

QUALITY SPECIFICATION FOR

BriteArc family

List of contents

A. Quality specification for lamps

B. Classification of Defects

C. Acceptable Quality Level (AQL)

A	02.06.1992	Specnbr. droptest (p11) is 99E..... i.s.o. 45 E.....	E	29.05.1998	P28 added
B	08.10.1993	page 7 and 9 adjusted	F	29.10.1998	Page 6 : l15 added
C	08.10.1996	Update of defects, replace IEC410 with ISO2859	G	13.09.2001	Page 12 : table adjusted + *exception added
D	10.04.1998	Page 6 added and page 8 : P26 and P27 added	H	24.10.2002	P29 added

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO OPG OPM S&H LABO PURCH QC ENG
 1 1 i-net 0 0 0 1 1

1. QUALITY SPECIFICATION FOR LAMPS

A. GENERAL

- A.1 This specification applies to lamp types as outlined in the attached QUALITY AND SAFETY REQUIREMENTS and describes the warranty given by SLI SYLVANIA or its subsidiaries, further referred to as “supplier”.
- A.2 The supplier warrants the lamps delivered to be in compliance with the individual QUALITY AND SAFETY REQUIREMENTS.
- A.3 For approval of lamp quality an inspection may be performed by the recipient in accordance with ISO 2859, inspection level II, if not specified otherwise.

B. DEFINITION OF TERMS

- B.1 Inspection lot
means a collection of units of lamps from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria.
It usually consists of lamps of a single type, wattage or style, but may be differ from lots designated for other purposes (production, shipments, etc.).
- B.2 Test quantity
is the number of individual lamps to be tested to determine conformance with the acceptability criteria.
- B.3 Test unit
is one lamp to be tested.
- B.4 Defective unit
is a lamp which contains one or more defects.
- B.5 Defect
is a non—conformity of an inspected unit with the product and/or quality specifications.

C. CLASSIFICATION OF DEFECTS

C.1 Attributive Defects

Are grouped into the following classes or sub—classes according to their seriousness:

- a. Critical defect: Code
Is likely to result in hazardous or unsafe conditions for individuals C
using, maintaining or depending upon the product or to be seriously
detrimental to commercial interest.
- b. Vital Defect: I
Renders a product inoperative or otherwise useless.

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

c. Major Defect: P
Reduces materially the usability of the product, or a severe appearance defect.

d. Minor Defect: M
Is not likely to reduce materially the usability of the unit of product for its intended purpose but is a departure from established standards having little bearing on the effective use or operation of the unit product.

C.2 Quantitative Defects Q
Is a failure to comply with quantitative product parameters as indicated in the respective lamp specification and tested on units which have passed inspection tests on all qualitative defect classes (C, I, P and M).

D. ACCEPTANCE/REJECTION CRITERIA

- D.1 Lots inspected in accordance with this specification and found to comply with the requirements shall be accepted. In case of non-conformance the recipient is authorized to file a complaint with the supplier.
- D.2 To support a complaint the recipient shall render the technical data of the inspection, as well as the fabrication codes of the unit product and/or box to the supplier. Defective units found shall be kept and made available to the supplier upon request.
- D.3 The recipient shall, upon request, authorize the supplier to reinspect a lot which has been subject to complaint.
- D.4 Defectives found in the sample of an accepted lot shall neither be replaced, repaired not credited by the supplier.
- D.5 Rejection of a lot can only be based on such defects, which are defined in the respective product/quality specifications.
- D.6 Changes or amendments to this specification are not valid until mutually agreed upon in writing by both parties concerned.

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

2. Classification of Defects

2.1. CRITICAL DEFECTS

<u>Code</u>	<u>Defect Description</u>
C 01	<u>Non passive failure</u> lamp non containment during ignition or burning.
C 02	<u>Missing lens (Brite Beam)</u> lamp without front lens or a loose lens ring.
C 03	<u>Broken lens (Brite Beam)</u> broken lens or a loose lens.
C 04	<u>Open airline</u> open airline in lampbulb
C05	<u>Bulb contamination</u> foreign material inside the lamp which can cause non containment.
C 06	<u>Alien brand</u> on lamp etch, sleeve, box or label.

