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IS 8102 (1990): Technical requirements for frozen semen of breeding bull [FAD 5: Livestock Feeds, Equipment and Systems]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

**TECHNICAL REQUIREMENTS FOR FROZEN
SEMEN OF BREEDING BULL**

(First Revision)

UDC 636'082'453'54 [636'293]

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Animal Reproduction Equipment and Systems Sectional Committee had been approved by the Food and Agriculture Division Council.

Artificial insemination (AI) technique is being used increasingly for national livestock development programmes. The use of frozen semen of breeding bulls in such programmes is gaining popularity due to its long storability and easy transportation.

This standard was first published in 1976. The standard has been revised to align with ISO DIS 5499 'Artificial insemination of animals, frozen semen of breeding bulls' issued by International Organization for Standardization.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TECHNICAL REQUIREMENTS FOR FROZEN SEMEN OF BREEDING BULL

(*First Revision*)

1 SCOPE

1.1 This standard covers technical, biological and veterinary requirements applicable to frozen semen of breeding bulls. It also provides guidelines for transport of semen.

2 DEFINITIONS

2.1 For the purpose of this standard, the following definitions shall apply.

2.1.1 Sperm

Male reproductive cell intended/capable for the fertilization of a female reproductive cell.

2.1.2 Ejaculate

Quantity of semen obtained as a result of emission from male reproductive tract.

2.1.3 Semen

2.1.3.1 Freshly collected/Neat semen

Male generative ejaculate comprising only of spermatozoa and seminal fluids.

2.1.3.2 Diluted/Extended semen

Male generative ejaculate diluted and conditioned by a technique appropriate for the preservation and use of sperms.

2.1.4 Dose

Quantity of semen, packed singly and identified, intended for a single insemination.

2.1.5 Series of Doses

Group of doses of semen from one bull, prepared from one or more ejaculates, obtained within one day, and submitted to the same treatment.

2.1.6 Artificial Insemination

Deposition of semen in the female reproductive tract by means other than natural mating.

3 ZOO-TECHNICAL REQUIREMENTS FOR BREEDING BULLS

3.1 The bulls shall be of a descriptive breed, registered by an association (service of breeding animals) of stock-breeders or by other competent organizations.

NOTE — In special cases, sale of semen from cross-bred bulls is permitted if the genealogy and the results of testing the descendants are known.

3.2 The genetic merit of a breeding bull shall be confirmed by any approved sire evaluation method.

3.3 In general, bulls of dairy breeds are controlled as improvers. Hence, the sale of semen from young bulls, descended from known parents is permitted on condition that risks are shared between the two parties concerned.

3.4 Bulls shall be subjected to a control of fertility. Semen shall be of a good quality and shall originate from a bull presenting a fertility rate of at least 50 percent expressed by the non-return rate (NRR) within 60 to 90 days after the first insemination.

3.5 It is desirable to publish the breeding value estimates of breeding bulls.

4 VETERINARY CRITERIA OF CENTRES FOR ARTIFICIAL INSEMINATION AND FOR BREEDING BULLS

4.1 Breeding bulls shall be kept at recognized centres for artificial insemination under official control for at least 6 months before collecting semen. They shall not be used, during this period, for natural mating.

4.2 Semen shall be collected from the breeding bulls bred in a region free from infectious diseases and, in addition the following:

- a) The whole country shall have been free for 12 months from blue tongue (*Febria catarrhalis ovium*) ;
- b) No cases of foot-and-mouth disease of exotic types (SAT) shall have been reported for 12 months within a radius of 100 km of the centre for artificial insemination and no case of foot-and-mouth disease of the classic type shall have been reported for 12 months within 30 km;
- c) Animals kept in the centre for artificial insemination shall not have been affected by bovine tuberculosis, paratuberculosis, bovine brucellosis, Jhones disease, blue tongue and foot and mouth diseases.

5 REQUIREMENTS FOR FROZEN SEMEN

5.1 Semen shall be preserved in liquid nitrogen, packed individually by doses, protecting the semen from contact with the liquid nitrogen and micro-organisms. Each dose shall be identified by the following particulars:

- a) Name and number of the bull;

- b) Year, month and day of collection of the semen; and
- c) Breed.

NOTE — The sanitary and veterinary protection of the territory of the artificial insemination centre shall be assured by means of sanitary and prophylactic construction and exploitation.

5.2 Semen shall be free from pathogenic agents of the infectious diseases listed in 4.2 and cryptogenic micro-organisms. The semen shall not contain *Escherichia coli* (negative colitre).

5.2.1 In cases where the purchaser wishes the semen to be free from occasionally pathogenic micro-organisms, the list and the maximum admissible number of these germs and the number of non-pathogenic micro-organisms can be laid down by agreement between the parties concerned.

5.3 Antibiotics and other antimicrobial products, non-toxic to the spermatozoa, are permitted in the medium used for dilution of the semen.

5.4 Semen intended for export or import shall be used after storage for 28 days in the centre for artificial insemination or in an approved quarantine centre.

5.5 A semen sample after thawing shall have at least 40 percent progressively motile spermatozoa.

6 TRANSPORTATION OF SEMEN

6.1 Authorization for the export and import of the semen shall be granted by the Ministry of Agriculture or by other competent organisation.

