Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 1165 (2002): Milk Powder (Bi-lingual) [FAD 19: Dairy Products and Equipment]

“जान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartrhari—Nitisatakam
“Knowledge is such a treasure which cannot be stolen”
Indian Standard
MILK POWDER — SPECIFICATION
(Fifth Revision)
FOREWORD

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

The milk production in our country is characterized by seasonal variations and drying of milk, an important method of preservation, facilitates later consumption during the lean season. The dried milk products, thus, have become an essential part of the chain between the producer and the consumer.

This Indian Standard was first published in 1957 and subsequently revised in 1967, 1975, 1986 and 1992. The standard is being revised in order to:

a) Harmonize the presentation,
b) Update the referred standards, and
c) Update the methods of tests.

(Continued on third cover)
Indian Standard
MILK POWDER — SPECIFICATION
(Fifth Revision)

1 SCOPE
This standard prescribes the requirements, methods of sampling and test for milk powder.

2 REFERENCES
The Indian Standards listed below contain provisions, which through reference in this text constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<table>
<thead>
<tr>
<th>IS No.</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>323 : 1959</td>
<td>Specification for rectified spirit</td>
</tr>
<tr>
<td>1224 (Part 2) : 1997</td>
<td>Determination of milk fat by the Gerber method: Part 2 Milk products</td>
</tr>
<tr>
<td>2491 : 1998</td>
<td>Food hygiene — General principles — Code of practice (second revision)</td>
</tr>
<tr>
<td>4905 : 1968</td>
<td>Methods for random sampling</td>
</tr>
<tr>
<td>5401 : 1969</td>
<td>Methods for detection and estimation of coliform bacteria in foodstuffs</td>
</tr>
<tr>
<td>5402 : 1969</td>
<td>Methods for plate count of bacteria in foodstuffs</td>
</tr>
<tr>
<td>5887</td>
<td>Methods for detection of bacteria responsible for food poisoning:</td>
</tr>
<tr>
<td>(Part 2) : 1976</td>
<td>Isolation, identification and enumeration of Staphylococcus Aureus and fecal streptococci (first revision)</td>
</tr>
<tr>
<td>(Part 3) : 1993</td>
<td>General guidance on method for detection of Salmonella (second revision)</td>
</tr>
<tr>
<td>(Part 7) : 1999</td>
<td>General method for isolation and identification of Shigella</td>
</tr>
</tbody>
</table>

1 विषय क्षेत्र
यह मानक दूध पाउडर की अपेक्षाएँ, परीक्षण की विधि और दूध पाउडर के नमूने तैयार करने का वर्णन करता है।

2 संदर्भ
निम्नलिखित भारतीय मानकों में ऐसे प्रबन्ध हैं, जिनका इस मानक की पाठ सामग्री में संदर्भ है। अतः ये प्रबन्ध इस मानक के भी प्रबन्ध हैं। इस मानक के प्रकार के समय नीचे लिए गए संस्करण लेख थे। सभी मानकों का पुनरीक्षण किया जा सकता है इसलिए इस मानक के आधार पर समझौते करने वाले सभी पक्षों को प्रभाव दिया जाता है कि वे नीचे दशा ए गए मानकों के नवीनतम संस्करणों को लागू करने की संभावना के बारे में पता लगाएँ:

आईआईएस संख्या शीर्षक
323 : 1959 परिशोधित स्पीरिट की विशिष्टि
1224 (भाग 2) : जबरं विधि से दूध में वसा का निर्धारण:
1997 भाग 2 दूध उत्पाद
2491 : 1998 खाद्य स्वच्छता — सामायिक सिद्धांत — रीति सौंहिता (दृष्टांक पुनरीक्षण)
4905 : 1968 नमूना लेने की यादृच्छिक विधियाँ
5401 : 1969 खाद्य सामग्रियों में कोलिकामें बैक्टीरिया की पहचान और आकलन की विधियाँ
5402 : 1969 खाद्य सामग्रियों में बैक्टीरिया की प्लेट गणना की विधियाँ
5857 खाद्य विश्वास के जिम्मेदार बैक्टीरिया के पता लगाने की विधियाँ
(भाग 2) : 1976 स्टॉफ्काइलोकाक्स में आरैयस और फॉकल स्ट्रीप्टक्लोकाक्स को अलग करना, पहचान और गणना (फहराए पुनरीक्षण)
(भाग 3) : 1993 साल्मोनेला की पहचान की विधि के लिए, सामायिक दिशा निर्देश (दृष्टांक पुनरीक्षण)
(भाग 7) : 1999 शिगेला को अलग करने और उसकी पहचान की सामायिक विधि
3 REQUIREMENTS

3.1 Description

This material shall be white or white with greenish tinge or light cream in colour. It shall be free from lumps except those that break up readily under slight pressure and shall be reasonably free from scorched particles. It shall also be free from extraneous matter.

