PAS 66:2014

BSI Standards Publication

Official identification eartags for sheep and goats – Specification

bsi.

...making excellence a habit.™

Publishing and copyright information

Published by BSI Standards Limited 2014

ISBN 978 0 580 84406 5

ICS 65.020.30, 97.180

Publication history

First published 2005
Second edition 2009
Third (present) edition 2014

Contents

Summary of pages
This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 12, an inside back cover and a back cover.

This page deliberately left blank

Foreword

This PAS was developed by the Rural Payments Agency (RPA) and sponsored by the Department for Environment, Food and Rural Affairs (Defra). Its development was facilitated by BSI Standards and it was published under the licence from The British Standards Institution. It came into effect on 30 April 2014.

Acknowledgement is given to the following organizations that were involved in the development of this PAS as members of the steering group:

- ALIDMA
- Dalton ID Limited
- Department for Environment, Food and Rural Affairs (Defra)
- Department of Agriculture and Rural Development Northern Ireland (DARDNI)
- Ritchey Limited
- Rural Payments Agency (RPA)
- Scottish Government
- Welsh Government
- Co-opted

Acknowledgement is also given to members of a wider review panel who were consulted in the development of this PAS.

This PAS is not to be regarded as a British Standard. It will be withdrawn upon publication of its content in, or as, a British Standard.

The PAS process enables a specification to be rapidly developed in order to fulfil an immediate need in industry. A PAS can be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

Supersession

This PAS supersedes PAS 66:2009+C1:2010, which is withdrawn.

Relationship with other publications

This PAS is issued as part of a series of PAS for eartags which includes:

- PAS 44:2014, Official identification eartags for cattle – Specification

It has been developed in response to Council Regulation (EC) 21/2004 [1] which was adopted in December 2003. The requirement for the competent authority to approve eartags for sheep and goats came into effect on 9 July 2005.

Attention is drawn to the International Committee for Animal Recording (ICAR), International Agreement on Recording Practices [2].

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

This PAS is not intended to restrict new developments in design and materials providing they meet the minimum standards laid down in this PAS. Any approved ear tags on the market at the time of its publication that need re-testing should be approved to this PAS (PAS 66:2014) by 31 December 2015.

This specification is not intended to restrict new developments in design and materials providing they meet the minimum requirements laid down in this PAS.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element. The word "should" is used to express recommendations, the word "may" is used to express permissibility and the word "can" is used to express possibility, e.g. a consequence of an action or an event.

Spelling conforms to The Shorter Oxford English Dictionary. If a word has more than one spelling, the first spelling in the dictionary is used.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

In addition, attention is drawn to the relevant domestic legislation on the identification of sheep and goats [3].

1 Scope

This Publicly Available Specification (PAS) specifies requirements for the performance and testing of eartags used for the official identification of sheep and goats.

This PAS is not applicable to management tags.

The security aspects considered are those concerned with tamper-evidence and safeguarding against a tag's reusability, materials including plasticity, and printing processes including durability of print.

Requirements for animal welfare considerations are also included.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 3900-D10, ISO 7724-3, *Methods of test for paints – Part 3: Determination of colour and colour difference: calculation*

BS 5252F:1976, *Framework for colour co-ordination for building purposes*

BS EN 20105-A02, ISO 105-A02, *Textiles – Tests for colour fastness – Grey scale for assessing change in colour*

BS EN ISO 4892-3, *Plastics – Methods of exposure to laboratory light sources – Part 3: Fluorescent UV lamps*

BS ISO 11785:1996, *Radio-frequency identification of animals – Technical concept*

3 Terms and definitions

For the purposes of this PAS, the following terms and definitions apply.

3.1 eartag
permanent identification eartag, replacement or slaughter tag for a sheep or goat

3.2 replacement tag
red replacement eartag

3.3 accredited distributor
company that sells eartags and operates using the Great Britain Eartag Allocation System (ETAS)

3.4 electronic eartag
permanent identification eartag for sheep or goats incorporating an electronic transponder

3.5 newton (N)
force required to impart, to a mass of 1 kg, an acceleration of 1 m/s^2

NOTE Newton is equal to 0.2248 pounds force.

