Any disassembly/reassembly of UEEE/WEEE with the purpose of internal testing or troubleshooting; or replacement or repair of non-functioning or obsolete parts, not including consumable items such as batteries, toners, etc.
Regulated Output Fractions	Any component, preparation and/or substance which presents hazardous characteristic and that are within the list of regulated substance of the Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 – on waste electrical and electronic equipment (WEEE): <ul style="list-style-type: none"> ▪ Polychlorinated biphenyls/ terphenyls (PCB/PCT) containing capacitors ▪ Capacitors for high voltage generation >25 mm from microwaves ▪ Mercury containing components, such as switches or backlighting lamps ▪ Batteries & Accumulators ▪ Printed circuit boards if the surface of the element is greater than 10 cm² ▪ Toner cartridges, liquid and paste, as well as colour toner

	<ul style="list-style-type: none"> ▪ Plastic containing brominated flame retardants (BFR) ▪ Asbestos waste and components which contain asbestos ▪ Cathode ray tubes (CRT) ▪ Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC) ▪ Gas discharge lamps ▪ Liquid crystal displays (LCD) (together with their casing where appropriate) of a surface greater than 100 cm² and all those backlighted with gas discharge lamps ▪ External electric cables ▪ Components containing refractory ceramic fibres ▪ Components containing radioactive substances ▪ Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm, or proportionately similar volume).
Reuse	Use on any electronic product, parts, or components for its original intended purpose with or without prior repair or refurbishment.
Subcontractor	Any service provider who takes a portion of the work pursuant a take-back services contract or similar arrangement between the WEEE Treatment Operator and the LANDBELL GROUP. Includes only the subcontractors that conduct operations and services of WEEE treatment (handling, storage, transport and processing) on its parts, components, or materials.
Substances of Concern	Substances that have intrinsic properties which are harmful to human health and/or the environment
Transboundary Shipment	Any movement of wastes from an area under the national jurisdiction of a given country to an area under the national jurisdiction of another country.
Treatment	Operations including pre-treatment, (e.g. removal of hazardous components) recycling, and energy recovery and other recovery types as well as final disposition and the preparation prior to recovery or disposal, according to law in force.
Used Electrical and Electronic Equipment (UEEE)	Electric and electronic equipment that has been put into service and used but has subsequently been taken out of service and not yet discarded as waste. To the propose of the current TS, UEEE refers to material that are waiting to undergo preparation for reuse process.
Volatile Fluorocarbon (VFC)	Organic chemical compounds that contain the carbon-fluorine bond. In some cases, they may contain, also chlorine and/or. Compounds used as refrigerants or produce cells in plastics structure of an insulating foal when used as a blowing agent.
Volatile Hydrocarbon (VHC)	Organic chemical compounds consisting entirely of hydrogen and carbon, used as a refrigerant or to produce cells in plastics structure of an insulating foal when used as a blowing agent.
Waste	Substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.
Waste of Electric and Electronic Equipment (WEEE)	End of Life EEE, considered as waste (as per applicable legal requirements), including its components, parts and consumables which are part of the EEE at the time of discarding.

ABBREVIATIONS & ACRONYMS

BFR	Brominated Fire Retardants	H&S	Health and Safety
CCFL	Cold Cathode Fluorescent Lamp	ISO	International Organization for Standardization
CCTV	Closed Circuit Television	IT	Information Technology
CE	European Comission	LCD	Liquid Crystal Display
CFC	Chlorofluorocarbons	LDA	Large Domestic Appliances
CFL	Compact Fluorescent Lamps	LED	Light Emitting Diode
CRT	Cathode Ray Tube	MSDS	Material Safety Data Sheet
D	Disposal(Elimination Code)	MCL	Maximum Contaminant Level
DM	Dry Matter	ODS	Ozone Depleting Substance

DRE	Destruction Removal Efficiency	OECD	Organisation for Economic Co-operation Development
EfbV	Entsorgungsfachbetriebeverordnung	PBB	Poly Brominated Biphenyl
EC	European Council	PBDE	Poly Brominated Diphenyl Ether
EEE	Electric and Electronic Equipment	PCB	Polychlorinated Biphenyls
EFTA	European Free Trade Association	PCT	Polychlorinated Terphenyls
EHS	Environment, Health and Safety	POP	Persistent Organic Pollutant
EHS&SR	Environment, Health, Safety and Social Responsibility	PPE	Personal Protective Equipment
EN	European Standard – European Norm	PRO	Producer Responsibility Organization
EoL	End of Life	PVP	Photovoltaic Panels
EoW	End of Waste	PUR	Polyurethane Foam
ERP	European Recycling Platform	QERS	Qualified Electronic Recycling Standard
EU	European union	R	Recycling (Treatment Waste Code)
EWC	European Waste Code	REEE	Refurbished Electric and Electronic Equipment
FL	Fluorescent Lamps	R&R	Recycling and Recovery
FPD	Flat Panel Display	SDA	Small Domestic Appliances
GSCM	Global Supply Chain Manager	SFL	Straight Fluorescent Lamps
GPS	Global Positioning System	TEE	Temperature Exchange Equipment
H2C	H2 Compliance	TS	Technical Standard
HC	Hydrocarbons	UEEE	Used Electric and Electronic Equipment
HCFC	Hydrochlorofluorocarbons	VFC	Volatile Fluorocarbon
HEPA	High Efficiency Particulate Air	VHC	Volatile Hydrocarbon
HFC	Hydrofluorocarbons	WBA	Waste Batteries and Accumulators
HID	High Density Discharge Lamp	WEEE	Waste of Electric and Electronic Equipment

DESCRIPTION

Legal and Contractual Obligations	
Minimum Requirements	Additional Requirements
Retain, keep available and up to date all required permits/licenses/authorizations for all the sites, infrastructures, and operations.	Including, as applicable, the following: <ul style="list-style-type: none"> ▪ Interim storage ▪ WEEE treatment ▪ WEEE and output fractions transport ▪ Storage of output fractions.
Identify, access, and comply with all applicable laws, regulations, permit rules and contractual/customer requirements that pertain to your business, including but not limited to EHS&SR, waste domestic transport, import and export, waste storage and treatment, security, and labour.	When and where: <ul style="list-style-type: none"> ▪ Local national law does not provide adequate guidance, LANDBELL GROUP applies its own requirements as described in this TS. ▪ Applicable legal requirements conflict with the principles in this TS, the law always prevails. ▪ Applicable legal requirements conflict with the clauses of the LANDBELL GROUP contract, the law always prevails.
Define and maintain a documented procedure to identify, monitor and verify conformity with legal, regulatory, and contractual/customer requirements.	The compliance evaluations results (from legal, regulatory, contractual and customer requirements) should be recorded and available.
Liability	
Possess adequate and up to date insurance coverage to accommodate both legal, regulatory, and contractual requirements and to cover the risks and liabilities of the site size, nature, operations/ infrastructures, and quantity/type of waste processed.	Maintain financial, insurance and bond instruments to cover, at least, the following liabilities: <ul style="list-style-type: none"> ▪ Bodily injury (employees, subcontractors, visitors and other third parties). ▪ Damage to neighboring properties. ▪ Accidental pollution release and other emergencies (e.g. fire) ▪ Unplanned or planned closure, when applicable (decontamination of the site and post-closure needs).
Business Discontinuity	
Define and maintain a documented site closure plan. Update the closure plan, at least, every 2 years.	The site closure plan should include the following measures to be implemented in the event of the site closure or business discontinuity: <ul style="list-style-type: none"> ▪ Disposition of WEEE and the resulting output fractions ▪ Decommissioning of the facility ▪ Closure costs.
Security	
Minimum Requirements	Additional Requirements
Secure all storage and processing areas ensuring that they are protected from unauthorized access and egress to prevent thievery, losses, damages, data retrieval, unintended use and removal or unauthorized resale of any waste, components, or materials.	Protection systems should be implemented based on the degree of risk and may include security controls on: <ul style="list-style-type: none"> ▪ Infrastructure (e.g. fences, gates, security guards, CCTV, with last 90 days recording, alarm sensors, coded locks, lighting) ▪ HR processes (e.g. recruitment, criminal references check, training) ▪ Business processes (e.g. badging, access control, inventory control, loading and unloading controls, processing in timely manner to avoid stockpiling) ▪ Transport equipment (e.g. seals, truck security, routes assessment and GPS tracking).

