Barco ecoscore questionnaire

This questionnaire is used to calculate the Barco ecoscore of a device. Please try to complete as many questions as possible.
Give a description of what has been implemented in the device in the column 'Explanation/remarks'.
If a question is not applicable to the device, fill in 'Not applicable'

Topic	Question	Answer	Explanation/remarks
General			
Identification			
	Model		
	Description of the device or component		
	Intended use		
	Brand		
	Complete CDP_Specs tab		
	Complete Batteries tab		
	Reference product - List benchmark and competitors in tab 'Benchmark Competition'		
Energy			
Power supply efficiency			
	What is the efficiency level of the external power supply according to the Energystar standard? (e.g. Level VI) For USB power supply: USB-C.		
	What is the efficiency of the internal power supply at 100% loading conditions? (in %)		
	What is the power factor of the internal power supply at 100% loading condition?		
Energy efficiency			
	What is the power consumption in normal/active mode per delivered capability or standardized testing methodology (e.g. lm/W & color spectrum)? If the products has specific EU Ecolabel or EU GPP defined, these shall be considered as minimum benchmark. Provide energy test report and complete 'Benchmark Competition' tab.		
LCA Criteria	Or, do you have Life Cycle Assessment documents showing that the product supports the transition to a climate-neutral economy consistent with a pathway IPCC 1.5°C to limit the temperature increase to 1,5°C above pre-industrial levels and or, technologies used demonstrate substantial life-cycle GHG emission savings compared to the best performing alternative technology (EU Taxonomy).		
Standby mode/off mode			
	Is there a standby mode? If yes, what is the power consumption in standby mode? (W)		
	Is there a networked standby mode? (= a mode in which the product can be activated remotely) If yes, what is the power consumption in networked standby mode? (W)		
	Is there an off mode? If yes, what is the power consumption in off mode? (W)		
Power management function			
	Is there a power management function (that brings the device automatically into a low power mode when no content is shown)? Describe. After how much time of inactivity does the device enter the low power mode? Is the power management function enabled by default?		
Materials			
Full material declaration			
	Are Full Material Declarations available from suppliers? Criteria: % of components/M% (weight/weight %) covered by BOM.		
	Or, is info on critical raw materials (CRM) provided & Barco Substance list declared		
Halogens in PCBs and Cables			
	Does the device contain halogen-free PCB's (= free of halogenated flame retardants)? If yes, how many of the PCB's are halogen-free? (w/w% or #/#%) List PCB(A) parts in tab 'PCB & Cable' and complete info.		
	Does the device contain halogen-free cables? (internal and/or external cables, if country specific power cable is shipped this can be excluded from calculation) If yes, how many of the cables are halogen-free? (w/w% or #/#%) List cables in tab 'PCB & Cable' and complete info.		
Halogen-free plastics			
	Are the plastic parts halogen-free? List plastic parts in tab 'Plastic parts' and complete info.		
Product recyclability			
	Determination according EN 45555:2019	No input required.	
	Product recyclability targets: - Use of single polymer or recyclable polymer blend - Plastic enclosures shall not contain moulded-in or glue-on metal. - Materials which cannot be recycled together have the ability to be separated - Improving recyclability rate shall not harm the durability of the system itself		
Recycled or climate neutral material			
	Does the product contain recycled plastics? If yes, what is the amount of postconsumer (PCR) or postindustrial (PIR) recycled plastic? (weight recycled plastic/weight total plastic or %) Or, does the product contain climate neutral/biobased plastics? Provide documentation.		
	Does the device contain recycled metals in the housing and or base frame exceeding UNEP rates: Aluminum, steel, etc.		
Batteries			

