

R2 Equipment Categorization



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THE FRAMEWORK FOR EVALUATING EQUIPMENT AND CATEGORIZING ITS R2
CONDITION THROUGHOUT EACH STEP OF THE R2 PROCESS.

SUSTAINABLE ELECTRONICS RECYCLING INTERNATIONAL (SERI)

Reference Document for R2v3 First Public Comment Draft (April 2019)

This R2 Equipment Categorization (REC) is used to assign the cosmetic, functional, and data sanitization status to equipment and components upon receipt, in-process, and after processing by an R2 Facility. These categories are integrated with the R2 Standard to ensure the proper handling of the equipment by the R2 Facility. While these categories may be applied to individual pieces of equipment or components, they may alternatively be used to identify the status of batches of equipment or components, or specific storage areas.

The status assigned under the REC is also intended to be accepted by other R2 Certified facilities to allow for the continued processing or use of used electronic equipment with confidence and understanding of the equipment categories assigned by the previous R2 Facility.

While this categorization is only intended for use by R2 Certified organizations, it may be used by an organization that is not R2 Certified to standardize the categorization of electronic equipment for resale and recycling. The REC is not written or intended for use in commercial trade but is not prohibited from use in trade.

While it is preferred that an R2 Facility use the exact REC categories in identifying equipment in their operation and on their records, the R2 Facility may alternatively cross-reference their existing categories with this REC, using a written and audited cross-reference document to ensure consistency. It is also anticipated that not every category specified in this REC will be applicable to each R2 Facility. Therefore, only the categories relevant to each facility should be used from the REC.

Common categories are specified to cover the broad range of electronic devices received and managed by R2 Facilities. More detailed categories consistent with the common categories may be specified for individual equipment types to provide more detailed descriptions of each category consistent with the type of equipment. However, specific categories by types of equipment may be no less detailed or stringent than the common categories. They simply offer better detail based on the type of the equipment and its features.

Adoption and publication of this REC is governed by the SERI Manual of Policies and Procedures for R2 Standard Development and consistent with the process for R2 Standard revisions. Alternative categorization specifications, such as grading specifications established and maintained by other organizations, may be adopted by SERI as needed in the future. Such specifications must be approved by the R2 Consensus Body and added to this REC. Approval is subject to continued conformance with the R2 Standard and may be withdrawn at any time by the R2 Consensus Body.

Additional recommended, but not mandatory, category tables for equipment types and materials are also available in R2 Guidance.

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Disclaimer

This R2 Equipment Categorization (REC) is intended to be used for descriptive purposes in accordance with the R2 Standard to allow for an R2 Certified Organization to assign and thereby define agreed upon cosmetic, functional, and data sanitization statuses to equipment and components upon receipt, in-process, and after processing by an R2 Facility.

These categories are integrated with the R2 Standard to ensure the proper handling of the equipment by the R2 Facility in accordance with the R2 Standard but are never to be used in any manner that expressly or impliedly indicates the equipment and components are themselves R2 Certified, which is prohibited.

It is also intended to be accepted by other certified R2 facilities to allow for the continued processing or use of used electronic equipment with confidence and understanding of the assigned R2 Standard specified categories by the previous R2 Facility.

While this categorization is only intended for the operations of R2 Certified organizations, it is acknowledged that it may be used by an organization that is not R2 Certified to normalize the categorization of electronic equipment for resale and recycling.

The R2 Equipment Categorization specification is not written or intended for use in commercial trade but is not prohibited from use in trade. The R2 Equipment Categorization (REC) is only offered for use on an "AS IS" basis for R2 Standard compliance only and is not intended to substitute for any other descriptions or categorizations that may otherwise be necessary, whether for contractual purposes, legal compliance, safety, or any other purpose.

All use of the R2 Equipment Categorization (REC) categories, whether in communications, marketing, negotiations, contracts, or in an organization's efforts to legally or otherwise comply with its own statutory, regulatory, or other private or public environmental, safety, or any other requirements of any kind, is done so at the sole risk of the organization utilizing such descriptions, and SERI makes no representations, warranties, (express or implied), guarantees, or assertions of any kind as to the suitability, fitness for purpose, appropriateness, comprehensiveness, or sufficiency for any purpose whatsoever, other than the use of such descriptions for compliance with the R2 Standard.