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

2.2. <u>VITAL DEFECTS</u>	
<u>Code</u>	<u>Defect Description</u>
I 01	<u>Lamp inoperative</u> no starting at nominal supply voltage or lamp extinguishes within 1 min.
I 02	<u>Damaged pins (Single Ended)</u> lamp doesn't fit into respective lampholder gauge acc. to IEC publication 61-3.
I 03	<u>Damaged base threads (Double Ended)</u> lampnut can't manually be screwed on screw-thread.
I 04	<u>Leaker</u> cracked bulb, seal (detection with sparkcoil), excluding transportation damage.
I 05	<u>Missing lamp</u> box without lamp.
I 06	<u>Broken molybdenum foil</u> lamp inoperative
I 07	<u>Defective weld</u> broken weld between Mo-foil and electrode.
I 08	<u>Excentricity of lens (Brite Beam)</u> displacement of the lens regarding the reflector
I 09	<u>Cracked reflector (Brite Beam)</u>
I 10	<u>Length between base ends (Double Ended)</u> lamp does not fit in lampholder.
I 11	<u>Loose base</u> a base which is found to be loose or becomes loose when inserted into a lampholder
I 12	<u>Cracked leg or outer jacket</u>

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

I 13	<u>Wrong alignment of tip-off to ceramic lead (PS 575 DE)</u>
	tip-off points towards ceramic base or is not aligned in ceramic-wire plane
I 14	<u>Broken wire (unbased Double Ended lamp)</u>
I 15	<u>Oxidised weld</u> The weld outer lead-foil or electrode foil is completely oxidised at both sides of the foil The outer lead-foil weld is oxidised (only for free-burning end contacts)

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO OPG OPM S&H LABO PURCH QC ENG
 1 1 i-net 0 0 0 1 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

2.3. MAJOR DEFECTS

<u>Code</u>	<u>Defect Description</u>
P 01	<u>Poor weld</u> poor weld between Mo-foil and electrode
P 02	<u>Bad exhaust tip</u> - exhaust tip length > 2.5 mm - tip sucked in.
P 03	<u>Bad etch</u> lamp etch misplaced, crooked, partially illegible, parts missing or in any way indistinct.
P 04	<u>Excentricity of the burner (Single Ended)</u>
P 05	<u>Sharp burr on reflector (Brite Beam)</u> burr > 25 mm ² .
P 06	<u>Sharp burr on lens (Brite Beam)</u> burr > 25 mm ² .
P 07	<u>Airlines</u> airlines can cause leakers or non containment.
P 08	<u>Contaminated reflector (Brite Beam)</u> contamination > 25 mm ² .
P 09	<u>Contaminated lens (Brite Beam)</u> contamination > 10 mm ² .
P 10	<u>Contaminated bulb</u> contamination > 25 mm ² .
P 11	<u>Contaminated leg (Double Ended)</u> contamination > 25 mm ² .
P 12	<u>Dirty base</u> excessive dirt > 25 mm ² .

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

<u>Code</u>	<u>Defect Description</u>
P 13	<u>Electrode position</u> electrodes not in center of glassbulb.
P 14	<u>Split molybdenum</u> split in Mo > 25% of width.
P 15	<u>Oxidized molybdenum</u> molybdenum has dark, grey, blue spots.
P 16	<u>Oxidized electrodes</u> electrode has grey, blue, black colour.
P 17	<u>Oxidized molybdenum</u> molybdenum shows rainbow colours > 10% of surface
P 18	<u>Excess twist, lift, alignment of molybdenum</u> Mo-foils and tip off should be in the same plane. Mo-foils are twisted more than 30° to each other.
P 21	<u>Coating peeling off (Brite Beam)</u>
P 22	<u>Insufficient solder</u> dry solder joint at the end of the pins or the screwthread.
P 23	<u>Insufficient cement</u> insufficient cement can cause a loose lampcap.
P 24	<u>Bent lamppins (Single Ended)</u> lamppins are bent, lamp fits into respective lampholder gauge acc. to IEC publication 61-3.
P 25	<u>Leg deformation (Double Ended)</u>
P 26	<u>Tip-off not aligned in base wire plane (PS 575 DE)</u>
P 27	<u>Damaged Mo-leads (unbased Double Ended lamp)</u>
P 28	<u>Too much cement (PS 575 DE)</u> The cement is not within 4±1 mm from the edge of the ceramic.
P 29	<u>Alignment between cap and bulb</u> ≤ 1.5° measured with excentricity gauge