	Does the product contain batteries? If yes, how many of each type? Indicate if they are rechargeable or not.	Please fill in the Batteries tab	
	Are the batteries easily accessible and repleaceable by the end-user without or with common available tools? Specify tools if applicable.		
	What is the tested state of health of the rechargeable battery after 300 cycles, according to the standard IEC EN 61960-3-2017? Please provide test report.		
Packaging & Logistics			
Optimized product packaging design			
	What is the total weight of the packaging material?		
	Fill in the packed weight (kg) and the outer dimensions in the sheet 'Packaging' (include device, packaging, accessories, etc.)		
Optimized packaging incoming goods for assembly			
	Are relevant parts for assembly delivered in bulk (to Barco) (no individual packaging) or reusable packaging.		
Logistics/stacking			
	Is the packaging design optimized for a standard pallet (e.g.: 1200x800)? Note: Pallets in product packaging BOM not in scope		
	How many % of the pallet surface is used? Provide supporting drawings.		
	Have specific actions been taken to optimize transport? Is the packaging optimized for sea freight? (stacking height, etc.) See QAM_PAC02; Describe.		
Recyclability			
	List all packaging materials with their respective weights and recycled content in sheet 'Packaging'		
	Can all packaging materials easily be separated? (without the use of tools)		
	The employed materials results in mass weight average material ecopoint score <58	No input required.	
Recycled content			
	How many types of cardboard are used? (% per type + weight) How big is the recycled content in the cardboard in each type?	No input required.	
Number of accessories in the box			
	Which accessories will be included in the box? (cables, manuals, etc.) Please specify accessory type and quantity.		
End of life optimization - Circular economy			
Lifetime extension			
	How many standard years warranty/service contract are guaranteed? Are extended years warranty/service contracts possible? If yes, how many years?		
	How many years will spare parts be available after end-of-life?		
	Document product expected lifetime or Reference service Life calculated (PEL, PSL)		
	Document MTBF assessment at equipment level (B10, B50)		
Repairability: service model			
	Will the product be repaired? If yes, can the repair of critical components be done on-site?		
	Will the device be connected for service and/or predictive maintenance? (NA if in conflict with safety or data protection regulations)		
	No restrictions against second hand / remanufactured service components (data protect, compliancy or regulatory exemption are NA)		
Repairability: Spare parts			
	Which spare parts are available?		
	Is the list of spare parts and the process to order spare parts visible on the website? Can repair and maintenance information be accessed by a professional repairer? Provide the link. Where no safety or electrical risk exist, manufacturers provide clear repair instructions (e.g. hard or soft copy, video, 3D printing file) and make them publicly available, to enable a non-destructive disassembly of products for the purpose of replacing key components or parts for upgrades or repairs.		
Design for disassembly/repair			
	Can the housing, chassis and critical parts be removed with commonly available tools? How many tools are needed? Can the fasteners be reused? Provide service manual @ FQR. (Critical parts: see line 65)		
	Where the products are able to store data, is there data encryption, alongside a software function that resets the device to its factory settings and erases by default the encryption key?		
	Are PCB(A) assemblies potted?		

	WEEE recycling passport available on free accessible website (External PSU, charger and AC Adapters are exempted from the disassembly instructions)		
Modularity/Upgradeability			
	Is modularity in electronic components maximized? This, by using discrete building blocks that are part of a common platform or family, or this, by using building blocks that are genericly interchangeable. >50% number based of product building blocks shall fit this definition.		
	Are building blocks or software features that are subjected to rapid technological changes or changes in use profiles, upgradable? This should result in enhancement of the functionality, performance, capacity or esthetics of an end-product. If yes, please fill in the Impact criteria tab. At least 3 impact criteria (see tab impact criteria) shall be checked to apply this definition.		
	How many years will latest firmware be available after end-of-life? Ensure that functionality is not lost through (lack of) software updates prior EOL.		
Material type			
	Which plastic types are used in the enclosure and chassis? See plastics compatibility matrix for recycling in Definitions tab.		
	Are plastic parts weighing >25g marked according to ISO 11469 & ISO 1043 1-4? (e.g. <ABS-FR(52)>) In case of OEM/ODM, provide photo's/2D drawings. Markings are mandatory for non-medical displays, computers and servers.		
	Are housing/enclosure parts painted/coated? (paint is allowed for metals, recycled content plastics or coating for EMI purposes) Are there in-mould metal inserts or glue-on metal?		