Certification Bodies shall only review complaints regarding the use of the R2 Equipment Categorization (REC) to the extent necessary to determine whether a non-conformance with the R2 Standard may have occurred by mis-categorization or other misuse; however, neither SERI, nor any Accreditation Bodies or Certification Bodies, will be responsible for resolution of any other disputes of any kind, whether relating to contractual, transactional, commercial, false advertising or any other allegations or charges arising from disputes directly or indirectly relating to the use of the R2 Equipment Categorization (REC).

COMMON EQUIPMENT CATEGORIZATION

When equipment is received by an R2 Facility, it is in an unknown state until it is sorted, evaluated and further processed. Equipment is presumed to be non-functioning in the R2 Standard until it can be demonstrated through testing to be functional. This table provides common equipment categories for managing the status of non-functioning (and unknown) equipment through the process and down the recycling chain. When equipment is tested, it can move from the Evaluation Stage categories, to the Functioning Product categories (listed below).

Table 1 Common Evaluation Stage Categories

CONTROLLED EQUIPMENT – FOR EVALUATION AND PROCESSING			
Category	Equipment Hardware Description	Capable of Reuse	Next Process
CTRL0	NOT EVALUATED / UNKNOWN FUNCTIONALITY		
	<i>Includes:</i>		
	All equipment, components and materials upon receipt and until further evaluation.	Unknown	Core Provision 6
CTRL1	EVALUATED – MATERIALS FOR RECOVERY		
	<i>Includes:</i>		
	Not Capable of Reuse – equipment has been evaluated and determined to be incapable of reuse (usually based on age or condition) and is destined for materials recovery.	No	A – Downstream Recycling Chain Or
	Equipment ready for mechanical processing (Shred ready – battery, mercury, etc. removed).	No	E – Materials Recovery Or
	Focus Materials for Recovery – not whole equipment or components.	No	G – Brokering
CTRL2	EVALUATED – EQUIPMENT FOR TEST & REPAIR		
	<i>Includes:</i>		
	Not Tested – pending testing, but functionality is unknown.	Unknown	A – Downstream Recycling Chain Or
	Ready for Repair – testing has been attempted and equipment determined non-functioning, but still with market value and capable of being repaired.	Yes	C – Test & Repair Or
	For Parts Harvesting – the equipment does not work but may contain working parts that can be recovered.	Yes	D – Specialty Electronics Reuse Or F – Service Only

EXEMPT EQUIPMENT – OUT OF SCOPE OF DOWNSTREAM DILIGENCE	
Category	Equipment Hardware Description
EX0	EVALUATED – NON-ELECTRONIC EQUIPMENT
	<i>Includes:</i>
	Any items not covered in the definition of electronic equipment.
	Non-Focus Materials – plastic, metal, CRT panel glass, etc.
EX1	EVALUATED – PLANNED RETURN
	<i>Includes:</i>
	Warranty Return – failed component is returned to the manufacturer under warranty for a replacement to repair equipment for reuse.
	Recall – equipment or component is returned to the manufacturer under a recall.
	Return to Individual Owner – personal equipment is returned to the individual owner after attempted service has failed.
	Failed Equipment – the return of failed equipment or components that were purchased as Tested and Working Equipment.
	Errant Shipment – equipment or component was received in error and is returned to the sender.
	Damaged in Shipment – reusable equipment or components are damaged in shipment and are rejected and returned
	Nonconforming Equipment – equipment delivered does not meet the purchase specifications and is rejected and returned.

This table identifies the categories of processing and verification used to assess and remove data from the electronic equipment.

Table 2 Common Data Sanitization Categories

Category	Data Sanitization Description
S0	Not evaluated for data
S1	Not a data containing device
S2	Evaluated as not containing data
	<i>Includes:</i>
	Does not contain data
	Media containing data removed from the equipment
	Contains general information only
S3	Evaluated as containing data
	<i>Includes:</i>
	Data not sanitized
	Physically disabled (punched, crushed, drilled, impaled)
S4	Clear
	<i>Includes:</i>
	Data sanitized with software and manually verified (electronic sanitization records available)
	Data sanitized with software and electronically verified (electronic records available for both)
S5	Purge
	<i>Includes:</i>
	Physical destruction of data (degauss, secure erase, etc.)
S6	Destroy
	<i>Includes:</i>
	Physical destruction of the device (shred, pulverize, disintegrate, etc.)

Cosmetic categories describe the physical appearance of equipment, but not the functionality of the equipment. Cosmetic categories cannot be used alone to conclude the functionality or data sanitization status of equipment.