3.2 Flavour and Taste

The flavour of the product or of the reconstituted milk shall be pleasant and clean. It shall be free from off flavours (may have slightly cooked but not the burnt flavour). It is recommended that the flavour and taste may be judged on the basis of their sensory characteristics (see IS 10030).

3.3 Hygienic Conditions

The product shall be manufactured and packed under hygienic conditions as per IS 2491.

3.4 Milk Powder

3.4.1 It shall be the material prepared by spray drying of standardized milk obtained from fresh cow milk or buffalo milk or a mixture thereof (the standardized milk shall be prepared by adjustment of suitably processed milk solids). This standardized milk shall be free from additives. All processing and drying should be carried out in a manner that minimizes the loss of nutritive value, particularly protein quality.
3.4.2 For improving the dispersability of the product, lecithin to a maximum extent of 0.5 percent by mass may be added and declared on the label as per the PFA Rules.

3.4.3 The product may contain added calcium chloride, citric acid and sodium citrate, sodium salts of orthophosphoric acid and polyphosphoric acid (as linear phosphate), not exceeding 0.3 percent by mass of the finished product. Such additions need not be declared on the label.

3.4.4 Milk powder may contain a maximum of 0.01 percent of butylated hydroxyanisole (BHA) by mass of the finished product.

3.4.5 The product shall also conform to the requirements given in Table 1.

3.5 Microbiological Requirements

3.5.1 Bacterial Count

The bacterial count per gram of the product shall not be more than 40 000 when determined according to the method prescribed in IS 5402.

Table 1 Compositional Specification for Milk Powder

<table>
<thead>
<tr>
<th>Sl No. (1)</th>
<th>Characteristic (2)</th>
<th>Requirement (3)</th>
<th>Method of Test, Ref to</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Moisture, percent by mass, $M_{\alpha}$</td>
<td>4.0</td>
<td>IS 11623</td>
</tr>
<tr>
<td>ii)</td>
<td>Total solids, percent by mass, $M_{\min}$</td>
<td>96.0</td>
<td>See Note</td>
</tr>
<tr>
<td>iii)</td>
<td>Fat, percent by mass, $M_{\min}$</td>
<td>26.0</td>
<td>IS 11721 for reference purpose and 5 of IS 1224 (Part 2) for routine purposes</td>
</tr>
<tr>
<td>iv)</td>
<td>Insolubility index, $M_{\alpha}$</td>
<td>2.0 ml</td>
<td>IS 12759</td>
</tr>
<tr>
<td>v)</td>
<td>Total ash (on dry basis), percent by mass, $M_{\alpha}$</td>
<td>7.3</td>
<td>Annex A</td>
</tr>
<tr>
<td>vi)</td>
<td>Titratable acidity (lactic acid), percent by mass, $M_{\alpha}$</td>
<td>1.2</td>
<td>Annex B</td>
</tr>
</tbody>
</table>

NOTE: — From the mass of residue as obtained in the method prescribed in IS 11623 calculate the percentage of total solids.