Management System	
Minimum Requirements	Additional Requirements
Design, develop, implement, and improve an EHS&SR management system adequate to the characteristics of your operations, facilities, and resources.	Site integrated certification, as per international standards or equivalent (e.g. ISO 9001, ISO 14001, and ISO 45001), is welcome.
EHS Commitments	
Define, communicate, and keep updated an EHS&SR Policy available to all employees as well as to the public.	<p>EHS&SR policy must include, as a minimum, the following commitments:</p> <ul style="list-style-type: none"> ▪ Pollution prevention ▪ Employees H&S protection ▪ Fair work practices and dignifying work environment ▪ Ethical behaviour, fair business and competition practices ▪ Continual improvement ▪ Applicable legal, statutory, and contractual requirements compliance.
Define EHS&SR improvement objectives, appropriate to the nature and scale of the operator's EHS&SR risks/impacts	<p>EHS&SR objectives need to be documented in an annual program where the following is defined:</p> <ul style="list-style-type: none"> ▪ Targets, deadlines, and responsibilities ▪ Evidence of achievement.
Risks Management	
<p>Conduct a documented EHS&SR risk/impacts assessment, covering all site activities, and keep it updated.</p> <p>The EHS&SR risk/impacts assessment needs to consider normal, abnormal, and emergency conditions and include at least the following:</p> <ul style="list-style-type: none"> ▪ Hazards identification (physical, chemical, biological, and ergonomic) and environmental aspects ▪ Risks/Impacts identification ▪ Risks/Impacts significance evaluation ▪ Plans and measures to eliminate and/or reduce the risks/impacts (prevent/minimize workers exposures, environmental releases and resources consumption, business misconduct, inappropriate labour practices and human rights abuse). 	<p>Make available appropriate actions to prevent workplace accidents and/or illnesses. Preventive and control measures need to fulfil the following hierarchy (from preferably to last resort):</p> <ul style="list-style-type: none"> ▪ Elimination of the hazard/impact (e.g. modifying production methods and processes) ▪ Replacement (e.g. use a different product/equipment, materials/substances replacement) ▪ Engineering controls (e.g. vacuum cleaner with HEPA filter, encasing, exhausting, machine safeguarding, adapting maintenance processes etc.) ▪ PPE, signage/warning and/or administrative controls (e.g. training, work scheduling, usage of ear plugs, mask, safety boots, etc.).
Organization, Knowledge, Skills, and Training	
Maintain the adequate organization setup (resources, responsibilities, accountabilities, and competences) to address technical challenges and EHS&SR risks present at the site.	Employees need to have the necessary expertise, skills and knowledge for the responsibilities and tasks they undertake, aligned with the site EHS&SR management system defined and implemented.
<p>Respect the training and qualifications requirements requested by national law.</p> <p>Identify training needs and provide the necessary training to all employees and subcontractors in line with their specific activities, responsibilities, and EHS&SR risks to which they are exposed to.</p> <p>Training documentation and support information should be available to employees and easily accessible.</p>	<p>Some examples of the necessary expertise, knowledge and training are:</p> <ul style="list-style-type: none"> ▪ EHS&SR management system ▪ EHS&SR risks and controls ▪ EEE/UEEE/WEEE composition and characteristics Handling, sorting and treatment of WEEE/UEEE and materials of concern. ▪ WEEE/UEEE treatment process and equipment operation and maintenance (specific for each stream) ▪ Prevention and response to emergencies procedures/plans (evacuations routes, emergency exist, first aid, explosive atmosphere, use of emergency response equipment, etc.) ▪ Repairing/refurbishing, data sanitation and testing procedures ▪ Shipment and import/export regulations.

Management System	
EHS Improvement	
Establish a process to implement corrective actions to address any identified deviations with the legal, regulatory, contractual requirements, EHS&SR targets, and EHS&SR performance.	Evidence of the corrective actions follow-up and closure shall be available.
Perform self-evaluations/audits/inspections to ensure that the activities are completed in accordance with legal, statutory, and contractual/customer requirements.	Be cooperative and available for periodic audits conducted directly or indirectly by LANDBELL GROUP, and share any evidence needed to demonstrate compliance with this present TS.
Define an annual documented management review process (with evidence of performance evaluation and decision making for improvement).	A documented monitoring program shall demonstrate that the site tracks adherence with the internal defined procedures and updates EHS&SR risk assessments.
Documentation and Record Management	
Maintain the necessary level of procedures and other documentation to enforce the EHS&SR management system and to comply with the applicable legal requirements.	As a minimum, define and implement documented procedures, plans and guidelines for handling, sorting, storage, and treatment of WEEE/UEEE and materials of concern/hazardous substances.
Treatment operations and EHS&SR information is to be disclosed to LANDBELL GROUP, when appropriated, in alignment with the legal, statutory, and contractual requirements and in accordance with industry practice.	Falsification of record or records showing a misrepresentation of the treatment operations conditions are not tolerated.
Keep critical records for 5 years unless a higher period is specified by applicable law/contract requirement.	Critical records are all the ones needed to show full conformity with the legal, statutory and the present TS requirements. Records shall be legible, available and/or easily retrievable in hard copies or digital format.
Maintain an adequate and periodical backup, at least for the critical records.	Digital copies backups shall be kept off-site or by using a cloud environment.
Respect and comply with privacy and protection of personal data and information security law (e.g. responsible for data security, written procedures and policies, data leaks reporting and notification procedure, employees training, contracts requirements cascading down to the subcontractors).	Appropriate controls need to be in place to safeguard LANDBELL GROUP and its customer sensitive documentation/information.
Communications	
Implement a process that allow employees to raise EHS&SR concerns, suggestions for improvement and support employees' participation on risk management and accidents investigations.	Facilitate regular and proactive EHS&SR communication (e.g. occupational monitoring results, PPE usage, emergency procedures, machines safeguarding, layout changes to face ergonomic risks, work conditions).

Track and Trace	
Minimum Requirements	Additional Requirements
Transport, Reception and Handling	
Ensure care during transport, loading, unloading, and handling of WEEE to avoid any damage to the appliances, unnecessary EHS impacts and/or undermine its subsequent recycling and recovery potential.	Special attention needs to be given to WEEE hazardous streams (e.g. TEE, CRT, FPD, Lamps).
Pack all WEEE, during transport, in a stable manner to avoid damage and breakage of loads and emissions to the environment.	Transport of WEEE hazardous streams (e.g. TEE, CRT, FPD) shall be done in weatherproof covered vehicles or in suitable containers/cages. Lamps need to be always transported in containers/cages.
Ensure care during transport, loading, unloading, and handling of output fractions to avoid any unnecessary EHS impacts and/or undermine its subsequent recycling and recovery potential.	Containers used for output fractions shipment need to be labelled with content and appropriate to: <ul style="list-style-type: none"> ▪ Comply with legal requirements. ▪ Protect against EHS risk. ▪ Be compatible with and resistant to the fractions hold therein. ▪ Comply with the downstream operators packaging acceptance requirements.
Guarantee that all transport activities are done (directly or via subcontractors) by duly permitted, insured and well-maintained vehicles and with logistic equipment in good conditions.	Preventive maintenance of transport vehicles and equipment is: <ul style="list-style-type: none"> ▪ Adequate. (conducted according to manufacturer's recommendations) ▪ Privileged over corrective maintenance. ▪ Supported by plan and records.
Transboundary Shipment	
Any required written notifications, authorizations, or consents for transboundary movements must be secured before shipment.	Transboundary shipments of <u>WEEE and/or output fractions resulting from the WEEE</u> treatment must be done in compliance with Basel Convention and with Rotterdam Convention, as applicable.
All transboundary movements of WEEE/UEEE should follow applicable transport rules.	
Export Rules for WEEE collected in EU	
Under no circumstance can <u>unprocessed WEEE or non-functioning UEEE</u> be shipped outside EU and EFTA territory.	Transboundary shipments of WEEE and/or output fractions resulting from the WEEE treatment must be done in compliance with the <i>Regulation (EC) 1013/2006</i> (until end-of waste criteria is achieved).
	To be able to clearly distinguish shipment of WEEE from REEE, all the REEE shipments need to comply with the minimum requirements for shipment, as defined per Annex VI of the <i>Directive (EC) 2012/19</i> .
	Export of WEEE/UEEE (whatever the destination) intended for preparation for reuse, repair or refurbishment containing controlled substances (as per Annex I of <i>Regulation (EC) 1005/2009</i> , is forbidden.
Under no circumstance can Hazardous or Regulated Output Fractions (listed in Annex VII of the <i>WEEE Directive 19/2012</i>) resulting from WEEE treatment be shipped outside EU and EFTA territory, while they are still waste.	Transport of WEEE loads should be performed in an efficient way, minimizing environmental impact, and having in consideration the proximity principle.
To be exported outside EU and EFTA territory any hazardous or regulated output fraction needs to reach EoW status.	Shipment of non-hazardous fractions and non-regulated fraction are controlled and managed (until EoW status is achieved) to ensure that: <ul style="list-style-type: none"> ▪ Destination holds the permits to accept and treat the relevant waste. ▪ EHS conditions of the destination are equivalent or higher than the ones of the country of origin. ▪ Treatment conditions are equivalent and compliant with the objectives set down in the <i>Directive (EC) 2012/19</i>.