Table 3 Common Cosmetic Categories

Category	Cosmetic Description
C0	Not categorized
C1	Damaged – For materials recovery.
C2	Used Poor – Heavy use and age. Cosmetic blemishes are significant and may require repair. Damages to latches, hinges, keyboards, etc. are prevalent. Parts are missing.
C3	Used Fair – Heavy use and age. Cosmetic blemishes are consistent with wear, including more and larger dents, discoloration, and scratches. Some parts, panels, bezels, or covers may be missing.
C4	Used Good – Cosmetic blemishes include scratches and/or other surface imperfections from consistent use, but equipment is in good condition overall. Minor wear of labeling may be visible. Small dents and small areas of discoloration may be present from the removal of tags. No damage to latches or hinges, nor any missing parts, panels, bezels, or covers.
C5	Used Very Good – Cosmetic blemishes include minor scratches and/or other surface imperfections from consistent use, but equipment is in good condition. Minor wear of labeling may be visible. Small dents and small areas of discoloration from the removal of tags. No missing parts.
C6	Used Excellent – Overall excellent cosmetic condition. May have light scratches or other minor blemishes from normal wear. Minor cosmetic blemishes have no impact on the system’s overall functionality or performance. Fully cleaned with all non-original labels removed. No missing parts.
C7	Certified Pre-Owned – Used equipment that has been fully restored to like-new condition with manufacturer warranty. Fully cleaned and cosmetically repaired with no blemishes. No missing parts.
C8	Unused – New, unused equipment removed from original packaging with no signs of wear or alteration.
C9	New Open Box – New, unused equipment in original packaging where factory seals have been broken. No signs of wear or alteration.

See more detail in the enhanced cosmetic category information Appendix A.

Functioning products are categorized based on the level of functionality of the item as well as any defects and missing parts or components.

Table 4 Common Functioning Product Categories

(Equipment are functional products not subject to downstream R2 control)

Category	Product Functionality Description
SPECIALTY AND COLLECTIBLE EQUIPMENT	
F1	<p>Verified Specialty Equipment</p> <ul style="list-style-type: none"> • Verified removed from operation with no known defects in functionality • No physical damage or defects • No corrosion • No missing parts • Original part numbers and serial numbers verified accurate
F2	<p>Collectible or Specialty equipment</p> <ul style="list-style-type: none"> • Collectibles are rare, vintage, and no longer manufactured or supported by the OEM • Specialty equipment are rare and specialized equipment not generally available in retail • Inspected and determined to be viable for reuse or parts • May have broken or missing pieces
REFURBISHED	
F3	<p>Key Functions Working</p> <ul style="list-style-type: none"> • A subset of the original functions of the device that an ordinary user of the device expects to function are verified working through manual or automated tests • Software may not be loaded or configured • Hardware required for key functions to be tested may have been removed after testing (e.g. Hard Drive) • May be missing components not essential to key functions • Secondary functions may not be tested or working • May not include Focus Materials (e.g. Battery) that are not working or not tested • All missing parts or cosmetic damages will be listed for each item
F4	<p>Hardware Functional</p> <ul style="list-style-type: none"> • All hardware is tested manually or with diagnostic software and verified working • No missing or damaged components or parts • Software not loaded or configured • No hardware defects
F5	<p>Refurbished</p> <ul style="list-style-type: none"> • All functions tested with diagnostic software • Loaded and configured with legally licensed software for full operations ready for the user • Electronic test results are available • No hardware or software defects
F6	<p>OEM Refurbished</p> <ul style="list-style-type: none"> • All functions tested with diagnostic software • Repaired with OEM original parts • Loaded and configured with original manufacturer’s legally licensed software • Meets OEM specifications for full original functionality • Electronic test results are available • Zero defects

SPECIFIC EQUIPMENT CATEGORIZATION

This section is intentionally blank and reserved for alternative categorization specifications, such as grading specifications established and maintained by other organizations. Alternative categorization specifications may be adopted by SERI as needed in the future for specific types of equipment. Such specifications must be approved by the R2 Consensus Body and added to this REC. Approval is subject to continued conformance with the R2 Standard and may be withdrawn at any time by the R2 Consensus Body.