**Table 1**

<table>
<thead>
<tr>
<th>क्रम संख्या</th>
<th>विशेषांक (२)</th>
<th>अनुशासन (३)</th>
<th>परीक्षा की विधि, संदर्भ देखें (४)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) क्षेत्र, प्रतिशत टॉटल मात्रा में, अधिकतम</td>
<td>40</td>
<td>आईएस 11623</td>
<td></td>
</tr>
<tr>
<td>ii) क्षेत्र, प्रतिशत टॉटल में, नूनभागम</td>
<td>96.0</td>
<td>नोट देखें</td>
<td></td>
</tr>
<tr>
<td>iii) क्षेत्र, प्रतिशत टॉटल में, नूनभागम</td>
<td>26.0</td>
<td>संदर्भ के लिए, आईएस 11721 और नविनित्त उद्देश्यों के लिए आईएस 1224 (भाग २) का ५</td>
<td></td>
</tr>
<tr>
<td>iv) अनुप्रयोगिक नूनभागम, अधिकतम</td>
<td>20 मिली.</td>
<td>आईएस 12759</td>
<td></td>
</tr>
<tr>
<td>v) क्षेत्र, प्रतिशत टॉटल में, अधिकतम</td>
<td>7.3</td>
<td>अनुप्रयोगिक विधि</td>
<td></td>
</tr>
<tr>
<td>vi) अनुप्रयोगिक अनुप्रयोगिक (लीकर्ट अनुप्रयोगिक), प्रतिशत टॉटल में, अधिकतम</td>
<td>1.2</td>
<td>अनुप्रयोगिक विधि</td>
<td></td>
</tr>
</tbody>
</table>

नोट — आईएस 11623 में विशेष विधि के तहत अवशेष के टॉटल में क्षेत्र की प्रतिशत की गणना करें।
3.5.2 Coliform Count

The coliform bacteria shall be absent in 0.1 g of the product when determined according to the method prescribed in IS 5401.

3.5.3 Staphylococcus Aureus

The coagulase positive *staphylococcus aureus* shall be absent in 0.1 g of the product when tested as per the procedure described in IS 5887 (Part 2).

3.5.4 Salmonella

*Salmonella* shall be absent in 25 g of the product when tested as per the procedure described in IS 5887 (Part 3).

3.5.5 Shigella

*Shigella* shall be absent in 25 g of the product when tested as per the procedure described in IS 5887 (Part 7).

NOTE — The requirements of *Salmonella* and *Shigella* shall be tested in laboratory situated away from production area or in a recognized outside laboratory.

4 PACKING

4.1 Retail Packing

The milk powder shall be packed in clean and sound containers (see IS 11078) or in a food grade flexible pack made from a film or combination of any of the substrates made of board paper, polyethylene, polyester metallized film or aluminium foil in such a way as to protect it from deterioration. The product shall be packed in nitrogen, carbon dioxide or a mixture therefore. The packages shall be hermetically sealed. In case of plastic material only food grade plastic (see IS 10171) shall be used.

NOTES

1 For food grade plastic material, Rule 49(5) (v) of PFA Rules should also be referred.
2 In the case of flexible pack, the following information shall be marked on the label. ‘Once opened, the entire product content should immediately be placed in a clean air tight container’.

4.1.1 The product shall be packed in quantities as stipulated under the provisions of the Standards of Weights and Measures (Packaged Commodities) Rules, 1977.

4.1.2 Further encasing of individual retail packs may be carried out in bags/cartons of adequate strength as outlined in 4.2.

4.2 Bulk Packing

4.2.1 The product may be packed in quantities of 25

3.5.2 कोलीफाम की गणना

आईएस 5401 में विभिन्न प्रक्रिया के तहत निर्धारण के समय उत्पाद में 0.1 ग्राम मात्रा में कोलीफाम अनुपस्थित होनी चाहिए।

3.5.3 स्टाफ्फिकाउक्स अरूरस

आईएस 5887 (भाग 2) में विभिन्न प्रक्रिया के तहत परीक्षण के समय उत्पाद का 0.1 ग्राम की मात्रा में कोएग्लोस फांटिक स्टाफ्फिकाउक्स अरूरस अनुपस्थित होनी चाहिए।

3.5.4 साल्मोनेला

आईएस 5887 (भाग 3) में विभिन्न विभिन्न प्रक्रिया के तहत उत्पाद का परीक्षण करने समय 25 ग्राम की मात्रा में साल्मोनेला अनुपस्थित होनी चाहिए।

3.5.5 शिगेला

आईएस 5887 (भाग 7) में विभिन्न प्रक्रिया के तहत उत्पाद का परीक्षण करने समय 25 ग्राम की मात्रा में शिगेला अनुपस्थित होनी चाहिए।

नोट — साल्मोनेला और शिगेला का परीक्षण उत्पादन क्षेत्र से बाहर स्थित एक प्रयोगशाला या किसी अन्य वातावरण में करना चाहिए।