Track and Trace	
Minimum Requirements	Additional Requirements
Export Rules for WEEE collected outside EU	
<p>Ensure no export, directly or indirectly (via brokers or dealers), of WEEE or non-functioning UEEE from OECD member countries to non-OECD members countries.</p>	<p>The no export ban is not enforced to the following:</p> <ul style="list-style-type: none"> ▪ WEEE and non-functioning UEEE defined as non-hazardous under the Basel Convention. ▪ UEEE that has been tested and labelled as suitable for reuse without further repair/refurbishment, prior to any transboundary movement. ▪ Defective batches of UEEE sent back to the producer, under warranty. ▪ Output fractions from WEEE treatment, which have reached the EoW status, are to be used as a feedstock of a manufacturing process and do not require further processing or preparation.
Traceability	
<p>Maintain updated a functional database to track WEEE and components/material (i.e. inflows/receipts and outflows, processed on site, sent for further processing off site, or disposed of or sold/donated).</p>	<p>Keep an updated process flowchart/diagram or table that outlines all incoming versus outgoing materials from your activities.</p>
<p>Maintain a systematic inventory and identification process which allows that waste batches, entering the site and upon receipt, to be documented with sufficient information, such as <u>origin</u>, <u>date of receipt</u>, <u>EWC or equivalent</u> and <u>weight</u> to ease traceability.</p>	<p>Conduct periodical inventories to balance the input material received at the site, treated waste, and output fractions sent to downstream operators, as well as waste still stored at the site either unprocessed or treated.</p>
<p>Weight all loads entering and leaving the site and conciliate it with the information stated on related waste transport documentation.</p>	<p>Weighing needs to be done by a calibrated scale issuing automatic weigh slips, to avoid manual data entries.</p> <p>For preparation for reuse operations, it is tolerated the existence of an abacus (weights equivalence table validated by previous sampling activities).</p> <p>Records for tracking and accountability of all materials transferred from the site and destined to downstream markets must be available.</p>

Storage	
Minimum Requirements	Additional Requirements
Storage of WEEE/UEEE before Decontamination/Treatment	
<p>Ensure that all storage of WEEE/UEEE, prior to treatment is:</p> <ul style="list-style-type: none"> ▪ Secured (see security section) ▪ With weatherproof covering or in appropriate containers ▪ On impermeable surfaces with appropriate and well-kept spillage equipment/materials. 	<p>To overcome some logistic constrains, non-hazardous and non-decontaminated WEEE (LDA/SDA) can be stored outside, if allowed by the site permit conditions.</p> <p>Under no circumstances can hazardous WEEE (lamps, TEE, CRT and FPD) and UEEE be stored outside.</p>
<p>Ensure care during storage of WEEE/UEEE to avoid any damage which could increase unnecessary EHS risks and/or undermine the subsequent reuse, recycling, and recovery potential.</p>	<p>Whatever the storage method (container, stacked or bulk) WEEE/UEEE shall be stored in a stable manner.</p> <p>TEE, CRT, FPD and Lamps are not allowed to be stored in bulk piles.</p> <p>Containers used to store WEEE and fractions, when contaminated and if necessary, shall be duly cleaned and decontaminated before reuse. Cleaning and decontamination activities of the containers shall be recorded.</p>
<p>Respect maximum storage capacity and duration defined by permit requirements.</p>	<p>When there is no guidance on storage capacity, the total of non-decontaminated WEEE stored on-site shall not exceed the maximum treatment installed capacity of a 6-month period (account individually for each stream).</p>
Storage of Output Fractions/Materials of Concern	
<p>To prevent releases in the environment and to reduce EHS risks, store output fractions containing materials of concern/hazardous substances:</p> <ul style="list-style-type: none"> ▪ In appropriate containers or in facilities with weatherproof covering. ▪ On impermeable surfaces with appropriate spillage equipment/materials, well maintained and with a layer of resistant coating. (no evidence of leaks, spills or fugitive emissions shall exist) ▪ According to compatibility rules. ▪ Properly identified. (EWC or equivalent waste code and EHS safety signs) 	<p>The site needs to hold adequate containers (in number and type), kept in good conditions to store hazardous output fractions (e.g. lamps, batteries, capacitors containing PCB).</p> <p>Containers holding hazardous substances, which present a risk of leakage, needs to be equipped with a secondary containment and protected against accidental damage.</p>

Decontamination and Treatment	
Minimum Requirements	Additional Requirements
Conduct WEEE treatment in adequate facilities (both in layout and dimension), with impermeable surfaces and in facilities with weatherproof covering, to fulfil the requirements set down in the law, regulations, and present TS.	Treatment facilities must hold the minimum needed technical capabilities and equipment.
WEEE treatment shall respect waste hierarchy, being disposal the last treatment option (e.g. landfill or incineration without energy recovery).	Treatment shall be conducted in a practical way, ensuring environmental, economic, and technical sustainability.
Maintenance	
<p>Maintain building infrastructures, equipment, machines, and tools in good conditions favouring routine inspection and preventive maintenance to corrective maintenance practices.</p> <p>Adequate amount of critical spare parts needs to be available or at least existing contracts to get them in the best delay to keep the downtime period to a minimum.</p>	<p>Preventive maintenance programs shall be available, showing that maintenance activities are:</p> <ul style="list-style-type: none"> ▪ Adequate. ▪ All controlling/monitoring equipment is operating as per approved specifications. ▪ Limiting the EHS hazardous avoiding inadequate equipment performance. ▪ Conducted in accordance with the manufacturer's recommendations. (frequency and tasks)
Decontamination	
Landfill of any whole WEEE is forbidden.	
Remove and recover, in an environmentally sound way, all oils and other fluids that have potential of soil, ground and/or surface water pollution	
<p>Remove, as a minimum, the following substances, preparations, and components of any WEEE (as applicable):</p> <ul style="list-style-type: none"> ▪ Polychlorinated biphenyls & terphenyls containing capacitors. (PCB/PCT) ▪ capacitors for high voltage generation >25 mm from microwaves ▪ Mercury containing components, such as switches or backlighting lamps. ▪ Batteries & Accumulators ▪ Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 cm². ▪ Toner cartridges, liquid, and paste, as well as colour toner. ▪ Plastic containing brominated flame retardants (BFR). ▪ Asbestos waste and components which contain asbestos. ▪ Cathode ray tubes (CRT). ▪ Chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC) ▪ Gas discharge lamps. ▪ Liquid crystal displays (LCD) (together with their casing where appropriate) of a surface greater than 100 cm² and all those backlighted with gas discharge lamps. ▪ External electric cables. ▪ Components containing refractory ceramic fibres. ▪ Components containing radioactive substances. ▪ Electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm, or proportionately similar volume). 	<p>When national legislation sets other substances, preparations, and components to be removed, then the local specificities should be respect.</p> <p>De-contamination should be economically and environmentally feasible and conducted in a way that:</p> <ul style="list-style-type: none"> ▪ Maximizes the recycling and recovery rate of WEEE, their components, materials, and parts. ▪ Prevents pollution. ▪ Avoids occurrence of fires and other accidents. ▪ Preserves employees' health and safety. <p>The operator should have a documented procedure on how to handle and treat each one of these substances, preparations, and components to be removed from WEEE, especially the ones that are <u>Materials of Concern</u>.</p>
Shredding, crushing, shearing and compression of loads without conducting the above decontamination phase is not allowed.	Coarse shredding, with the intention of facilitating the access to components, substances, preparations, and parts of WEEE to be removed during decontamination is allowed if the shredding, crushing and compression process does not increase EHS risks and/or undermining the subsequent recycling and recovery potential.

Decontamination and Treatment	
Additional Treatment	
Recover or dispose of the removed substances, preparations, and components in accordance with the applicable legislation or regulations.	Landfill waste acceptance criteria, if regulated, needs to be met and evidence of any leakage essays should be kept.
Separate the output fractions into the purest state possible, accordingly with the available technology on-site.	
It is not allowed to mix output fractions to make the overall waste volume achieve the non-hazardous waste classification.	Mixture is acceptable if the downstream treatment site has a clear authorization by the relevant authorities to treat the waste blend as such. When this is the case a composition of the mixture needs to be provided periodically by the downstream treatment operator accompanied with analysis records.
Certificate of Treatment	
Provide, for each batch of WEEE received a certificate attesting that the waste was effectively treated. For some WEEE PRO it might be acceptable by the authorities a certificate per month (or any other agreed upon frequency), with a description of all the loads received within the period.	The certificate of treatment should bear, as a minimum the following information: <ul style="list-style-type: none"> ▪ A reference of the transport document or waste origin. ▪ Treatment date. ▪ Treatment location. ▪ Quantity of waste treated. ▪ Treatment process.
Mass Balance	
Conduct, every 3 years, or anytime a substantial change occurs within the treatment process (technology, input waste type, downstream vendors map, etc.), mass balance studies, per each WEEE operational stream treated on-site, extracting, as a minimum, the following information: <ul style="list-style-type: none"> ▪ Input WEEE stream quantity (weight). ▪ Quantity of each output fraction resulting from the WEEE treatment conducted at the operator site (weight). ▪ Quantity of each specific removed substances, preparations, and components (weight), and related percentage (%), as per decontamination guidelines, within the total of output fractions. ▪ Percentage, for each output fraction, of its treatment destination (preparation for reuse, recycling, energy recovery and disposal). 	The balance of masses deviation between all input and output fractions, measured during mass balance studies, shall be lower than 5%.
Recycling and Recovery Rates (R&R)	
Demonstrate the achievement of the minimum recycling and recovery targets as per applicable legislation and according with the R&R rates defined in the present TS.	When national legislation sets higher targets, then the local targets should be considered.
Calculate R&R rates, at least once a year, and/or every time a change in the treatment process occurs and/or in the downstream treatment network. When WEEE legal categories with different R&R targets are treated together, the calculation of the overall R&R rates is done according to the ratio method of the input.	The R&R rates shall be calculated as a: <ul style="list-style-type: none"> ▪ % of the total of all output fractions, classified as prepared for reuse and recycling in proportion to the total of the input amount of non-treated appliances (Recycling Rate). ▪ % of the total of all output fractions classified as prepared for re-use, recycling, and other material recovery in proportion to the total of the input amount of non-treated appliances (Recovery Rate). <p>It is considered best practice that R&R Rates consider the entire downstream treatment network (from untreated WEEE until each one of the output fractions reach the EoW status).</p>

Decontamination and Treatment

Monitoring and Reporting

Monitor, periodically, the key parameters to evaluate the effectiveness and quality of WEEE decontamination/treatment process conducted at the site.