4 General requirements

4.1 Materials

4.1.1 Eartags shall be manufactured from non-degradable materials, for example thermoplastic elastomer, polyamides or metals.

4.1.2 The welfare of livestock shall be considered when selecting materials to be used in the construction of eartags (see **4.3**).

4.2 Design and construction

4.2.1 The dimension of eartags shall be sufficient for the information printed on an eartag to be visible from a distance when inserted and to accommodate the information specified in **6.1** in a manner that is easily readable.

4.2.2 Once sealed, the distance between the innermost faces of eartags shall not be less than 5 mm apart.

NOTE For guidance on the insertion of eartags into an animal's ear, see Annex A.

4.2.3 Transponders shall be securely located in an eartag.

NOTE Securing methods exclude open or unsealed compartments.

4.2.4 Replacement tags shall be red in colour within the range 04 E 55 to 04 E 56 of BS 5252F:1976. The fixing mechanism may be of any colour.

NOTE Attention is drawn to the Defra Regulation for Requirements for Identification Code Marking [3].

4.2.5 All other eartags shall be of a predominant colour which cannot be mistaken for red, as agreed by the competent authority. The fixing mechanism may be of any colour.

NOTE Attention is drawn to the Defra Code of Practice [4].

4.3 Animal welfare

4.3.1 Eartags shall be non-harmful to the animal.

NOTE Attention is drawn to the Defra Welfare Assessment [5].

4.3.2 Eartags shall have smooth, rounded corners and no sharp edges or protrusions specifically on the shaft of the piercing pin.

NOTE 1 The visible piercing point after fixing is not considered a protrusion.

*NOTE 2 In case of dispute, the sharp edges test, as detailed in BS EN 71-1:2005, **8.11**, can be used.*

4.3.3 Eartags shall be inserted with the accredited distributor's recommended applicator.

4.3.4 Accredited distributors shall provide approved guidance on animal welfare, storage, application and intended use.

NOTE Attention is drawn to the Defra Code of Practice for manufacturers /suppliers of sheep/goat identifiers [4].

5 Performance requirements

5.1 General

If the model of tag submitted for testing is to be sold as a replacement tag then fifty red identification ear tags shall be supplied from which samples will be selected at random and shall meet the requirements specified in **5.2** to **5.6**. If a colour of tag other than red is supplied for testing, then that model of tag shall not be marketed or sold as a replacement tag. If red is not supplied, then the alternative colour supplied for testing shall be yellow.

Where the eartag is an electronic eartag, a test read shall be carried out in accordance with Annex B before testing.

*NOTE 1 Within Great Britain BCMS will monitor through the Ear Tag Allocation System (ETAS, see **6.1.1**) the performance of each approved tag on behalf of the competent authority. Where the performance of a tag gives cause for concern, the accredited distributor/supplier will be notified and the tag's official approval may be withdrawn.*

NOTE 2 Within Northern Ireland DARD will monitor the performance of accredited distributors, suppliers and their products. Where performance gives cause for concern, the accredited distributor/supplier will be notified and the official approval of their tags may be withdrawn.

5.2 Resistance to artificial weathering

5.2.1 When tested in accordance with BS EN ISO 4892-3, the marking of plastics components of eartags shall remain legible after exposure to UV light. The exposure chamber shall be fitted with UVA 340 fluorescent tubes and operated continuously for 1 000 h at (50 ± 5) °C giving a cycle of 8 h UV and 4 h condensation darkness. The irradiance level of the lamps shall be 0.83 W/m^2/nm.

5.2.2 After artificial weathering the change in colour of replacement tags shall be less than delta E* of 10 CIELAB units, when measured in accordance with BS 3900-D10, or a grey scale change of less than 3 when measured in accordance with BS EN 20105-A02.