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APPENDICIES

Appendix A: Enhanced Cosmetic Category Info

Category	Title	Description	Visual Appearance	Label Condition	Dents & Scratches	Discoloration	Missing Parts	Latches & Hinges Damaged	Cleaned (Inside/Outside)	Packaging
C0	Not Categorized	Not yet evaluated or categorized	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
C1	Damaged	Not Reusable	Poor	Poor	Major	Major	Yes	Yes	No	None
C2	Used Poor	Missing critical parts	Poor	Poor	Major	Major	Yes	Yes	Yes	None
C3	Used Fair	Missing non-critical parts	Fair	Fair	Moderate	Moderate	Yes	Yes	Yes	None
C4	Used Good	No missing parts	Good	Good	Minor	Minor	No	No	Yes	None
C5	Used Very Good	Minor imperfections not affecting functionality	Good	Good	Minor	Minor	No	No	Yes	None
C6	Used Excellent	Refurbished equipment in like-new condition	Excellent	Excellent	None	None	No	No	Yes	No Factory Packaging
C7	Certified Pre-Owned	OEM Refurbished	New	Excellent	None	None	No	No	Yes	No Factory Packaging
C8	Unused	Not in original packaging	New	Excellent	None	None	No	No	Yes	No Factory Packaging
C9	New Open Box	In original unsealed packaging	New	Excellent	None	None	No	No	Yes	Unsealed Factory

Appendix B: Linkage with Functioning, Cosmetic and Data Sanitization Categories

Products are equipment that have been processed and ready to be sold for reuse (finished goods). Products are assigned a combination of functional, cosmetic and data sanitization categories to ensure the product is finished processing.

Product Category	Product Functionality Description	Cosmetic Category	Data Sanitization Category
SPECIALTY AND COLLECTIBLE EQUIPMENT			
1	<p>F1 – Verified Specialty Equipment</p> <ul style="list-style-type: none"> • Verified removed from operation with no known defects in functionality • No physical damage or defects • No corrosion • No missing parts • Original part numbers and serial numbers verified accurate 	<p>C7 – Restored C6 – Used Excellent</p>	<p>S3 – Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear) S5 – Data Sanitized (purge)</p>
2	<p>F2 – Collectible or Specialty equipment</p> <ul style="list-style-type: none"> • Collectibles are rare, vintage, and no longer manufactured or supported by original manufacturers • Specialty equipment are rare and specialized equipment not generally available in retail. • Inspected and determined to be viable for reuse or parts. • May have broken or missing pieces. 	<p>C6 – Used Excellent C5 – Used Very Good C4 – Used Good C3 – Used Fair</p>	<p>S3 - Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear) S5 – Data Sanitized (purge)</p>
REFURBISHED			
3	<p>F3 – Key Functions Working</p> <ul style="list-style-type: none"> • A subset of the original functions of the device that an ordinary user of the device expects to function are verified working through manual or automated tests. • Software may not be loaded or configured • Hardware required for key functions to be tested may have been removed after testing (e.g. Hard Drive) • May be missing components not essential to key functions. • Secondary functions may not be tested or working. • May not include Focus Materials (e.g. Battery) that are not working or not tested. • All missing parts or cosmetic damages will be listed for each item. 	<p>C6 – Used Excellent C5 – Used Very Good C4 – Used Good C3 – Used Fair</p>	<p>S3 – Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear) S5 – Data Sanitized (purge)</p>

Product Category	Product Functionality Description	Cosmetic Category	Data Sanitization Category
4	<p>F4 – Hardware Functional</p> <ul style="list-style-type: none"> • All hardware is tested manually or with diagnostic software and verified working • No missing or damaged components or parts • Software not loaded or configured • No hardware defects 	C6 – Used Excellent	<p>S3 – Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear)</p> <p>S5 – Data Sanitized (purge)</p>
5	<p>F5 – Refurbished</p> <ul style="list-style-type: none"> • All functions tested with diagnostic software • Loaded and configured with legally licensed software for full operations ready for the user. • Electronic test results are available. • No hardware or software defects 	C6 – Used Excellent	<p>S3 – Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear)</p> <p>S5 – Data Sanitized (purge)</p>
6	<p>F6 – OEM Refurbished</p> <ul style="list-style-type: none"> • All functions tested with diagnostic software • Repaired with OEM original parts • Loaded and configured with original manufacturer’s legally licensed software. • Meets OEM specifications for full original functionality. • Electronic test results are available. • Zero defects 	C7 – Certified Pre-Owned	<p>S3 – Evaluated as not containing data</p> <p>S4 –Data Sanitized (clear)</p> <p>S5 – Data Sanitized (purge)</p>

Revision History

Approved Date	Effective Date	Version	Description of Change
		1.0	Initial Publication

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