4 पैकिंग

4.1 खुदरा पैकिंग

दूध पात्र की पैकिंग स्वच्छ और मजबूत कंटेनरों (पात्र) में की जानी चाहिए (देखें आईएस 11078) या लचीले पैक खाद्य श्रेणी के फिल्म या बोर्ड, कागज, पलाईथिलीन, पलाईस्टर मेटलाइड, फिल्म या एल्यूमीनियम प्लाइल के संयोजन के समेट से इस प्रकार होनी चाहिए कि क्षारण से इसकी रक्षा हो। उत्पाद की पैकिंग नाइट्रोजन, काबन डाइऑक्साइड या उनके भिंति से होनी चाहिए। पैकेज बायोसिफील सीलिंग चाहिए। प्लास्टिक सामग्री के उपयोग में केवल खाद्य श्रेणी के लिए उपयुक्त प्लास्टिक या ही उपयोग किया जाना चाहिए (देखें आईएस 10171)।

नोट

1 खाद्य श्रेणी की प्लास्टिक सामग्री के लिए पीएफए नियम के नियम संख्या 49(5) (v) को देखें।
2 लचीले पैक के संबंध में निन तथ्य लेखांक लिखी होनी चाहिए।

4.1.1 बात और माय मात्रक अधिनियम (दिविश्यंद) नियम, 1977 के प्रतिवेदन के अनुसार विभिन्न मात्राओं में ही उत्पाद की पैकिंग की जानी चाहिए।

4.1.2 इसके बाद अवलम्बन में डब्बे के लिए एक खुदरा पैक को बैंग/कांटन में रखना चाहिए जिनमें 4.2 में दिये गये दिशा निर्देश के अनुसार पौष्टिक घटना होनी चाहिए।

4.2 भोक पैकिंग

4.2.1 खाद्य पदार्थ की श्रेणी की 0.05 मिमी. की न्यूनतम
kg bags of food grade polyethylene (see IS 10171) of minimum thickness 0.05 mm. The bags should be properly closed by tying with a string or a rubber band. The bags can also be heat sealed, but ensure that inner side of bag is free from milk powder particles. The bag shall be subsequently encased in any of the following:

a) Multi-walled Kraft paper, such as crepe Kraft paper bags of not less than 80 GSM (g/m²) grade lined with hessian cloth having a mass of 270 GSM (g/m²) and having two inner layers of plain Kraft paper of not less than 80 GSM (g/m²) grade;

b) Packs made out of 80 GSM (g/m²) Kraft paper sandwich laminated to high density polyethylene woven fabric having construction as given in Annex A of IS 8069 with 20 GSM (g/m²) polyethylene; and

c) Any other newer packaging as alternative system provided these have been tested for strength, air-permeability, etc, by a recognized institution and found equivalent to the material specified in 4.2(a) and (b) above. The material coming in direct contact with the product shall be of food grade.

4.2.2 The bags meant for reconstitution shall be stored below 20°C and a statement ‘Not for direct consumption’ but for ‘Reconstitution only’ shall be made on the package along with the date of manufacture. However, in case the moisture of these bags in maintained below 3.5 percent, the bags need not be stored below 20°C. Such bags shall have to be consumed within five months of their date of manufacture and this shall be given in the form of expiry date.

5 MARKING

5.1 The package shall bear legibly and indelibly the following information:

a) Name of the material and brand name, if any;
b) Name and address of the manufacturer;
c) Type of material;
d) Batch or code number;
e) Process of drying;
f) Month and year of manufacturing or packing;
g) Net mass;
h) Directions for storage;

j) Best for consumption up to ……… (month and year in capital letters);

मोटाई वाले पालिका भित्ती (देखें आईएस 10171) के 25 किलोग्राम को श्रमला के बैंग में उत्त पैकिंग को जानकारी चाहिए। बैंग को समृद्धता तलाव से तार या रेड बैंग से बद चिह्नित करना चाहिए। बैंगों को उत्त और सीलर्ड किया जा सकता है तब तक यह सूचना चाहिए कि बैंग का भौतिक निर्यात दुप्पुर के कारण के संदर्भ में न आए। इसके बाद बैंग को निम्न विरासतों से आवश्यक रूप से रखा जाना चाहिए:

क) कीप्र क्राफ्ट जैसे बहुतरंगी क्राफ्ट पेपर के बैंग जो 80 जीएसएम (ग्राम/मीटर) से कम के न होंगे 270 जीएसएम (ग्राम/मीटर) के जूता या डाट के कपड़े से टेक लाहौं और जो 80 जीएसएम (ग्राम/मीटर) से न कम के दो प्लेन ब्राफ्ट पेपर के दोहरे भौतिक तरीके से बालें होंगे;

ख) 80 जीएसएम (ग्राम/मीटर) क्राफ्ट पेपर से बने पैक जो कोई भी नयी पैकेजिंग को श्रमला, बायबु पराम्परियता आदि किसी मान्यता प्राप्त संस्था से जूती परवरी और उपर 4.2(क) तथा (ख) में दी गई विशेषता समाधान के समस्त हो।

4.2.2 पुनर्भोजन के उद्देश्य वाली बैंगलियों (बैंग) को 20°से से कम तापमान पर प्रभावित किया जाना चाहिए और यह भूलना लिखनी होती है। 'पुनर्व्याप्ति उपयोग के लिए नहीं' के तरीके 'पुनर्भोजन के लिए।' बहराहत, इन बैंगों में नयी नहीं का कारण 3.5 प्रतिशत से कम होना चाहिए और पहले तापमान 20°से से कम नहीं होने की आवश्यकता है। ऐसे बैंगों को उनकी निर्माण की तरीके से पूर्व माहेंगे को अदालत के भीतर उपयोग में लाना चाहिए और उस पर समाप्ति का तारीख भी लिखिये गयी होती है।

5 चिह्नीकरण

5.1 सभी पैकेजिंग में निम्न चर्चाएँ होती हैं और यदि रूप से व्यवहार होती चाहिए:

क) उत्त पैक का नाम और ब्रांड का नाम, यदि कोई हो तो;

ख) निम्नादि का नाम और पता;

ग) समाधान का प्रकार;

घ) पैक और कोड संख्या;

ड) उत्तर की प्रक्रिया;

ढ) उत्तर पैकेज के माहेंगे तथा वर्ष;

च) बुल्ल इंट्रमेशन;

ज) उत्तर के दिशा निर्देश;

फ) ………..,के से उपयोग के लिए सब्जलम (छापे के बाद अक्षरों में माहेंगे और वर्ष);
OR

Best for consumption within ……… (months) from the date of packing/manufacture;

k) Direction for reconstitution;
m) The contents of this container on reconstitution as per the directions have … litre(s) toned milk;
n) Information given under Note 2 of 4.1 if applicable; and

5.1.1 BIS Certification Marking

The product may also be marked with the Standard Mark.

5.1.2 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

Representative samples of the material shall be drawn and tested for conformity to this standard as prescribed in Annex C.
ANNEX A

DETERMINATION OF TOTAL ASH (ON DRY BASIS)

A-1 APPARATUS
A-1.1 Flat-Bottom Dish, of stainless steel, porcelain, silica or platinum.
A-1.2 Muffle Furnace, maintained at 550 ± 20°C.
A-1.3 Desiccator

A-2 PROCEDURE
A-2.1 Weigh accurately 3 g of the material in the dish, previously dried in an air-oven and weighed. Heat the dish gently on a flame at first and then strongly in a muffle furnace till grey ash results. Cool the dish in a desiccator and weigh. Heat the dish again for 30 min in the muffle furnace. Cool the dish in a desiccator and weigh. Repeat this process of heating for 30 min, cooling and weighing until the difference between two successive weighings is less than one milligram. Record the lowest mass.