5.2.3 Condition the test specimens, three of which shall be sealed and assembled, for a minimum of 16 h at (–23 ± 2) °C followed by a minimum of 1 h at (23 ± 2) °C and test the specimen as follows.

5.2.4 If the eartag contains an electronic chip, then at least two products shall be sealed and assembled and tested in accordance with **5.2.1** and **5.2.3** and then read, in accordance with Annex B, to ensure the tag, as a whole, has survived the test procedures with the chip *in situ* and there shall be no change in the information read.

In addition, after removing the samples from the freezer, drop them onto a concrete surface from (1 ± 0.02) m. There shall be no separation of electronic chip and ear tag.

5.2.5 After exposure plastics components shall exhibit no detrimental effect to UV light by testing in accordance with **5.3**, **5.4** and **5.5**.

5.3 Resistance to tensile loading

When tested in accordance with Annex C, plastics eartags shall resist a minimum tensile load of 200 N.

NOTE Attention is drawn to the International Committee for Animal Recording (ICAR), International Agreement on Recording Practices [2].

5.4 Resistance to low temperature impact

When tested in accordance with Annex D, the material used in the main body of plastics eartags shall not split or crack.

NOTE 1 An unbroken dent of the impacted surface does not constitute failure.

NOTE 2 If the same composition of plastics material is used in the manufacture of more than one type of eartag, it is only necessary to conduct the test on one sample of the material.

5.5 Resistance to abrasion

When tested in accordance with Annex E, none of the material samples of eartags shall exhibit any damage or change resulting from the test in comparison with the reference piece, e.g. erosion of the test surface and the marking shall remain legible.

NOTE If the same composition of material is used in the manufacture of more than one type of eartag it is only necessary to conduct the test on one set of material samples.

5.6 Resistance to assembly

When tested in accordance with Annex F, the plastics material used in the eartags shall not split, crack or deform on assembly.

6 Information and marking

6.1 Information

6.1.1 Plastics type eartags shall be permanently marked or embossed with the following information:

a) the number of this Publicly Available Specification, i.e. PAS 66 [1)];

b) the name or trademark of the accredited distributor, importer or manufacturer.

NOTE NI suppliers of official identification eartags should not manufacture or supply eartags unless they have been authorized by DARD. Enquiries regarding eartag authorization should be directed to the DARD Implementation Support Unit, Veterinary Service, Upper Newtownards Road, Belfast BT4 3SB. Tel. 0300 200 7840.

6.1.2 All eartags shall be accompanied by an accredited distributor's declaration of conformity containing the following information:

a) the number and date of this Publicly Available Specification, i.e. PAS 66:2014;

b) the name or trademark of the accredited distributor, importer or manufacturer;

c) the unique lifetime identification numbers of the eartags forming the batch or production run.

6.2 Print size and colour

6.2.1 Characters used in the identification code marking shall be easily readable.

NOTE 1 Attention is drawn to the Defra Regulation for Requirements for Identification Code Marking [3].

NOTE 2 Defra recommends a minimum height of 5 mm.

6.2.2 The identification code shall be printed in a single contrasting colour to the plastics base material upon which they are applied, or for metal eartags impressed without inks.

---

1) Marking PAS 66 in relation to a product represents an accredited distributor's declaration of conformity, i.e. a claim by or on behalf of the accredited distributor that the product meets the requirements of the standard current at the time of testing. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity.

NOTE PAS 66 does not impose any specific restrictions on material to be used in the production of metallic secondary identification tags. However, the tag should remain legible for the lifetime of the animal. Consequently, the accredited distributor should be mindful of the performance of such materials over time, particularly with regard to wear and weathering, when determining the appropriate depth of lettering to be applied. Should a metal tag type be shown to be insufficiently proof against abrasion or weathering over the life of the animal, the competent authorities may remove the tag from the list of PAS 66 approved tags.

6.3 Durability and legibility of printed information

The printed identification code shall remain legible after being lightly rubbed by hand for 15 s with a piece of cloth soaked with water, again for 15 s with a piece of cloth soaked in petroleum spirit, and again for 15 s with a piece of cloth soaked in methyl ethyl ketone.