Company name	
Name of responsible	
Function title	
Signature	
Date	

Benchmark / Competition:

Benchmark and / or reference products manufacturer	Type / product name	Delivered capability	Max power consumption	Power consumption in normal active mode	Power consumption in networked / standby / off modes	Describe measurement conditions	Link to webpage/specs
Example 1: xxxx	HC display	600 cd/m² typ.	95 W	40 W	Off mode: < 0,5 W Standby mode: < 1 W	Normal power consumption measured at typical brightness	

PCBs and cables:

Part number (Barco part nr or NA)	PCB/Cable	Description	Amount (#)	Weight of PCB/Cable (g)	Halogen free (yes/no)
Example: Kxxxxxxx	PCB	Main power board	1	84	Yes

Plastic parts:

Part number (Barco part nr or NA)	Description	Material	Specify blend	Amount (#)	Weight of Plastic part (g)	Halogen free (yes/no)	Recycled content or climate neutral?	Weight of recycled content (g) or % of recycled content in material blend
Example 1: Kxxxxxxx	Housing part left	PC-ABS	Bayblend FR 3010 HF	1	186	Yes	No	0
Example 2: Kxxxxxxx	Housing part right	PC-ABS	Bayblend FR 630 GR	1	174	Yes	Yes	30%

Batteries:

Lowest article number (e.g. end product, board, battery) traceable in SAP; if OEM product add all product numbers	Description	Battery type	Rechargeable (yes/no)	Quantity of batteries	Voltage (V)	Weight (g)	Capacity (C or Wh)
Example: Bxxxxxx	Remote control set	LR03	No	2	1,5	8	180

Packaging dimensions					
Width (mm)					
Length (mm)					
Height (mm)					
Volumetric weight (kg)			0		
Product weight (kg)					
Packed weight (kg)					
%		calculation: vol weight vs packed weight			
List all packaging materials					
(List all packaging materials, select a material, indicate the % recycled content and fill in the weight)					
Description	**Barco Part Number**	**Material**	**Recycled content %**	**Kg**	**Is the identification code present on the packaging item? (Yes/No)**
e.g. Biobased foam	Kxxxxxxx	PE foam	0	1	Yes
e.g. Recycled foam	Kxxxxxxx	PUR	0,25	0,1	Yes
e.g. Box	Kxxxxxxx	Cardboard (box)	0,89	2	Yes
Total				**3,1**	

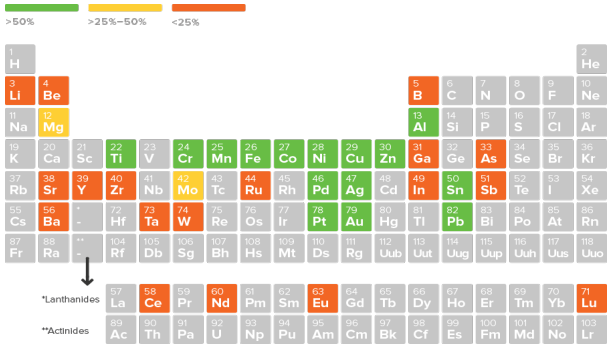
Definitions	Requirements
ECO mode	A condition when the device consumes less energy than in one mode on user initiative (to reduce energy consumption, to increase lifetime of the lamp/LCD)
Energy efficiency external power supplies	Energy efficiency according to the International Efficiency Marking Protocol for External Power Supplies (Version 3.0, September 2013)
Full Material Declaration	A full material disclosure/declaration is a list of all substances present in the product with their respective mass or concentration.
Halogen-free	For printed circuit boards (as defined in IEC 61249-2-21) • < 900 ppm Chlorine • < 900 ppm bromine • < 1500 ppm total halogens For components other than printed circuit boards: Each plastic within the component must must contain • < 1000 ppm (0.1%) of Bromine (Br), and • < 1000 ppm (0.1%) of Chlorine (Cl)
Networked standby	A condition in which the equipment is able to resume a function by way of a remotely initiated trigger from a network connection
Off mode	A condition in which the equipment is connected to the mains power source and is not providing any function;the following shall also be considered as off mode: - conditions providing only an indication of off-mode condition - conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2004/108/EC
Plastic marking according to ISO 14469 & ISO 1043 1-4?	ISO 11469:2016: Generic identification and marking of plastic products ISO 1403:2011: Plastics - Symbols and abbreviated terms - 1403-1: Part 1: Basic polymers and their special characteristics - 1403-2: Part 2: Fillers and reinforcing materials - 1403-3: Part 3: Plasticizers - 1403-4: Part 4: Flame retardants
Upgrade	Process of enhancing the functionality, performance, capacity or aesthetics of a product
Power factor	The ratio of the real power consumed in Watts to the apparent, or reactive, power drawn in volt amperes
Power management function	When equipment is not providing a main function, and other energy-using product(s) are not dependent on its functions, the power management function shall switch equipment after the shortest possible period of time appropriate for the intended use of the equipment, automatically into a condition having networked standby/standby.
Standard tools for dismantling	Tools most commonly used for repair purposes in general that are readily available for purchase by any individual or business without restrictions
Standby mode	A condition where the equipment is connected to the mains power source, depends on energy input from the mains power source to work as intended and provides only the following functions, which may persist for an indefinite time - reactivation function, or reactivation function and only an indication of enabled reactivation function, and/or - information or status display
PSU certification https://www.clearesult.com/80plus/program-details#program-details-table	