6.2 The quality of the semen before despatch shall comply with the details in the delivery documents (see the zoo-technical and veterinary certificates given in Annexes A and B, respectively).

6.3 Semen shall be transported in suitable containers disinfected in advance and filled with liquid nitrogen to at least two-thirds of their capacity at the time of expedition and assuring preservation of the frozen semen for at least 10 days.

6.4 The container should be properly packed for safe transportation. The lid itself being left free for normal movement to prevent the pressure being built up inside the container.

6.5 The container should have the addresses of the consigner and consignee of the semen. It should have the following information properly displayed:

'TOP', 'DO NOT TILT', 'HANDLE WITH CARE' AND 'NON-INFLAMMABLE NITROGEN'

ANNEX A (Clause 6.2)

PROFORMA FOR ZOO-TECHNICAL CERTIFICATE

A-1 CHARACTERISTICS OF BREEDING BULL

a) Identification

- i) Breed,
- ii) Name and number,
- iii) Date of birth,
- iv) Registration number,
- v) Blood group, if available, and
- vi) Authorization number of testing or approval for the use of the breeding bull.

b) Genealogy

- i) Names and numbers of parents with indication of the results of performance control of ancestors (milk yield and the fat content calculated in accordance with IS 6692 : 1972) and/or of the meat quality (see Table 1), and
- ii) Number of descendants registered.

c) Zoo-technical Value

- i) Results of control,
- ii) Individual control,

- iii) Testing on descendants,
- iv) Conformation of the bull, and
- v) Number of first artificial inseminations, used for the calculation.

A-2 NAME AND ADDRESS OF THE CENTRE (STATION) FOR ARTIFICIAL INSEMINATION

A-3 CHARACTERISTICS OF EXTENDED SEMEN

- a) Date(s) of the collection;
- b) Diluting medium used and degree of dilution;
- c) Addition of other products and their quantity; and
- d) Minimum number of spermatozoa.

A-4 CHARACTERISTICS OF EXPEDITION

- a) Presentation of doses : straws;
- b) Quantity : volume of dose;

Table 1 Genealogy

[Clause A-1 (b)]

Sire : Name and registration number Results of performance control	Sire of sire : Name and registration number Results of performance control
	Dam of sire : Name and registration number Results of performance control
Dam : Name and registration number Results of performance control	Sire of Dam : Name and registration number Results of performance control
	Dam of Dam : Name and registration number Results of performance control

- | | |
|--|---|
| c) Identification: | A-5 NAME AND ADDRESS OF THE
DISPATCHING CENTRE (STATION) |
| i) Colour | |
| ii) Marking | A-6 REGISTERED OFFICE AND ADDRESS
OF THE CONSIGNEE |
| d) Minimum number of live spermatozoa per
dose; | |
| e) Recommended method of thawing; | A-7 AUTHENTICATION OF THE ZOO-
TECHNICAL CERTIFICATES — (Approval
by the Appropriate Authorities). |
| f) Type of container (vessel) volume; | |
| g) Identification of the dose. | |

ANNEX B

(Clause 6.2)

PROFORMA FOR VETERINARY CERTIFICATE**B-1 GENERAL VETERINARY CONDITION***Example:*

Jhones disease
Blue tongue

- a) Name of Country/state;
b) For the last 12 months, the country has
been free from the following bovine
diseases:

Example:

Jhones disease
Blue tongue

- c) For the last 12 months, the collecting
centre has been free from the following
bovine diseases in the radii of 30 and
100 km.

Example:

Foot-and-mouth disease of exotic type
(SAT) within a radius of 100 km of the
centre.

Foot-and-mouth disease of classic type
within a radius of 30 km of the centre.

**B-2 GENERAL SANITARY STATE OF
ANIMALS IN THE CENTRE (STATION)
FOR THE PRODUCTION OF SEMEN**

Results of the following analysis:

<i>Disease</i>	<i>Type of Analysis</i>	<i>Date of Analysis</i>	<i>Results</i>
Brucellosis			
Tuberculosis			
Jhones disease			
Blue tongue			
Foot-and-mouth disease			

**B-3 VETERINARY STATE OF BREEDING
BULLS WHOSE SEMEN IS TO BE
COLLECTED**

(Results of the following analysis) :

<i>Disease</i>	<i>Type of Analysis</i>	<i>Date of Analysis</i>	<i>Results</i>
Brucellosis			
Tuberculosis			
Jhones disease			
Blue tongue			
Foot-and-mouth disease			

NOTES

1 The specification of the importing country is to
be met for export.

2 Regular testing for the occurrence of the disease
should be made thrice annually or at least once
every six months.

**B-4 SANITARY STATE OF PARENTS OF
THE BULL AND/OR OF ITS STOCK AND/OR
OF ITS PROGENITORS***Example:*

Breeding bulls providing the semen are the
descendants of parents free from tuber-
culosis, brucellosis, leucosis, etc.

**B-5 NAME AND ADDRESS OF THE
DISPATCHING CENTRE (STATION)****B-6 NAME AND ADDRESS OF THE
CONSIGNEE****B-7 AUTHENTICATION OF THE
VETERINARY CERTIFICATE**

Approval by the appropriate authorities

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Doc : No. FAD 41 (3069)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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