A-3 CLACULATION
A-3.1 Total ash (on dry basis),

\[ \text{percent by mass} = \frac{100(M_2 - M)}{(100 - M_0)(M_1 - M)} \]

where

\[ M_2 = \text{mass, in g, of the dish with the ash;} \]
\[ M = \text{mass, in g, of the empty dish;} \]
\[ M_1 = \text{mass, in g, of the dish with the material taken for the test;} \]
\[ M_0 = \text{moisture, percent by mass, calculated as per IS 11623.} \]

K-1 उपकरण
K-1.1 चप्टी भाली, स्टेनलेस स्टील, पोर्सलाइन, सिलिका या प्लेटिनियम की भाली।
K-1.2 मक्कल फार्नेस का तापमान, 550 ± 20°सें.।
K-1.3 जल सौंदिन

K-2 प्रक्रिया
K-2.1 पहले से एयर ऑवन में सुखाई हुई और वजन की गयी भाली में सामग्री का 3 ग्राम वजन कर रखें। भाली को पहली धीरे ओवन पर पहले गाम करें और उसके बाद मक्कल फार्नेस में तेज ओवन पर तब तक गाम करें जब तक भूरे रंग का भास्कर (Ash) ना प्राप्त हो जाए। जल सौंदिन में भाली ठंडी रखें और वजन करें। भाली का एक बार फिर मक्कल फार्नेस में 30 मिनट तक गाम करें। भाली को जल सौंदिन में ठंडा रखें और वजन करें। 30 मिनट तक गाम करने का, ठंडा रखने और वजन करने की प्रक्रिया को तब तक तुरंत रहें जब तक दो लम्बी वजनों का अंतर एक मिलिग्राम से कम न हो जाए। सबसे अधिक वजन प्राप्त करें।

K-3 गणना (परिकलन)
K-3.1 कुल भास्कर (सामग्री आधार पर),

\[ \text{वजन प्राप्तित में} = \frac{100(M_2 - M)}{(100 - M_0)(M_1 - M)} \]

जहाँ

\[ M_2 = \text{भास्कर के साथ भाली का वजन, ग्राम में;} \]
\[ M = \text{भाली का वजन, ग्राम में;} \]
\[ M_1 = \text{सामग्री के साथ भाली का वजन, ग्राम में; तथा} \]
\[ M_0 = \text{तमी, वजन प्राप्तित में, आईएस 11623 के अनुसार परिकलित।} \]
ANNEX B
[Table 1, Sl No. (vi)]
DETERMINATION OF TITRABLE ACIDITY

B-1 APPARATUS

B-1.1 Burette, with soda-lime guard tube.
B-1.2 Porcelain Dishes, white hemispherical of approximately 60 ml capacity.
B-1.3 Stirring Rods, of glass, flattened at one end.
B-1.4 Pipettes, to deliver 10 ml and 1 ml.

B-2 REAGENTS

B-2.1 Standard Sodium Hydroxide Solution, 0.1 N
Prepare a concentrated stock solution of sodium hydroxide (sticks or pellets) and water in a flask. Tightly stopper the flask with a rubber bung and allow any insoluble sodium carbonate to settle down for 3 to 4 days.

B-2.1.1 Use the clear supernatant liquid for preparing the standard 0.1 N solution. About 8 ml stock solution is required per litre of distilled water.

B-2.2 Phenolphthalein Indicator Solution
Dissolve one gram of phenolphthalein in 100 ml of rectified spirit (see IS 323). Add 0.1 N sodium hydroxide solution until one drop gives a faint pink colouration, dilute with distilled water to 200 ml.

B-2.3 Rosaniline Acetate Solution (Bench Solution)
Dilute 1 ml of the stock solution to 500 ml with a mixture of rectified spirit and distilled water in equal proportions by volume.

NOTE — The stock solution and the bench solution should be stored in dark-brown bottles securely with rubber bugs.

B-3 PROCEDURE

Weigh accurately about 1 g of the sample into each of the two porcelain dishes. Add 10 ml of boiling water to each dish and stir with the flat end of a glass rod until a perfectly smooth liquid is obtained. Cool to room temperature. Use the contents of one dish as a blank by
stirring in 2 ml of bench solution of rosaniline acetate. Add 1 ml of phenolphthalein indicator solution of the other dish followed by standard sodium hydroxide solution introduced drop by drop from the burette until by comparison the colour matches the point tint of the blank. Stir vigorously throughout. The time taken for the complete titration shall not exceed 20 seconds. The titration shall be preferably made in north light or under illumination from a day light lamp.

B-4 CALCULATION

Titratable acidity (as lactic acid), percent by mass

\[ = \frac{9AN}{M} \]

where

\( A = \) volume in ml of the standard sodium hydroxide required for titration,
\( N = \) normality of the standard sodium hydroxide solution, and
\( M = \) mass in g of milk powder taken for the test.