80 PLUS Certification	115V Internal Non-Redundant				115V Industrial			
% of Rated Load	10%	20%	50%	100%	10%	25%	50%	100%
80 PLUS	-	80%	80%	80% PFC ≥ 0.90	-			
80 PLUS Bronze	-	82%	85% PFC ≥ 0.90	82%	-			
80 PLUS Silver	-	85%	88% PFC ≥ 0.90	85%	80%	85% PFC ≥ 0.90	88%	85%
80 PLUS Gold	-	87%	90% PFC ≥ 0.90	87%	82%	87% PFC ≥ 0.90	90%	87%
80 PLUS Platinum	-	90%	92% PFC ≥ 0.95	89%	85%	90% PFC ≥ 0.95	92%	90%
80 PLUS Titanium	90%	92% PFC ≥ 0.95	94%	90%	-			

80 PLUS Certification	230V EU Internal Non-Redundant				230V Internal Redundant			
% of Rated Load	10%	20%	50%	100%	10%	20%	50%	100%
80 PLUS	-	82%	85% PFC ≥ 0.90	82%	-			
80 PLUS Bronze	-	85%	88% PFC ≥ 0.90	85%	-	81%	85% PFC ≥ 0.90	81%
80 PLUS Silver	-	87%	90% PFC ≥ 0.90	87%	-	85%	89% PFC ≥ 0.90	85%
80 PLUS Gold	-	90%	92% PFC ≥ 0.90	89%	-	88%	92% PFC ≥ 0.90	88%
80 PLUS Platinum	-	92%	94% PFC ≥ 0.95	90%	-	90%	94% PFC ≥ 0.95	91%
80 PLUS Titanium	90%	94% PFC ≥ 0.95	96%	91%	90%	94% PFC ≥ 0.95	96%	91%

CA T20, Title 20 Appliance efficiency Regulations section	https://govt.westlaw.com/calregs/Document/IEEDE2D64EF7B4F168C0E85379828A8C2
TCO On mode projectors	Initiate the projector to present a default test image, full screen bright white picture, RGB settings 255, 255, 255 (100% image loading) on the reported maximum projected screen size Amax/office or Amax/video. Allow the projector to remain in this mode until stable energy readings are measured. Measurements are considered stable if the wattage reading does not vary by more than 1% for the duration of a three-minute period.