The decontamination/treatment process effectiveness and quality key parameters should include:

- Input WEEE stream quantity. (weight)
- Quantity of each substance, preparation and components that were removed during the decontamination phase. (weight)
- Quantity of other output fraction resulting from the WEEE treatment conducted at the operator site. (weight)
- Any lab analysis considered to be relevant to demonstrate the purity, effectiveness of the decontamination/treatment process or absence of cross-contamination between output fractions.

Preparation for Reuse	
Minimum Requirements	Additional Requirements
Define and implement a documented process to inspect each UEEE and determine its destination: preparation for use, recycling, or recovery. The results of such inspection/sorting process need to be documented.	UEEE/WEEE or any of its components need to be prepared for reuse or refurbished in facilities that are duly permitted or holding an authorities' notification (according to what is applicable) for the relevant operations and have the technical capability (equipment, resources, and know-how) to test and repair the relevant products.
Segregate, store and clearly identify, within all the steps of the preparation for reuse process, the different devices and components classification and status (UEEE, REEE, WEEE).	UEEE/WEEE, components and parts which are not eligible for preparation for reuse are to be recycled and recovered in sites respecting the applicable requirements on the present TS.
Ensure due care during the disassembly of UEEE and its components to face any potential EHS risk and to maximize the preparation for reuse potential.	Preparation for reuse of components and parts is allowed for UEEE if the traceability of each component and part is kept and follows the rules applicable to REEE.
Cleaning and Visual Inspection	
Define and implement a documented cleaning and visual inspection procedure.	Visual inspection is appropriate to detect any physical damage, defects, corrosion, missing parts, accessories, peripherals, or any items which could impose EHS risks.
Define and implement a documented process and maintain the appropriate records to check if each device has been recalled by the original manufacturer.	Any recalled products shall be rejected for preparation for reuse and considered WEEE.
Remove and destroy from the equipment all prior identification such as tags, labels, or any other personal identifying marks.	
Don't remove any of the UEEE original producers' plates, namely the ones that identify the producer's name, the brand and model of the device and its serial number.	Any UEEE missing its original producer identification shall be rejected for preparation for reuse and considered WEEE. Additionally, for EU, any UEEE missing the CE marking shall be rejected for preparation for reuse and considered WEEE.
Data/Software Erasing	
Define and implement a documented process for data erasing stored within data bearing devices and components.	The sanitation processes shall include: <ul style="list-style-type: none"> ▪ Types of data storage devices accepted. ▪ Types of data to be sanitized. ▪ Methods for data sanitation for each type of data storage devices. ▪ Methods to distinguish sanitized devices from devices containing data waiting to be sanitized. ▪ Duration to sanitize data from the time of receipt. ▪ Types of records kept.
Ensure data erasing, for data containing devices, through wiping process, using adequate software.	Records must be kept, ascertaining the destruction of data, including: <ul style="list-style-type: none"> ▪ Serial number. ▪ Date of destruction. ▪ Results of the data sanitation wiping process.
Perform verification on each wiped disk to confirm the success of the wiping process.	Units that fail the overwrite process must be destroyed by shredding, crushing, shearing, perforating or incinerated and not sent to preparation for reuse.
Ensure a full software verification.	Maintain processes to ensure that all software and firmware transfers/installations on refurbished equipment and/or components are: <ul style="list-style-type: none"> ▪ Properly licensed. ▪ Compatible with the equipment/component operating systems. ▪ Aligned with the original producer recommendation.
Ensure the removal of the original licensed software from the UEEE unless it is returned to the same owner.	

Preparation for Reuse	
Quality and Safety	
REEE are intended to be sold or donated for its original intended use and in safe and working conditions.	For REEE to be placed on the EU market should follow the test conditions of EN 50614:2020.
Define and implement documented procedures to identify and ensure that all parts and components (spare parts) used in the refurbishing processes are compatible and according to the manufacturers' specifications with existing equipment and components.	When components are replaced, they need to be able to pass the functionality and safety test.
Define and implement documented procedures explaining how the devices shall be assessed and tested as fit for purpose for safety and functionality.	Safety and functionality test equipment needs to be calibrated in accordance with the manufacturer's instructions.
Test REEE, prior to shipment, sale, or donation, for any defect that could pose a safety threat to the user, using appropriate <u>safety</u> standards.	Maintain records of such tests.
Test the REEE, its units and parts to confirm their <u>working capability</u> (i.e. functionality) prior to shipment, sale, or donation. Test the function of the equipment (whole) as well as all the accessories and peripherals when these are sold together.	The REEE main function shall be the same/equivalent of the original EEE main function, when placed on the market. Maintain records of such tests.
Provide a minimum of 90 days warranty for the sold or donated REEE, excluding consumables items such as batteries, toners, fuser, etc. REEE loses the original producer warranty after being refurbished/repaired.	Provide means to easily communicate the warranty policy and the conditions to the customer/user. Have a process for product return/recall in case of malfunction within the warranty period, in accordance with the products regulations in force, including the acceptance, free of charge, of the equipment to the selling entity. Maintain records of the warranties provided.
Identification	
Any product sold or donated after the preparation for reuse needs to be referred and identified as a REEE. Attach a label in a visible location on all REEE intended for donation or resale indicating the equipment ID, the name and location of the preparation for reuse operator.	Each REEE, sold or donated, should be accompanied with a record attesting for preparation for reuse body liability. Guarantee no liability to the EEE original producers.
When selling or donating REEE, attach or provide information/documentation to the user: <ul style="list-style-type: none"> ▪ Product Information ▪ Safe installation and usage of the REEE and ▪ If applicable, on the software installed (including the version and applicable licenses). 	
Ensure that REEE, sold or donate respect the energy efficiency equivalent to the new products and compliance with the restriction of hazardous substances, according to applicable law.	The conclusion on the presence of restricted hazardous substances could imply, in some UEEE, some analysis.
Packaging	
Ensure that REEE are adequately packaged to protect from breakage during transport, loading and unloading.	
Attach an identification record securely on the packaging so it can be read without unpacking the REEE.	This record should contain, as a minimum, the following information: <ul style="list-style-type: none"> ▪ Name and identification number of the equipment or components if they are sold separately. ▪ Year of production (if available). ▪ Name and address of the company responsible for preparation for reuse. ▪ Name and address of the company responsible for the functionality and safety test (if different from the above). ▪ Result of functionality test (including date of test). ▪ Type of tests performed. ▪ Identification of any replaced component during repair/refurbishment. ▪ Product specification.

Preparation for Reuse

Product Tracking and Accountability

Keep an updated account of:

- Number of units and weight received for each EEE category (UEEE).
- Number of units and weight prepared for reuse by EEE category (REEE and REEE components).
- Number of UEEE, components and parts (units and weight) sent to recycling and recovery (WEEE).
- Serial number of the REEE and/or component.
- Name and address of the destination (user/customer).
- Sale document ID (invoice or receipt) or donation declaration.
- Import and Export data.

Large Equipment (LDA)	
Minimum Requirements	Additional Requirements
Equipment which any external dimension is larger than 50 cm. This category doesn't include equipment included in TEE, Lamps, and Displays categories.	<p>Includes, as non-exhaustive examples, the following EoL EEE:</p> <p>Washing machines, clothes dryers, dishwashing machines, cookers, electric stoves, electric hot plates, luminaires, equipment reproducing sound or images, musical equipment (excluding pipe organs installed in churches), appliances for knitting and weaving, large computer-mainframes, large printing machines, copying equipment, large coin slot machines, large medical devices, large monitoring and control instruments, large appliances which automatically deliver products and money, photovoltaic panels, furnitures with electric motors.</p>
	In EU, this operational category is associated with the legal category 4 (after August 2018) defined by the <i>Directive (EC) 2012/19</i> .
Decontamination	
<p>Remove, as a minimum, all substances, preparations, and components of any LDA (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Capacitors containing PCB or PCT. ▪ Print circuit boards. ▪ Asbestos. ▪ Refractory ceramic fibres. ▪ Fractions containing POP. 	<p>Textiles and cushions from furnitures with electric motors may contain brominated fire retardants. Such textiles and cushions shall be destined to incineration at high temperature in specific incinerators.</p> <p>Asbestos and refractory ceramic fibers fractions shall be removed before any further treatment that could jeopardize their recovery. Refractory ceramic fibers can be found in vitroceramic cookers, radiant ceramic cooktops, and storage heaters.</p>
Recycling and Recovery Rates	
<ul style="list-style-type: none"> ▪ 85 % shall be recovered. ▪ 80 % shall be prepared for re-use and recycled. 	
Photovoltaic Panels (PVP)	
PVP is a subcategory of the LDA. On the SDA category it is included small equipment that contain PVP.	<p>Includes, as non-exhaustive examples, silicon based PVP, and non-silicon based PVP.</p> <p>In EU, this operational category is associated with the legal category 4 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
<p>Remove, as a minimum, all the substances, preparations, and components of any PVP (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Semiconductor layer fraction (for non-silicon based PVP). ▪ Solders containing lead or metallic lead. 	<p>The operator shall maintain a system to identify, separate and sort silicon from non-silicon based PVP.</p> <p>If it is uncertain whether PVPs are silicon based or not, they shall be process, based on the precaution principle, as a non-silicon-based waste.</p>
PVP shall be processed in dedicated treatment lines to avoid transfer of contamination to other streams fractions.	Treatment processes shall allow the removal of hazardous substances such as cadmium (Cd), selenium (Se), arsenic (Ar) and Indium (In) from the semiconductor's layers.