\( \text{AN} = \)

ANNEX C

(Clauses 6)

SAMPLING OF MILK POWDER

C-1 GENERAL REQUIREMENTS

C-1.0 In drawing, preparing, storing and handing samples, in addition to the following precautions and directions, those given in 4 and 13 of IS 11546 should, as far as possible, be observed.

C-1.1 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

C-1.2 The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample. The sample containers shall in addition be sterile when they are used for sample for bacteriological examination.
C-1.3 Each container shall be sealed air-tight after filling and marked with full details of sampling, batch or code number, name of the manufacturer and other important particulars of the consignments.

C-1.4 Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

C-2 SCALE OF SAMPLING

C-2.1 Lot

All the containers in a single consignment of same type of material, drawn from a single batch of manufacture and of same size shall constitute a lot. If the consignment is declared to consist of different batches of manufacture, the batches shall be marked separately and the group of containers in each batch shall constitute separate lots.

C-2.1.1 For ascertaining the conformity of material to the requirements of this specification, samples shall be tested from each lot separately.

C-2.2 The number of containers to be selected from the lot shall depend on the size of the lot, quantity of material in the container and shall be as given in Table 2.

<table>
<thead>
<tr>
<th>Number of Containers in the Lot</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>For tests other than microbiological tests</td>
<td>For microbiological tests</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Up to 100</td>
<td>3</td>
</tr>
<tr>
<td>101 to 300</td>
<td>5</td>
</tr>
<tr>
<td>301 to 500</td>
<td>7</td>
</tr>
<tr>
<td>501 and above</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Containers in the Lot</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>For tests other than microbiological tests</td>
<td>For microbiological tests</td>
</tr>
<tr>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Up to 50</td>
<td>2</td>
</tr>
<tr>
<td>51 to 100</td>
<td>3</td>
</tr>
<tr>
<td>101 to 300</td>
<td>4</td>
</tr>
<tr>
<td>301 and above</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>तालिका 2 नमूना लेने वाले पात्रों की संख्या</th>
<th>(खण्ड C-2.2 और C-3.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>लाट में पात्रों की संख्या</td>
<td>नमूने का आकार</td>
</tr>
<tr>
<td>निर्देशावली से इतर परीक्षण के लिए</td>
<td>सूचकांक</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>100 तक</td>
<td>3</td>
</tr>
<tr>
<td>101 से 300 तक</td>
<td>5</td>
</tr>
<tr>
<td>301 से 500 तक</td>
<td>7</td>
</tr>
<tr>
<td>501 और उससे अधिक के लिए</td>
<td>9</td>
</tr>
<tr>
<td>50 तक</td>
<td>2</td>
</tr>
<tr>
<td>51 से 100 तक</td>
<td>3</td>
</tr>
<tr>
<td>101 से 300 तक</td>
<td>4</td>
</tr>
<tr>
<td>301 और उससे अधिक के लिए</td>
<td>5</td>
</tr>
</tbody>
</table>
C-2.3 These containers shall be selected at random from the lot. In order to ensure the randomness of selection, procedure given in IS 4905 may be followed.

C-3 TEST SAMPLES AND REFEREE SAMPLES

C-3.1 Preparation of Individual Sample

Draw with a suitable sampling instrument approximately equal quantities of material from different parts of the same container till about 150 g of material is obtained. This shall be divided into three equal parts. Each part so obtained, shall constitute an individual sample representing the container and shall be transferred immediately to thoroughly clean and dry containers sealed airtight with the particulars given in C-1.3. The individual sample so obtained shall be divided into three sets in such a way that each set have a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

C-3.2 From the selected containers, select a sub-sample according to col 3 or col 6 of Table 2, as the case may be. Draw with a suitable sampling instrument which is sterile, at least 100 g of material and mix thoroughly under aseptic conditions to form sample of container for microbiological examination (for guidance and details, see 13.3.2 of IS 11546). Divide sample taking care not to bring any microbiological contamination in the material into three equal parts. Each part so obtained shall constitute a sample representing the container and shall be transferred immediately to thoroughly clean and dry containers sealed airtight with the particulars given in C-1.3. They shall be marked, in addition, with the words ‘For Microbiological Examination’. The samples so obtained shall be divided into three sets in such a way that each set has a sample representing each selected container. One of these sets shall be marked for the purchaser, another for the vendor and the third for the referee.