NOTE 1 Petroleum spirit is defined as the aliphatic solvent hexane with a content of aromatics of maximum 0.1 % volume, a kauri-butanol value of 29, initial boiling point of 65 °C, a dry point of 69 °C and a specific gravity of 0.68 kg/l.

NOTE 2 Methyl ethyl ketone also known as butanone is a colourless, flammable ketone, CH3C(O)CH2CH3, used in lacquers, paint removers, cements and adhesives, cleaning fluids and celluloid.

6.4 Security of printed information

Identification codes shall be printed or, for metal eartags, marked without inks in such a manner that they cannot be defaced or have their form altered without leaving evidence.

Annex A (informative)

Applicators and insertion of eartags

A.1 For insertion of the eartag a single-action applicator should be used, whereby the eartag itself pierces the ear. The applicator should not utilize double penetration or "dagger" type techniques.

A.2 To minimize distress upon insertion of the eartag, the piercing angle of the sharp tip of the eartag should not be greater than 60° (Figure A.1).

NOTE The piercing angle is twice the angle that the sharpened end or the part of the piercing point makes with the centre line of insertion.

A.3 The design and use of applicators should minimize the risk of pain and distress to the animal, safeguard the animal and operator from danger and guard against the spread of disease and risk of infection. Antibacterial coatings may be incorporated into the applicator to reduce the risk of infection.

NOTE Eartag applicators should be used by competent operators who should clean and disinfect the applicator at regular intervals. Sheep and goats should be handled quietly but firmly at all times so as to avoid unnecessary pain or distress to the animal.

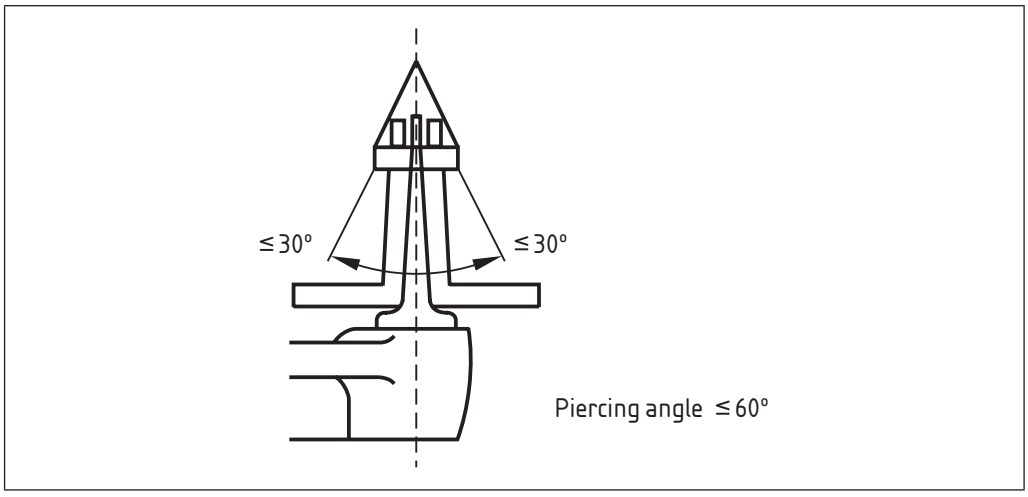
A.4 Applicators should provide positive feedback to the operator on correct tag closure and should incorporate a mechanism that allows the speedy and automatic release of the eartag from the ear, in order to protect the ear from tearing.

A.5 Applicators should be designed so as not to allow incomplete union, lateral misalignment or oblique sealing of the eartag.

A.6 The eartag should be located such that it is visible at a distance.

A.7 Applicators should be clearly marked with the tag accredited distributors name and the packaging or instructions should indicate the tags with which they can be used.