Small Equipment (SDA)	
Minimum Requirements	Additional Requirements
<p>Equipment which external dimension is smaller than 50 cm.</p> <p>This category doesn't include equipment included in TEE, Lamps, and Small IT categories.</p>	<p>Includes, as non-exhaustive examples, the following EoL EEE:</p> <p>Vacuum cleaners, carpet sweepers, appliances for sewing, luminaires, microwaves, ventilation equipment, irons, toasters, electric knives and kettles, clocks and watches, electric shavers, scales, appliances for hair and body care, calculators, radio sets, video cameras, video recorders, hi-fi equipment, musical instruments, equipment reproducing sound or images, electrical and electronic toys, sports equipment, computers for biking, diving, running, rowing, etc., smoke detectors, heating regulators, thermostats, small electrical and electronic tools, small medical devices, small monitoring and control instruments, small appliances which automatically deliver products, small equipment with integrated photovoltaic panels.</p> <p>In EU, this operational category is associated with the legal category 5 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
Decontamination	
<p>Remove, as a minimum, all the substances, preparations, and components of any SDA (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Capacitors containing PCB or PCT. ▪ Printed circuit boards. ▪ Batteries and accumulators. ▪ Asbestos. ▪ Refractory ceramic fibers. ▪ Radioactive substances. ▪ BFR plastics. 	<p>Radioactive substances, asbestos and refractory ceramic fibers fractions shall be removed before any further treatment that could jeopardize their recovery.</p>
Recycling and Recovery Rates	
<ul style="list-style-type: none"> ▪ 75 % shall be recovered, and, ▪ 55 % shall be prepared for re-use and recycled 	
Small Equipment (IT)	
Minimum Requirements	Additional Requirements
<p>IT and telecommunication equipment which external dimension is smaller than 50 cm.</p> <p>This category doesn't include equipment included in TEE, Lamps, and Small Equipment categories.</p>	<p>Includes, as non-exhaustive examples, the following EoL EEE: Mobile phones, GPS, pocket calculators, routers, personal computers, printers, telephones.</p> <p>In EU, this operational category is associated with the legal category 6 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
Decontamination	
<p>Remove, as a minimum, all the substances, preparations, and components of any IT (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Capacitors containing PCB or PCT. ▪ Printed circuit boards. ▪ Batteries and accumulators. ▪ Toners and print cartridges. ▪ BFR plastics. 	
Additional treatment	
<p>Implement a destruction process for any data contained device, components and recording media, or other similar items on and within the equipment by either:</p> <ul style="list-style-type: none"> ▪ Shredding, crushing or desintegrating the resident memory material. ▪ Melting or incineration. 	<p>When either the mechanical or thermal destruction is not conducted at the 1st tier treatment site, the data containing devices/components (e.g. hard drives) need to be, at least perforated or degaussed (magnetically erased) to ensure data deletion before shipping to the following treatment tier.</p>
Recycling and Recovery Rates	
<ul style="list-style-type: none"> ▪ 75 % shall be recovered, and ▪ 55 % shall be prepared for re-use and recycled. 	

Screens and Monitors	
Minimum Requirements	Additional Requirements
Screens, monitors, and equipment containing screens having a surface greater than 100 cm ²	<p>Includes, as non-exhaustive examples, the following EoL EEE:</p> <p>Screens, Televisions, LCD photo frames, monitors, laptops, notebooks.</p> <p>In EU, this operational category is associated with the legal category 2 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
Decontamination	
<p>Remove, as a minimum, all the substances, preparations, and components of any Screens & Monitors (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Panel CRT glass (non-lead contaminated glass). ▪ Funnel CRT (Lead contaminated glass). ▪ Fluorescent coatings. ▪ Backlighting lamps and other mercury containing components. ▪ Capacitors containing PCB or PCT. ▪ Printed circuit boards. ▪ Batteries and accumulators. ▪ BFR plastics. 	
Additional treatment	
Treat CRT in dedicated treatment lines.	The processing area needs to have an appropriate exhaust system connected to an efficient air filtration system to avoid the spread of dust (fluorescent coatings), heavy metals (e.g. lead, mercury) and flying glass.
Treat FPD in dedicated treatment lines.	
Recycling and Recovery Rates	
<ul style="list-style-type: none"> ▪ 80 % shall be recovered, and ▪ 70 % shall be prepared for re-use and recycled. 	
Lamps	
Minimum Requirements	Additional Requirements
Lamps	<p>Includes, as non-exhaustive examples, the following EoL EEE:</p> <p>Straight fluorescent lamps (SFL), compact fluorescent lamps (CFL), fluorescent lamps (FL), high intensity discharge lamps (HID) (including pressure sodium and metal halide), low pressure sodium lamps, LED.</p> <p>In EU, this operational category is associated with the legal category 3 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
Decontamination	
<p>Remove, as a minimum, the mercury from:</p> <ul style="list-style-type: none"> ▪ Fluorescent Lamps (FL) ▪ Straight Fluorescent lamps (SFL) ▪ Compact Fluorescent Lamps (CFL) ▪ Gas Discharge Lamps (HID). 	Based on the precautionary principle, all lamps, and components thereof for which the content of mercury is uncertain, should be treated as containing mercury.
Additional treatment	
Treat mercury containing lamps in dedicated treatment lines.	
Recycling and Recovery Rates	
<ul style="list-style-type: none"> ▪ 80 % shall be recycled. 	

Temperature Exchange Equipment (TEE)	
Minimum Requirements	Additional Requirements
Types and Categories	
Temperature Exchange Equipment	<p>Includes, as non-exhaustive examples, the following EoL EEE:</p> <p>Refrigerators, freezers, equipment which automatically delivers cold products, air conditioning equipment, dehumidifying equipment, heat pumps, radiators containing oil and other temperature exchange equipment using fluids other than water for the temperature exchange.</p> <p>In EU, this operational category is associated with the legal category 1 (after August 2018) defined by the <i>Directive (EC) 2012/19</i>.</p>
Decontamination	
<p>Remove, as a minimum, all the substances, preparations, and components of any TEE (as applicable) such as:</p> <ul style="list-style-type: none"> ▪ Oil/heat transmission fluids. ▪ Ammonia. ▪ Backlighting lamps and other mercury containing components. ▪ Chlorofluorocarbons (CFC), Hydrochlorofluorocarbons (HCFC), Hydrofluorocarbons (HFC) – VFC. ▪ Hydrocarbons (HC) – VHC. 	<p>For ammonia (NH₃) TEE, either remove the entire cooling circuit or neutralize ammonia before shipment for destruction in specialized waste plants.</p>
Additional treatment	
<p>Treatment of TEE is divided into 4 steps:</p> <ul style="list-style-type: none"> ▪ Step 0 – manual removal of shelves, drawers, mercury switches and lamps. ▪ Step 1 – extraction of all refrigerants from the refrigerant system. ▪ Step 2 – extraction of blowing agent from the insulating material. ▪ Step 3 – converting VFC and VHC as a part of the treatment; process into compounds that do not deplete the ozone layer. <p>Treat TEE, containing VFC and VHC, in adequate and dedicated treatment lines, able to extract and capture them for proper subsequent treatment.</p> <p>TEE Treatment facilities should comply with the applicable explosion protection measures.</p>	<p>For EU located facilities, treatment of TEE containing VFC, VHC or both need to be conducted in accordance with EN 50625-2-3 and the TS 50625-3-4.</p>
Step 1	
All refrigerants and oil shall be removed from the refrigerant system.	Refrigerants (VFC/VHC) need to be separated from oil and captured.
Removed compressors shall not be re-used.	The site needs to implement measures to prevent the reuse of removed compressors (e.g. perforated by drilling process).
<p>Measure the performance of step 1 treatment to monitor the:</p> <ul style="list-style-type: none"> ▪ VFC and VHC content in the oil removed from the compressors. ▪ Residual oil in the compressors. ▪ Total of VFC and VHC removed and captured. 	<p>Conduct periodically treatment performance tests (as a minimum, every 3 years or when there is a major change in the treatment process which can impact on the test results). Test frequency should be in line with the stricter conditions applicable (legal requirements, LANDBELL GROUP contract, or the above frequency timeline). Performance tests need to be conducted by auditors duly qualified for the realization and supervision of such performance tests.</p> <p>For EU located facilities, the step 1 monitoring and performance test of VFC and VHC TEE treatment should respect the methodology, guidelines and thresholds described in EN 50625-2-3 and the TS 50625-3-4.</p>

Temperature Exchange Equipment (TEE)

Step 2

Crushing/shredding of cabinets and separation of the resulting fractions needs to be conducted in a sealed environment, and in way to prevent releases of VFC and VHC emissions.	Measures should be implemented to minimize the content of VFC into the output fractions of metal, PUR, and plastics.
<p>Measure the performance of step 2 treatment to monitor the:</p> <ul style="list-style-type: none"> ▪ Remaining blowing agent concentration (VFC and VHC) in the PUR-fraction. ▪ Remaining quantities of PUR in the metal fraction. ▪ Remaining quantities of PUR in the plastic fraction. ▪ ODS substances emission to the atmosphere from the air extraction system. ▪ Dust emission to the atmosphere from the air extraction system. ▪ Fugitive emission into ambient atmosphere. 	<p>Conduct periodically treatment performance tests (as a minimum, every 3 years or when there is a major change in the treatment process which can impact on the test results). Test frequency should be in line with the stricter conditions applicable (legal requirements, LANDBELL GROUP contract, or the above frequency timeline).</p> <p>Performance tests need to be conducted by auditors duly qualified for the realization and supervision of such performance tests.</p> <p>For <u>EU located facilities</u>, the step 2 monitoring and performance test of VFC and VHC TEE treatment should respect the methodology, guidelines and thresholds described in EN 50625-2-3 and the TS 50625-3-4.</p>

Step 3

The resulting VFC and VHC removed and capture from the appliances need to be carefully stored, handled, and transported before destruction and in no circumstances released to the atmosphere.	VHC and/or VFC gases shall be processed by specialized and authorized technologies for their destruction.
Measure the performance of step 3 treatment to monitor the chemical composition of the output VFC and VHC delivered for destruction.	For <u>EU located facilities</u> , the step 3 monitoring and performance test of VFC and VHC TEE treatment should respect the methodology, guidelines and thresholds described in EN 50625-2-3 and the TS 50625-3-4.