C-3.3 Reference Samples

Referee sample shall consist of a set of individual sample (see C-3.1), composite sample (see C-3.2) and a set of samples for microbiological examination (see C-3.3) marked for this purpose and shall bear the seals of the purchaser and the vendor. These shall be kept at a place as agreed to between the purchaser and the vendor so as to be used in case of a dispute between the two.

C-4 NUMBER OF TESTS

C-4.1 Tests for the determination of moisture, total solids, insolubility index, total ash and fat shall be conducted on each of the samples consisting a set of the sample.
C-4.2 Tests for flavour, odour and titratable acidity shall be conducted on the composite sample.

C-4.3 Tests for bacteriological requirements shall be conducted, on each of the samples constituting a set of test samples labelled with the words ‘For Microbiological Examination’.

C-5 CRITERIA FOR CONFORMITY

C-5.1 The lot shall be declared as conforming to all the requirements of the specification of C-5.1.1 and C-5.1.3 are satisfied.

C-5.1.1 The test results on each of the individual samples for determination of requirements given in C-4.1 shall satisfy the corresponding specification requirements.

C-5.1.2 The test results on the composite samples for flavour and odour and titratable acidity shall satisfy the corresponding specification requirements.

C-5.1.3 The test results for bacteriological specifications shall satisfy the corresponding requirements.

In case of dispute English version of this standard shall be authentic.
While formulating this standard due consideration has been given to the relevant rules prescribed by the Government of India under the Prevention of Food Adulteration Act, 1954 and the Rules, 1955 and Standards of Weights and Measures (Packaged Commodities) Rules, 1977. This standard is, however, subject to the restrictions imposed under these, wherever applicable.

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.
Bureau of Indian Standards

BIS is a statutory institution established under the Bureau of Indian Standards Act, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of ‘BIS Catalogue’ and ‘Standards : Monthly Additions’.

This Indian Standard has been developed from Doc No.: FAD 57 (934).

Amendments Issued Since Publication

<table>
<thead>
<tr>
<th>Amend No.</th>
<th>Date of Issue</th>
<th>Text Affected</th>
</tr>
</thead>
</table>

BUREAU OF INDIAN STANDARDS

Headquarters:
Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephone: 2323 0131, 2323 3375, 2323 9402  Website: www.bis.org.in

Regional Offices:

<table>
<thead>
<tr>
<th>Region</th>
<th>Address</th>
<th>Telephones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>Manak Bhavan, 9 Bahadur Shah Zafar Marg</td>
<td>2323 7617, 2323 3841</td>
</tr>
<tr>
<td></td>
<td>NEW DELHI 110002</td>
<td></td>
</tr>
<tr>
<td>Eastern</td>
<td>1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi</td>
<td>2337 8499, 2337 8561</td>
</tr>
<tr>
<td></td>
<td>KOLKATA 700054</td>
<td>2337 8626, 2337 9120</td>
</tr>
<tr>
<td>Northern</td>
<td>SCO 335-336, Sector 34-A, CHANDIGARH 160022</td>
<td>60 3843, 60 9285</td>
</tr>
<tr>
<td>Southern</td>
<td>C.I.T. Campus, IV Cross Road, CHENNAI 600113</td>
<td>2254 1216, 2254 1442</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2254 2519, 2254 2315</td>
</tr>
<tr>
<td>Western</td>
<td>Manakalaya, E9 MIDC, Marol, Andheri (East)</td>
<td>2832 9295, 2832 7858</td>
</tr>
<tr>
<td></td>
<td>MUMBAI 400093</td>
<td>2832 7891, 2832 7892</td>
</tr>
<tr>
<td>Branches</td>
<td>AHMEDABAD, BANGALORE, BHOPAL, BHUBANESHWAR, COIMBATORE, DEHRADUN, FARIDABAD, GHAZIABAD, GUWAHATI, HYDERABAD, JAIPUR, KANPUR, LUCKNOW, NAGPUR, PARWANOO, PATNA, PUNE, RAJKOT, THIRUVANANTHAPURAM, VISAKHAPATNAM.</td>
<td></td>
</tr>
</tbody>
</table>

Laser Typeset by Sunshine Graphics