Figure A.1 **Piercing angle of the sharp tip of an identification eartag**



Annex B (normative)

Method of testing the readability of the transponder

The electronic eartag under test shall be read before and after **5.2** (resistance to artificial weathering) using a hand-held reader complying with BS ISO 11785 in the best coupling orientation between transponder and reader.

*NOTE The identification number obtained from the first read, prior to **5.2**, should be recorded; this will be used as the reference for the second read test. Following the performance requirement tests, the eartag should be read again, under the same*

test conditions to ascertain the identification number. This should match the number from the first read in order to ensure the transponder has survived the performance testing processes.

Annex C (normative) Method of test for tensile strength of eartags

C.1 Principle

The eartag is affixed to a test jig simulating its application in service and attempts are made to remove the eartag forcibly by pulling it.

C.2 Test conditions

Carry out all tests at a temperature of (20 ± 5) °C and ambient humidity.

C.3 Apparatus

C.3.1 *Test jig,* for the support of an eartag under test, simulating, where possible, a relevant service application and allowing the application of measurable tensile forces to the eartag in both shear and axial directions.

C.3.2 *Tensile test machine class 1*, operating at a jaw separation rate of (500 ± 25) mm/min, and capable of generating loads of up to 1 000 N.

C.4 Test procedure

C.4.1 General

Carry out the tensile test set out in **C.4.2** on each of the three conditioned eartags in turn.

C.4.2 Tensile test

Affix one of the conditioned eartags (**5.2.3**) to the test jig (**C.3.1**). Apply an increasing load (**C.3.2**) to any relevant point of the eartag, in any appropriate direction. Record the maximum load and the effect(s) of the tensile force on the appearance and/or efficacy of the eartag.

NOTE Apply the load from a different orthogonal direction for each sample tested.

Annex D (normative) Method of test for resistance to impact at low temperature

D.1 Principle

A sample of plastics material taken from a weathered eartag is conditioned at low temperature and impacted by a specified impactor from a given height.

D.2 Apparatus

D.2.1 *Falling weight impact machine*, having the following features.

D.2.1.1 *Rigid base*.

D.2.1.2 *Rigid specimen support plate*.

D.2.1.3 *Rigid superstructure*, incorporating a vertical low friction means of guiding the striker (e.g. a vertical tube).

D.2.1.4 *Sponge*, closed cell and expanded having a thickness of (30 ± 5) mm when uncompressed and a density of (500 ± 50) kg/m3.

D.2.1.5 *(17.5 ± 1) mm diameter hardened or high tensile steel hemispherical striker*, free from flats and other imperfections, with a total mass of (1 ± 0.1) kg.

D.2.1.6 Means of ensuring that the striker can strike the specimen at the centre of a suitable face.

D.3 Preparation of test specimens

Prepare a test specimen from each type of plastics tag that has been weathered in accordance with **5.2**.

D.4 Test procedure

Condition the test specimen for 60 min at (–23 ± 2)°C and within 20 s of removing the test specimen from the conditioning atmosphere; test the specimen as follows.

Place the test specimen on the sponge (**D.2.1.4**) with the weathered face downward and drop the striker (**D.2.1.5**) onto it from a height of (300 ± 5) mm.

Remove the test specimen from the machine and examine it visually and record any damage.

Annex E (normative) Method of test for abrasion resistance

E.1 Principle

A test specimen, cut from an eartag or from stock material, is secured to a rubbing head and is mechanically rubbed horizontally over an abrasive pad. The test specimen is then examined for damage.

E.2 Apparatus and materials

E.2.1 *Abrasive pad,* consisting of a random nylon web impregnated with phenolic resin and very fine grade aluminium oxide nominally 150 mm long × 100 mm wide × 5.0 mm thick.

NOTE 3M "Scotchbrite" CF-HP (red) is a suitable product.[2)]

E.2.2 *Distilled or demineralized water*.

E.2.3 *Skin graded iodine based disinfectant.*

E.2.4 *Methyl ethyl ketone (MEK).*

E.2.5 *Base machine*, see Figure E.1. The base machine shall include the following characteristics.

a) A flat plate mounted in the horizontal plane with a framework for clamping an abrasive pad.

b) A motor driven arm to which a rubbing head is pivoted.