Recycling and Recovery Rates

<ul style="list-style-type: none"> ▪ 85 % shall be recovered, and ▪ 80 % shall be prepared for re-use and recycled 	
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Materials of Concern/Output Fractions	
Minimum Requirements	Additional Requirements
Treat all <i>Materials of Concern</i> as per legal requirements, in facilities with the relevant permits and using the appropriate technology to manage safely and effectively each one of the output fractions and the associated EHS risks.	The following output fractions need to be destroyed as they are forbidden for reuse and recycling: <ul style="list-style-type: none"> ▪ CFC's, HCFC's, HFC's (VFC), on their condition as ODS; (in a specialized thermal destruction facility). ▪ Asbestos (in a specialized landfill).
The hierarchy of waste management should be respected (reduction, recycling, recovery, and disposal).	
Heavy Metals	
Any part, material, or component of a WEEE, whatever the typology, containing mercury, lead, beryllium, cadmium and/or hexavalent chromium shall not be landfilled. Commercial trading of mercury is banned. Exception is allowed for R&D and medical or analysis purposes.	Within EU, metallic mercury (pure form) destination needs to be in accordance with the <i>Regulation (EC) 1102/2008</i> : <ul style="list-style-type: none"> ▪ Temporarily stored for more than one year or permanently stored in salt mines adapted for the disposal of metallic mercury or in deep underground, hard rock formations Temporarily stored for more than one year in above-ground facilities dedicated to and equipped for the temporary storage of metallic mercury.
Polychlorinated Biphenyls/Terphenyls (PCB/PCT)	
Any part, material, or component of a WEEE, whatever the typology, containing PCB cannot be landfilled.	Based on the precautionary principle all capacitors, for which is uncertain the content of PCB/PCT, must be removed and treated as containing PCB/PCT.
Prevent from opening or shredding any of PCB/PCT containing capacitors.	
Electric radiators containing a reserve of oil/heat transmission fluids shall be drained and the fluid managed as PCB oil unless it is proven (by laboratory analysis) that is free of it.	The placing on the second-hand market of fluids containing PCB/PCT is prohibited. Due to their volatility, PCB containing fluids shall be stored in enclosed containers.
Printed Circuit Boards	
No disposal at landfills of printed circuit boards.	
Printed circuit boards must be processed by treatment processes (thermal, chemical, or other) capable of recovering precious metals and heavy metals.	Batteries and capacitors with a height > 25 mm, diameter > 25 mm or proportionately similar volume shall be removed from printed circuit boards before being sent to metal recovery processes.
Batteries and Accumulators	
Batteries and accumulators removed from WEEE, whatever the type, chemical composition, and type, cannot be landfilled.	For more details on the treatment guidelines for WBA please consult TS.LB.003 – Technical and Management Requirements for WBA.
<u>Industrial Batteries or Accumulators</u> , removed from WEEE, whatever their chemical composition cannot be incinerated.	For <u>Portable Batteries and Accumulators</u> and when they are incinerated, the incinerator must meet 99.9% destruction removal efficiency (DRE) for all regulated hazardous contaminants and 99.9999% DRE for dioxins.

Materials of Concern/Output Fractions

Brominated Flame Retardants (BFR) and Persistent Organic Pollutant (POP)

<p>Plastics containing BFR removed from WEEE may contain restricted POP.</p>	<p>The <u>restricted POP</u> (as per Stockholm Convention on POP) are:</p> <ul style="list-style-type: none"> ▪ Decabromodiphenyl ether (commercial mixture decaBDE). ▪ Hexabromobiphenyl (belongs to the group of polybrominated biphenyls PBB). ▪ Hexabromodiphenyl ether and Heptabromodiphenyl ether (commercial mixture octaBDE diphenyl ether). ▪ Tetrabromodiphenyl ether and Pentabromodiphenyl ether (known as Polybromodiphenyl ethers – PBDE).
<p>Plastics output fractions containing restricted POP shall be separated from the plastic fractions free of restricted POP.</p> <p>Plastic fractions resulting from TEE and LDA treatment could be considered as free from BFR.</p>	<p>To confirm the effective de-contamination (adequate removal and separation) of the plastics containing restricted POP, monitor the total concentration of tetraBDE, pentaBDE, hexaBDE, heptaBDE and decaBDE within the plastic fractions <u>intended to be recycled</u>.</p> <p>Operators shall provide information on the final destination of the BFR contaminated fraction, and % content in the mixed plastic fractions sent to next tiers.</p>
<p>To ascertain compliance with the thresholds, conduct a laboratory analysis, at least once a year, per each plastic fraction and per each WEEE stream, conducted by an external, independent, and accredited laboratory.</p>	<p>The MCL (Maximum Contaminant Level) for Total Bromine in the plastics fractions destined to be recycled shall not exceed 2000 ppm.</p> <p>The MCL (Maximum Contaminant Level) of restricted flame retardant decaBDE in the plastic fractions, intended to be recycled shall not exceed 10 ppm (threshold aligned with Regulation (EU) 2019/1021.</p> <p>The MCL (Maximum Contaminant Level) of restricted POP (the sum of all BDEs (brominated diphenyl ethers)) in the plastic fractions, intended to be recycled shall not exceed 500 ppm (threshold aligned with Regulation (EU) 2019/1021.</p>
<p>Plastics fractions that contain POP above threshold should be stored separately from non POP contaminated plastics.</p>	<p>Further sorting of these plastics can be done if this sorting process leads to the production of a fraction without BFRs.</p>
<p>Plastic output fractions containing restricted POP above the MCL shall be destroyed or irreversibly transformed.</p>	<p>Treatment operations that may lead to recovery, recycling, reclamation, or re-use, of restricted POP are not allowed.</p>
<p>Plastics free from restricted POP shall be preferably recycled and then recovery. No disposal at landfill of plastics which composition allows alternative recycling and recovery processes.</p>	<p>Dilution or mixture of plastic fractions to achieve the EoW status criteria or to reduce the restricted POP concentration is forbidden.</p>
Flat Panel Displays (FPD)	
<p>FPD (e.g. LCD and plasma screens) shall not be landfilled.</p>	
<p><u>For manual dismantling FPD treatment processes</u>, ensure that the number of broken lamps doesn't exceed the percentage of <u>5% of the total removed backlight lamps</u> (threshold aligned with EN 50625-2-2).</p>	<p>Measure continuously the amount of broken versus intact lamps removed from FPD (applicable only to LCD screens with CCFL).</p>
<p><u>For mechanical FPD treatment processes</u>, ensure that the smallest shredded mixed fraction, intended to be recycled, doesn't exceed a mercury (Hg) content of <u>0,5 mg/kg (ppm)</u> (threshold aligned with EN 50625-2-2).</p>	<p>To ascertain compliance with the threshold, monitor, at least once a year, the Hg content within the smallest shredded fraction conducted by an external, independent, and accredited laboratory.</p>
Lamps	
<p>Handling and storage of removed CFL shall be performed in a way to minimize lamps breakage and dissemination of contaminated particles and heavy metals in other fractions.</p>	
<p>Backlight gas discharge lamps should not be sent to landfill and the mercury shall be removed and recovered.</p>	<p>It is not allowed to:</p> <ul style="list-style-type: none"> ▪ Landfill glass from lamps. ▪ Use recycled lamp glass (directly or indirectly) for the food/beverage and pharmaceutical industry.
<p>To ensure an effective treatment of lamps, monitor the:</p> <ul style="list-style-type: none"> ▪ Content of mercury (Hg), within the glass fraction, which shall not exceed 10 mg/kg (ppm) ▪ Content of mercury (Hg), within the metal and mixed plastics fractions, which shall not exceed 100 mg/kg (ppm). <p>The above thresholds are aligned with EN 50625-2-1.</p>	<p>To ascertain compliance with the threshold, monitor, at least once a year, the Hg content within the fractions conducted by an external, independent, and accredited laboratory.</p>