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen
DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

SUBJECT: Quality and Safety Requirements for BriteArc Family

2.4. MINOR DEFECTS

<u>Code</u>	<u>Defect Description</u>
M 01	<u>Oxidized base</u> base has a tarnish colour
M 02	<u>Loose parts inside reflector (Brite Beam)</u> loose non conductive parts in reflector, which rattle audibly when the lamp is shaken.
M 03	<u>Excess cement</u> any cement visible on side of cap, leg > 10 mm ² .
M 04	<u>Excess silica smoke</u>
M 05	<u>Clear spots or scratches in coating of reflector (Brite Beam)</u> surface > 1.5 mm ² .
M 06	<u>Poor etch</u> lamp etch misplaced, crooked, partially illegible, faint, parts missing or in any way indistinct.
M 07	<u>Dirty or oxidized bridge/mount (Brite Beam)</u>
M 08	<u>Dirty reflector (Brite Beam)</u> contamination > 10 mm ² .
M 09	<u>Dirty lens (Brite Beam)</u> contamination > 3 mm ² .
M 10	<u>Dirty bulb</u> contamination at outside > 3 mm ² .
M 11	<u>Dirty leg (Double Ended)</u> contamination > 10 mm ² .
M 12	<u>Dirty base</u> contamination > 10 mm ² .

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

Code	Defect Description
M 12	<u>Glass splinter reflector/lens (Brite Beam)</u> glass splinter > 10 mm ² .
M 13	<u>Dirty electrode</u> any contamination on the electrodes
M 14	<u>Discoloured reflector (Brite Beam)</u> external poor appearance of the reflector coating.
M 15	<u>Damaged lampbase</u> visible damage.
M 16	<u>Oxidized leadwires</u>
M 17	<u>Loose parts in bulb</u> loose non conductive parts which rattle audibly when lamp is shaken
M 18	<u>Wrong date code on lamp</u> missing or wrong date code
M 19	<u>Crooked base</u> base more than 1.5° crooked with regards to the leg or outer jacket
M 20	<u>Glass defect</u> knots, stones, streaks, other defects or deformed seal

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

SUBJECT: Quality and Safety Requirements for BriteArc Family

2.5. QUANTITATIVE DEFECTS

<u>Code</u>	<u>Defect Description</u>
Q 01	Lamp wattage
Q 02	Operating voltage
Q 03	Luminous flux
Q 04	Colour temperature
Q 05	Colour rendering index (CRI)
Q 06	Average life
Q 08	Lumen maintenance
Q 09	Colour temperature maintenance
Q 10	Lamp dimensions

ISSUED BY : G. Vervecken / K.Desmedt
APPROVED BY : F. Hansen

STANDARDIZING : M. Van Leuven
Q.A. : R. Geens

DISTRIBUTION : PRO 1 OPG 1 OPM i-net S&H 0 LABO 0 PURCH 0 QC 1 ENG 1

3. ACCEPTABLE QUALITY LEVEL (AQL)

3.1. Visual Defects

Defect class	Code	AQL	Compliance with
CRITICAL	C	*	Classification of defects
VITAL	I	*	Classification of defects
MAJOR	P	0.65	Classification of defects
MINOR	M	2.5	Classification of defects

* any one defect found rejects total inspection lot.

3.2. Quantitative Defects

Defect Description	Code	AQL	Compliance with
Lamp wattage	Q 01	6.5	lamp data sheet
Operating voltage	Q 02	6.5	lamp data sheet
Luminous flux	Q 03	4.0	lamp data sheet
Colour temperature	Q 04	4.0	lamp data sheet
Colour rendering index	Q 05	4.0	lamp data sheet
Average life	Q 06		lamp data sheet
Lumen maintenance	Q 08	6.5	lamp datasheet
Colour temperature maint.	Q 09	6.5	lamp datasheet
Lamp dimensions	Q 10	6.5	lamp data sheet

3.3. Test conditions

Defect Description	Code	Conditions
Life	Q 21	cycle: 3 hours on, 0.5 hour off*
Drop test	Q 22	to be performed on packed lamps H= 1000 mm drop test: spec. nr. 99E 0602-001

* One exception : BF 150 SE : cycle is 11 hours on, 1 hour off.