$A_{Max/video}$	On Mode (normal operation)
≤ 6.6 m^2	≤ 260 W
≤ 13.3 m^2	≤ 310 W
> 13.3 m^2	≤ 310+150*(A_{max}- 13.3) W

UNEP rates	
Expert	If a repair, re-use, upgrade process can be carried out by a person with specific training and/or experience related to the product category concerned, the process is categorized as feasible for an expert.
Authorized expert	Person who is directly trained and audited by the manufacturer.
Bulk	Products or parts packed (min 2) togheter into one overall bulk packaging. Singel use bulk packaging shall contain less packaging material vs single unit packaging.
Access to critical parts	Physical access to prioirty parts (EN45554) and its fasteners or Barco defined spare parts, allowing the operator to remove the part for repair, upgrage or re-use.
firmware updates available	Availability of latest firmware update during the product lifetime. This does not to require mandatory firmware updates of the product is running stable or end of life.
Loosely Glued	Materials glued together shall be eastly removable by applying reasonable amount of force in order to separate the two materials for collective recycling. Separation shall be possible without the use of tools or the need of protective equipment.
Optimized Stacking	The product packing has been designed taking into account stacking of identical and or different articles for air, truck and see fright. The box has been labeled accordingly to facilitate stacking by the fright forwarder according the QAM Packaging 2.3.2 published on https://www.barco.com/en/about-barco/legal/terms-and-conditions.
Reusable packing	Packaging that is re-used to transport the same type of goods at least twice without impairment of its protective function.
PCR	Post-consumer recycled: Post-consumer recycled materials are derived from used consumer products, often packaging, bottles, durable goods including IT products.
PIR	Post-industrial recycled: Post-industrial recycled materials are derived from waste generated from manufacturing processes that led to the creation of the original source material.
CEL	The China Energy Label is an energy consumption label for products (displays, projectors and microcomputers) sold in China. It is similar to the EU energy label. CEL is voluntary for medical and industrial displays as well as for laser and LED projectors. Cinema projectors not in scope.
Standard pallet	Euro-pallet (1200 x 800 (x144)) or 1200 x 1000 (x144) mm or 600 x 800 (x144) mm
Plastics compatibility matrix for recycling	**TABLE 9.15** **Material compatibility chart for co-processing of recycled plastics** (Source: Paul Bishop, Pollution Prevention, McGraw-Hill, 2000, p. 401)

Matrix Material \ Additive	PE	PVC	PS	PC	PP	PA	POM	SAN	ABS	PBTP	PETP	PMMA
PE	■	□	□	□	■	□	□	□	□	□	□	□
PVC	□	■	□	□	□	□	□	■	●	□	□	■
PS	□	□	■	□	□	□	□	□	□	□	□	□
PC	□	○	□	■	□	□	□	■	■	■	■	■
PP	■	□	□	□	■	□	□	□	□	□	□	□
PA	□	□	○	□	□	■	□	□	□	○	○	□
POM	□	□	□	□	□	□	■	□	□	○	□	□
SAN	□	■	□	■	□	□	□	■	■	□	□	■
ABS	□	●	□	■	□	□	○	□	■	○	○	■
PBTP	□	□	□	■	□	○	□	□	○	■	□	□
PETP	□	□	○	■	□	○	□	□	○	□	■	□
PMMA	□	■	○	■	□	□	○	■	■	□	□	■

Key: ■ Compatible ● Compatible with limitations ○ Compatible only in small amounts □ Not compatible

Source: Adapted from Bras and Rosen, 1997.

Product recyclability rate	Mass % of product that can be recycled, considering the best commonly available EU recycling streams according to EN 45555:2019 standard. For (non-HC) displays, enclosures and bezels with flame retardants shall be recyclable.

$$R_{cyc} = \frac{\sum_{k=1}^{n} \left(m_k \cdot R_{cyc,k} \right)}{m_{tot}} \cdot 100\ \%$$

R_{cyc}	is the recyclability rate of the product;
R_{cov}	is the recoverability rate of the product;
n	is the number of parts/materials;
m_k	is the mass of the kth part/material;
$R_{cyc,k}$	is the recyclability factor of the kth part/material;
$R_{cov,k}$	is the recoverability factor of the kth part/material;
m_{tot}	is the mass of the complete product.

Typical power consumption	Barco's calculation of the typical power consumption is based on the black level power consumption, the maximum power consumption and an average usage of the LED wall. On average a customer configures the display at 70% of its maximum brightness, and the typical content on the wall consumes only 33% of that power. Barco's calculation of the typical power consumption = [(Max power– black level power)*70%*33%]+ black level power