NOTE The machine has an automatic stop mechanism that may be pre-set to stop the arm on completion of the required number of cycles.

---

2) 3M Scotchbrite is a trademark owned by 3M and is an example of a suitable product available commercially. This information is given for the convenience of users of this standard and does not constitute an endorsement by BSI of this product.

c) The arm reciprocates the rubbing head on a straight course along the length of the abrasive pad with approximate sinusoidal motion.

NOTE The nominal length of the stroke of the arm is 100 mm.

d) The rubbing head is attached to the arm by a parallelogram linkage to allow free vertical movement of the head whilst maintaining its working surface in a horizontal plane. There is negligible play or friction between the head and the arm.

E.2.6 *Rubbing head,* to secure test specimens to its bottom face. The total mass of the head with the test specimens attached shall be (600 ± 10) g.

E.3 Preparation of test specimens

Cut three test specimens and a reference specimen, each (50 ± 1) mm × (25 ± 1) mm or equivalent area if made from a number of pieces cut from actual eartags with markings.

E.4 Test procedure

Maintain the atmosphere of the test room at (20 ± 5) °C.

Set the base machine (**E.2.5**) to operate at (30 ± 3) cycles/min and to stop when 40 cycles have been completed.

Clamp a test specimen to the rubbing head (**E.2.5**) so that its lower face is in contact with the abrasive pad. Pour approximately 20 ml of distilled or demineralized water onto the abrasive pad. Lower the rubbing head into position and immediately start the machine.

On completion of the cycles remove the test specimen from the rubbing head, and rinse and dry the piece.

Repeat this procedure using the other two test specimens using a new piece of abrasive pad for each test. Examine the test specimens in accordance with **E.5**.

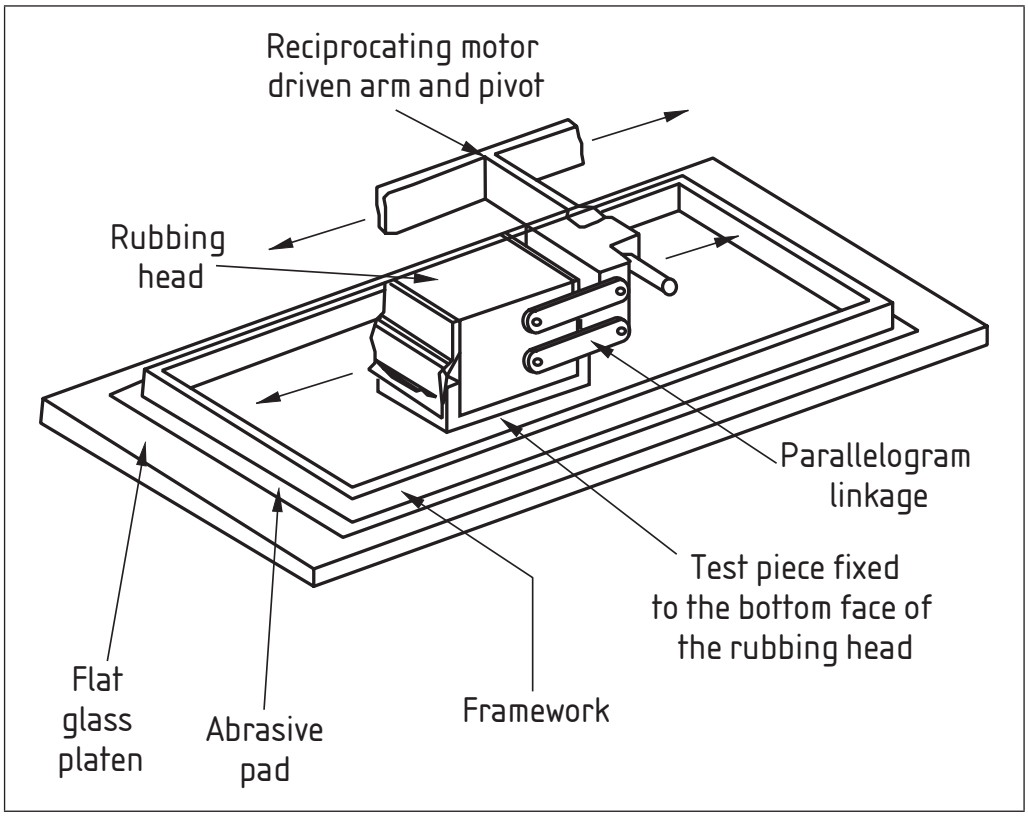
Repeat this procedure using similar quantities of the disinfectant on a further three samples. Examine the test specimens in accordance with **E.5**.