Materials of Concern/Output Fractions	
Photovoltaic Panel (PVP) Glass	
<p>PVP glass shall not be sent to landfill, neither used in the food, beverage and/ or pharmaceutical packaging industry.</p>	
<p>To ascertain the effective de-contamination and treatment of PVP, monitor the following contaminants, within the glass output fractions, according to the technology type:</p> <p><u>Silicon based PVP:</u></p> <ul style="list-style-type: none"> ▪ 1 ppm DM cadmium (Cd) ▪ 1 ppm DM selenium (Se) ▪ 100 ppm DM lead (Pb). <p><u>Non-Silicon based PVP:</u></p> <ul style="list-style-type: none"> ▪ 10 ppm DM cadmium (Cd) ▪ 10 ppm DM selenium (Se) ▪ 100 ppm DM lead (Pb). <p>The above thresholds are aligned with <i>EN 50625-2-4</i>.</p>	<p>To ascertain compliance with the thresholds, monitor, at least once a year, the PVP glass fraction conducted by an external, independent, and accredited laboratory.</p>
CRT and CRT Glass	
<p>CRT shall not be disposed at landfills.</p> <p>Only de-contaminated CRT (removal of the fluorescent coating) shall be accepted to the downstream recycling and recovery processes.</p>	<p>CRT glass can be disposed at specialized landfill when there is a legal obligation established by the national authorities of the country.</p>
<p>To ensure an <u>effective de-contamination of CRT</u> (proper fluorescent coating removal) monitor, at least once per year the residual sulphur (S) on cleaned CRT glass, which shall not exceed 5mg/kg DM of glass.</p> <p>To ensure an <u>effective segregation of the CRT funnel and panel glass</u> monitor, at least once per year the mass percentage of lead oxide (PbO) in panel glass (front glass) fraction, which shall not exceed a lead oxide (PbO) content of 0,5% by weight.</p> <p>The above thresholds are aligned with <i>EN 50625-2-2</i>.</p>	<p>Analysis to the CRT glass streams needs to be conducted by an external, independent, and accredited laboratory to ascertain compliance with the thresholds.</p>
Fluorescent Coatings	
<p>The fluorescent coatings can be sent to hazardous landfill, special smelters or processed in facilities involved in rare earth elements recovery.</p>	<p>Analysis to evaluate the characteristics of the content of fluorescent coating needs to be conducted by an external and independent laboratory before sending to final destination.</p>
Asbestos and Refractory Ceramic Fibers	
<p>The WTSP shall avoid any emissions of asbestos and refractory ceramic fibres.</p>	<p>These fractions shall be sealed with an impermeable covering and clearly marked with the related danger label.</p>

Downstream Network	
Minimum Requirements	Additional Requirements
<p>Map out the WEEE downstream operators' network for <u>Materials of Concern</u> of First Treatment sites (1T), including, as a minimum, the following information.</p> <ul style="list-style-type: none"> ▪ Location (city and country) ▪ Description of waste (output fraction) processed. ▪ Waste code (EWC or equivalent) or indication of EoW status. ▪ Treatment description (e.g. landfill, smelting, shredding, manual dismantling, etc.) ▪ Treatment code (R or D code or equivalent). <p>For PRO operations the WEEE downstream operators network mapping is only mandatory until second tier (2T) while for Voluntary take-back operations/programs the mapping shall occur until final destination.</p>	<p>Downstream requirements also apply when the next tier operator is a trader or a broker.</p> <p>Final destination means:</p> <ul style="list-style-type: none"> ▪ Landfill ▪ Incineration (with or without energy recovery) ▪ End-of Waste status
Selection and Continuous Qualification	
<p>Hold a formalized documented process for the selection and continuous qualification of subcontractors and immediate downstream treatment operators who are processing <u>Materials of Concern</u>.</p> <p>The process shall demonstrate the gathering, analysis, and annual update, as needed, of the key documentation.</p>	<p>The operator shall maintain a complete portfolio, per each subcontractor <u>and immediate downstream</u> treatment operator treating <u>Materials of Concern</u>, holding, as a minimum the following information/documentation:</p> <ul style="list-style-type: none"> ▪ General information (name, contacts, and location). ▪ Permits for the waste activities (copy, number and expiration date, waste accepted at the site and waste treatment description). ▪ EHS&SR management system summary, including the risk assessments, legal requirements list, compliance evaluation results, and internal audit results. ▪ ISO standards certificates and any relevant treatment recycling standard certificates (e.g. EN 50625 series, R2I, e-stewards, EfbV, etc.). ▪ Insurance policies (copy, number, and coverage details). ▪ Declarative Mass Balance for each WEEE stream, components, or materials (R&R Rates declaration). <p>Additionally, <u>for operators involved in voluntary take-back operations/ptograms</u>:</p> <ul style="list-style-type: none"> ▪ Downstream Vendors Map – flowchart/diagram showing the whole treatment chain with fractions names, yields and treatment description summary.
Contracts/Agreements	
<p>Maintain with all your active subcontractors and immediate downstream operators, at least for the ones treating <u>Materials of Concern</u>, signed contract/agreements.</p>	<p>The contracts/agreements should reflect the following obligations:</p> <ul style="list-style-type: none"> ▪ Compliance with applicable EHS&SR legislation/regulation. ▪ Sharing of the selection and qualification documentation of their downstream treatment operators. ▪ Business continuity clause in case of “force majeure”. ▪ Holding a contract/agreement to their immediate downstream treatment operators ensuring the same obligation as above. <p>Additionally, <u>for operators involved in voluntary take-back operations/programs</u>:</p> <ul style="list-style-type: none"> ▪ Conduct formal reviews or annual audits (in case of H2C customer specific Take-Back Programs) to the downstream treatment operators treating Materials of Concern. ▪ Granting access at any given time to LANDBELL GROUP auditors to the site ▪ Granting access to LANDBELL GROUP, at any given time, to the information/documentation of the selection, qualification, control, and audit process to demonstrate compliance with the present TS.

Downstream Network

<p>Each treatment operator/site (on the WEEE treatment chain) shall be able to demonstrate the capability of their downstream treatment network to:</p> <ul style="list-style-type: none"> ▪ Comply with the applicable legal requirements. ▪ Use adequate technology to treat the output fractions. ▪ Achieve the minimum R&R rates. ▪ Respect the requirements of the present TS or of any other QERS. 	<p>Implement a process to communicate, within the downstream network, the present TS, or any equivalent requirements from recognized (QERS).</p>
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<p>Maintain with all your active subcontractors and immediate downstream operators, signed contracts/agreements that reflect the following obligations:</p> <ul style="list-style-type: none"> ▪ Uphold respect for Human Rights, including anti-modern slavery controls. ▪ Comply with all applicable Human Rights laws, regulations, and international standards. 	<p>The contracts/agreements should enable:</p> <ul style="list-style-type: none"> ▪ Access to active subcontractors and immediate downstream vendors sites/facilities by mandated auditors (even on behalf of the customers) ▪ Provision, as needed, of the information/documentation from the selection, qualification, control, and audit process to demonstrate compliance with the Human Rights legislation, regulations, international standards, and the present TS. ▪ Cascade down of the requirements to their immediate downstream treatment operators ensuring the same level of obligation. <p>Cooperation in mitigation and remedy of Human Rights abuses/violations.</p>
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Operations Continuity

<p>Identify a backup qualified supplier for all subcontractors and downstream vendors treating <i>Materials of Concern</i>.</p>	<p>This risk management approach is useful to avoid dependence from subcontractors or downstream vendors and/or from markets that could hinder waste treatment capability (e.g. volumes, bans, etc.).</p>
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Audits (Voluntary Take Back Operations/Programs)

<p>Maintain a documented audit plan for the active subcontractors and immediate downstream network treating Materials of Concern, serving H2C customer specific Take-Back Programs.</p>	<p>The audit plan should include:</p> <ul style="list-style-type: none"> ▪ Downstream operator details. (name, location, material of concern treated, and tier within the downstream vendor network) ▪ Audit type. (desk-top/on-site) ▪ Audit duration and date. ▪ Audit team. ▪ Audit scope. ▪ Audit criteria.
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<p>Audit, as a minimum every 12th month, your active subcontractors and immediate downstream operators treating Materials of Concern, serving H2C customer specific Take-Back Programs.</p> <p>Desk-top audits are acceptable but at least one on-site audit needs to be conducted every 3 years.</p>	<p>Perform audits, according with the audit plan, to ensure that your subcontractors and immediate downstream operators treating Materials of Concern respect the:</p> <ul style="list-style-type: none"> ▪ Legal applicable requirements. ▪ Contractual requirements. ▪ Present TS or any equivalent QERS.
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<p>Ensure audits are also implemented by your downstream vendors to their next tier of downstream operators treating Materials of Concern, serving H2C customer specific Take-Back Programs.</p> <p>The audit obligation stops when any of the Materials of Concern:</p> <ul style="list-style-type: none"> ▪ Have reach its final destination (landfill/incineration) ▪ Is sold/donated as tested working products or components for reuse purpose. ▪ Have reach the EoW status. 	<p>When your downstream vendors fail to comply with the audit requirement for their active downstream operators treating Materials of Concern, it should be ensured that an audit conducted directly by you or by H2C can be facilitated (access to facilities, documentation, and availability of auditees).</p>
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<p>Maintain evidence of audit completion (audit plans/schedules, audit summary reports, audit reports, corrective action plans and follow-up) and make them available to H2C, upon request.</p>	<p>The findings resulting from the audits (deviation and improvement suggestions) need to be followed and measured for their closure and effectiveness.</p>
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Environmental, Health & Safety (EHS)	
Minimum Requirements	Additional Requirements
Provide to all workers a safe and healthy working environment and, when applicable, safe, healthy and dignifying residential facilities, complying with applicable local law, as a minimum.	Maintain an appropriate level of housekeeping at the plant, both at processing and storage areas.
Ban eating, drinking, and smoking in storage and treatment areas	Potable water, dining facilities and clean toilets should be available to workers.
EHS Operational Control	
Identify, control and/or treat, to comply with legal and statutory requirements, and to eliminate or reduce the EHS hazards/impacts related to: <ul style="list-style-type: none"> ▪ Air emissions (stack or diffuse) ▪ Process wastewater and stormwater. ▪ Waste production at the site. ▪ Resources consumption (e.g. electricity, fossil fuel, surface water and groundwater) ▪ Hazardous substance usage ▪ Noise (boundary and at work) and vibrations. 	<p>The adequate pollution abatement equipment should be installed and maintained to reduce/prevent releases of pollutants into the environment.</p> <p>Take measure to save energy and limit emissions of greenhouse gases limited to its activities.</p> <p>The adequate preventive maintenance, machine guarding, shut down devices and protection work equipment should be installed and maintained to reduce/remove the EHS risks and impacts.</p>
Implement procedures for sampling, monitoring reporting, evaluating and responding to: <ul style="list-style-type: none"> ▪ H&S hazards, especially in the cases where exposure thresholds are regulated. ▪ Pollutant releases and resources consumption, particularly in the cases where releases and usage thresholds are regulated. 	<p>Results of sampling and monitoring activities should be documented and used to update the EHS risk assessment.</p> <p>Equipment used on the EHS monitoring needs to be properly calibrated/verified.</p> <p>Laboratories used to analyse samples need to be accredited and capable of testing the relevant parameters.</p>
Monitor, annually, the following levels of hazards in the working areas: <ul style="list-style-type: none"> ▪ Airborne (according with the risk assessment which should include at least mercury exposure – CFL and LCD processing and storage areas and lead exposure – CRT treatment process) ▪ Noise exposure (at least once for all workstations and annually for the workstations above 85dB) ▪ Dust (according with the risk assessment and for all workstations where emission of dust is possible like shredders, balers, etc.). 	All the parameters need to be below the occupational exposure limits value thresholds defined by applicable law/permit.
Hazardous Substances Usage	
Adhere to all applicable legal and regulatory requirements regarding prohibition or restriction to use of specific substances and/or preparations.	<p>Hazardous substances are to be handled of with care, to avoid releases to the environment and to reduce its unneeded production (when and where applicable).</p> <p>Keep updated the MSDS of all hazardous substances and preparations used and stored on site.</p>
Waste Produced On-Site	
Respect the waste management hierarchy (reduction, reuse, recycling, recovering and elimination) and keep available a waste management plan for the waste produced at the site.	<p>Waste produced at the site result, among others, from cleaning, utilities maintenance, pollution abatement and emergency response consumables, support facilities (canteens, gardens, etc.).</p> <p>Adequate containers should be available and maintained to reduce leakages into the environment (special care shall be taken for hazardous waste).</p>
Personal Protection Equipment – PPE	
PPE must be available to workers and its usage enforced where and when necessary.	<p>The selection and enforcement of usage of the appropriate PPE, as well as the degree of protection required, should be a result of the risk assessment.</p> <p>To prevent contamination, PPE should be stored in a dedicated container cabinet when not in use.</p>

Environmental, Health & Safety (EHS)	
Signage and Warnings	
<p>The facility should employ appropriate signs and labels to clearly identify, at least:</p> <ul style="list-style-type: none"> ▪ Restricted or hazardous areas and nature of hazards ▪ Emergency equipment ▪ Evacuation routes and assembly area ▪ Equipment hazards ▪ Required PPE. 	
Occupational Medicine	
Implement a process to identify, investigate, solve (by implementing appropriate corrective actions) and control incidents and accidents occurring at the facility.	Implement and maintain updated an annual log to track EHS incidents and accidents.
Provide to employees adequate and regular medical surveillance to prevent occupational diseases, in accordance with risk assessment. In the case of a work accident or an occupational illness provide necessary medical treatment and facilitate the employee's return to work.	Ensure that medical or physical exams conducted to workers or potential workers are not used in a discriminatory way.
Employees dealing with hazardous substances/materials of concern shall undergo periodically a medical check to investigate the level of exposure.	Annually (or less if mandate by law) measure the following: <ul style="list-style-type: none"> ▪ Mercury intake concentration (CFL and LCD treatment process) – blood and urine. ▪ Lead intake concentration (CRT treatment process) – blood and urine. ▪ Audiometric tests for workplaces where the exposure is higher than 85 dB (e.g. shredders, balers, etc.).
Identify the workstations considered hazardous for pregnant, nursing women or workers with a medical condition and ensure that there are not exposed to the hazard while the medical condition is in place.	Accommodate those employees to a non-hazardous position, while the medical condition is in place.
Emergency	
Identify and assess potential emergency situations.	EHS risks and impacts of each emergency shall be addressed, and appropriate measures shall be taken during emergencies and in their aftermaths to minimize them. When applicable, plans shall exist to address prevention and management of situations related to Lithium batteries fire.
Document, implement, maintain up to date and test (drills) procedures/plans to prepare for, respond and report the potential identified emergency situations, including: <ul style="list-style-type: none"> ▪ Fires ▪ Explosions ▪ Medical emergencies ▪ Natural disasters ▪ Uncontrolled release of pollutants (e.g. leaks and spills) 	Emergency procedures/plans should focus to protect people's lives, minimize environmental impacts and property damage, and include: <ul style="list-style-type: none"> ▪ Possible emergency scenarios ▪ Response to each emergency scenario ▪ Responsibilities and roles. ▪ Evacuation and other emergency response drills periodically performed and documented. <p>Keep records of all events that affected the facility such as fire, leaks, etc. and damages encountered.</p>
When mandatory, get the approval of the emergency plans/procedures from the relevant regulatory authority	
Keep in safe and normal operating conditions (inspected and ready for use) the adequate and sufficient response systems to face emergency situations (e.g. alarms, fire extinguishers, spill kits, first aid kits, etc.). Be equipped with an emergency notification system to alert workers in case of an emergency.	

Social Responsibility	
Minimum Requirements	Additional Requirements
Dignifying Work Environment	
Do not tolerate any kind of forced, bounded or involuntary labour relations.	
Do not tolerate any form of harsh or inhumane treatment.	No employee shall be subjected to corporal punishment, sexual, psychological, verbal harassment, or abuse.
Do not allow any form of discrimination.	This is applicable, but not limited to, hiring, advancement, compensation, benefits, training, layoffs, and terminations.
Do not tolerate any form of child labor.	Unless local law stipulates a higher age limit, no person younger than the age for completing compulsory education, or younger than 15, shall be employed.
Do not allow juvenile workers to work overtime, night shifts, or in hazardous environments or to conduct dangerous operations.	Juvenile workers are under the age of 18 years old.
Wages and Benefits	
Exceed or match wages, including overtime and benefits, as required by applicable law.	Wages shall not be deducted as a fine or penalty under any disciplinary practice unless regulated under a collective bargaining agreement or recognized by law.
Provide workers an understandable pay slip.	Pay slips should include information on the details of wages and benefits calculations (e.g. overtime, bonuses, deductions).
Labour Relationships	
Ensure that all labour relations are covered by written employment agreement/contract describing the terms and conditions of employment.	The employment agreement/contract should be written down in a language understandable by the employee and a full signed copy given to the employee. All amendments to the terms and conditions of the employment are fully and freely consent and documented.
Garantee that all workers can terminate their labour relationship, upon reasonable notice and withouth a penalty.	
Comply with the legal limits for usage of temporary, dispatch and/or outsourced labour.	
Ensure the recruitment of foreign migrants' workers who are legally permitted to work.	Equivalent working conditions during employment should be provided to foreign migrant workers, such as: <ul style="list-style-type: none"> ▪ Contract terms & conditions. ▪ Compensation package (payroll and fringe benefits) ▪ Appropriate work conditions/infrastructures ▪ Training opportunities ▪ Freedom of labour contract termination ▪ No extra-charges for employment.
Working Schedule	
Comply with the maximum admissible by law for working hours, including overtime.	Working time shall never exceed 60 hours per week, including paid overtime.
Accommodate the mandated rest days, working breaks, holidays, vacations, and leaves.	In the absence of local applicable regulations ensure workers are allowed at least to take one day off every seven days.
Freedom of Association and Grievance Process	
Respect the employee's right to collectively bargain.	Allow all employees to exercise their legal rights to form, join or refrain from joining organizations representing their interests as employees.
Put in place a confidential, anonymous, effective mechanism available to all workers to report grievances without the fear of reprisal (e.g. unethical, unfair treatment).	The grievance process should cover: <ul style="list-style-type: none"> ▪ Reporting, processing and investigation ▪ Implementation plan ▪ Follow-up for closure and effectiveness ▪ Appeal procedure.

Social Responsibility	
Respect for Stakeholders Interests	
Implement a process to ensure effective and open feedback, consultation and/or dialogue with customers, employees, suppliers, community, and other stakeholders, related to the business and operations.	
Conduct a risk assessment of your supply chain.	Exercise due diligence on sourcing from suppliers that commit human rights abuse/violations (e.g. child exploitation, slavery, human trafficking) and abusive labour practices (e.g. severe EHS negative impact).
Encourage your employees to participate in community social responsibility activities and provide them the conditions for that.	

LANDBELL GROUP is an international supplier of service and consulting solutions for environmental and chemical compliance. Our aim is to reduce the complexity of extended producer responsibility legislation, as well as other product- and packaging- related requirements for producers and distributors. In everything we do, we seek to provide our customers with the most competitive solutions in terms of service quality, compliance, and cost.

At LANDBELL GROUP, we prepare our clients for the uncertainties to come. We help them unlock the value of the circular economy and strive to be their best partner on the journey to a more sustainable future.

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