Repeat this procedure using similar quantities of methyl ethyl ketone on a further three samples. Examine the test specimens in accordance with **E.5**.

E.5 Assessment

Compare each test specimen, tested in accordance with **E.4**, with the reference piece by viewing with normal or corrected vision, from a distance of 1 m, the surfaces illuminated by north sky light in the northern hemisphere, or south sky light in the southern hemisphere. The light shall be incident upon the surfaces at an angle of (45 ± 5)° and the direction of viewing shall be approximately along the perpendicular to the plane of the surface. Record any damage or change in legibility.

Figure E.1 **Base machine**



Annex F (normative)

Method of test for assembly

F.1 Principle

Eartags are assembled at –5 °C and +30 °C to ensure there is no cracking or deformation that could affect their performance.

F.2 Preparation of test specimens

F.2.1 Condition three eartags and a suitable applicator for a minimum of 60 min at (–5 ± 2) °C.

F.2.1.1 Condition a further three eartags fully submerged in a container of water for a minimum of 60 min in a chamber at (30 ± 2) °C.

F.3 Test procedure

Assemble each test specimen (**F.2.1** and **F.2.1.1**) in accordance with the accredited distributor's instructions within 1 min of removing it from the conditioning environment. Visually inspect each test specimen for splitting or cracking and record any changes or damage.

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 71-1:2005 + A8:2009, *Safety of toys – Part 1: Mechanical and physical properties*

BS EN 61000-3-2:2001, IEC 61000-3-2:2000, *Electromagnetic compatibility (EMC). Limits – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)*

Other publications

[1] EUROPEAN COMMUNITIES. Council Regulation (EC) 21/2004 of 17 December 2003 establishing a system for the identification and registration of ovine and caprine animals and amending Regulation (EC) No. 1782/2003 and Directives 92/102/EEC and 64/423/EEC. Luxembourg: Office for Official Publications of the European Communities.[3)]

[2] International Committee for Animal Recording (ICAR), International Agreement on Recording Practices, Section 1.1, Appendix B — Performance evaluation and approval of official permanent identification devices. Part 1: Conventional permanent plastics eartags with or without machine readable printings 2003. September 17, 2003.

[3] The Sheep and Goats (Records, Identification and Movement) (England) Order 2009 as amended (and its equivalents in Scotland, Wales and Northern Ireland).[4)]

[4] Defra Code of Practice for Sheep and Goat Ear Tag Manufacturers/Suppliers.[5)]

[5] Defra-RPA Ear Tag Welfare Assessment Process.[6)]

3) Available from http://www.ojec.com

4) http://www.legislation.gov.uk/uksi/2009/3219/contents/made

5) http://rpa.defra.gov.uk/rpa/index.nsf/vContentByTaxonomy/BCMS**Tagging**Sheep%20&%20Goat%20Tagging%20-%20Sheep%20&%20Goat%20ETAS**Sheep%20&%20Goats%20Code%20of%20Practice**?OpenDocument

6) http://rpa.defra.gov.uk/rpa/index.nsf/15f3e119d8abcb5480256ef20049b53a/accadcdb5ad852678025772d004be0cb/$FILE/Annex%20D.pdf

This page deliberately left blank

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™