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Indian Standard

SPECIFICATION FOR RUBBER, RAW, NATURAL

(Third Revision)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Indian Standard

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(*Continued on page* 7)

Indian Standard

SPECIFICATION FOR RUBBER, RAW, NATURAL

(Third Revision)

0. FOREWORD

0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 28 March 1986, after the draft finalized by the Rubber Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

0.2 This standard was originally published in 1968 and subsequently revised in 1975 and 1977. In this revision the ISNR 5 special grade is deleted and two new grades ISNR 3CV and ISNR 3L have been introduced. The permissible levels of volatile matter and nitrogen for all the grades have been slightly changed. ISNR 3L grade specifies a colour parameter also.

0.3 Indian Standard Natural Rubber is a technically specified form of natural rubber. Normally technical specification is applied to rubber produced in large factories with high output. Since such processing factories have high output, considerable bulking and blending possibilities exist there. So this form of natural rubber has better uniformity in properties. The rubber thus produced is not marketed as sheet or crepe, but as solid blocks.

0.4 The Committee intended to include acetone extract requirement in the specification but in the absence of necessary data regarding the variation in the quality of rubber, it has not been included.

0.5 In the formulation of this standard, considerable assistance has been derived from ISO 2000-1978 (E) Rubber, Natural (NR) — Specifications published by the International Organization for Standardization and SMR Bulletin No. 5, published by the Rubber Research Institute of Malaysia.

0.6 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements, methods of sampling and test for general purpose raw natural rubber produced from latex or scrap rubber from plantations.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 7503 (Part 1)-1974† shall apply.

3. GRADE

3.1 This standard prescribes six grades of natural rubber, namely, ISNR 3CV, ISNR 3L, ISNR 5, ISNR 10, ISNR 20 and ISNR 50 depending upon the chemical requirements given in Table 1.

4. REQUIREMENTS

4.1 Description — The bale of raw natural rubber shall be free from skim rubber and evident mould growth.

4.2 Chemical Requirements — The material shall comply with the requirements given in Table 1.

5. PACKING

5.1 The crumb rubber shall be packed in 25 or 50 kg bales. The material shall be wrapped in low density polyethylene sheets and shall be further wrapped as agreed to between the purchaser and the supplier (*see* IS : 5598-1986‡).

6. MARKING

6.1 Each bale of raw natural rubber shall be marked indelibly with grade of rubber; net mass of bale; name of the producer/estate, or trade-mark if any; batch number; and month and year of production.

*Rules for rounding off numerical values (*revised*).

†Glossary of terms used in rubber industry, Part 1.

‡Code of practice for bale coating, and marking of rubber (*first revision*).

TABLE 1 PHYSICAL AND CHEMICAL REQUIREMENTS FOR NATURAL RUBBER

(*Clauses* 3.1 *and* 4.2)

Sl No.	Characteristic	Requirements for						Method of Test, Ref to
		ISNR 3CV	ISNR 3L	ISNR 5	ISNR 10	ISNR 20	ISNR 50	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	Dirt content, percent by mass, *Max*	0·03	0·03	0·05	0·10	0·20	0·50	NR: 1 of IS : 3660 (Part 1)-1972*
ii)	Volatile matter, percent by mass, *Max*	0·80	0·80	0·80	0·80	0·80	0·80	NR: 2 of IS : 3660 (Part 1)-1972*
iii)	Ash, percent by mass, *Max*	0·50	0·50	0 60	0·75	1 00	1·50	NR: 3 of IS : 3660 (Part 1)-1972*
iv)	Nitrogen, percent by mass, *Max*	0·6	0·6	0·6	0·6	0 6	0·6	NR: 11 of IS : 3660 (Part 2)-1968†
v)	Initial plasticity	40±5	30(*Min*)	30(*Min*)	30(*Min*)	30(*Min*)	30(*Min*)	NR: 12‡ of IS : 3660 (Part 3)-1971§
vi)	Plasticity retention index (PRI), *Min*	60	60	60	50	40	30	NR: 13‖ of IS : 3660 (Part 3)-1971§
vii)	Colour (Lovibond scale) *Max*	—	6·0	—	—	—	—	NR: 14 of IS : 3660 (Part 4)-1979¶

*Methods of test for natural rubber, Part 1 (*under revision*).

†Methods of test for natural rubber, Part 2 (*under revision*).

‡In parallel plate plastimeter [as described in 3.1.1 of NR: 12 of IS : 3660 (Part 3)-1971] one platen of 10·0 mm diameter shall be used.

§Methods of test for natural rubber, Part 3 (*under revision*).

‖Temperature recovery of the oven and the inserted tray and dishes to within 1°C of the set temperature in a time not exceeding six minutes [in place of two minutes as described in 3.3 (b) of NR : 13 of IS : 3660 (Part 3)-1971] after insertion of load.

¶Methods of test for natural rubber, Part 4 (*under revision*).

6.2 The bales of raw natural rubber may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. SAMPLING AND CRITERIA FOR CONFORMITY

7.1 For purpose of ascertaining the conformity of the raw natural rubber in a consignment to this standard, the scale of sampling and criteria for conformity shall be as prescribed in IS : 5599-1970*.

8. TEST METHODS

8.1 Tests shall be carried out as prescribed in col 9 of Table 1.

*Methods for sampling of raw rubber.

(*Continued from page* 2)

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Definition
Force	newton	N	$1\ N = 1\ kg.m/s^2$
Energy	joule	J	$1\ J = 1\ N.m$
Power	watt	W	$1\ W = 1\ J/s$
Flux	weber	Wb	$1\ Wb = 1\ V.s$
Flux density	tesla	T	$1\ T = 1\ Wb/m^2$
Frequency	hertz	Hz	$1\ Hz = 1\ c/s\ (s^{-1})$
Electric conductance	siemens	S	$1\ S = 1\ A/V$
Electromotive force	volt	V	$1\ V = 1\ W/A$
Pressure, stress	pascal	Pa	$1\ Pa = 1\ N/m^2$

INDIAN STANDARDS INSTITUTION

The Indian Standards Institution (ISI), which started functioning in 1947, is the national standards organization for India. Its principal object is to prepare standards on national and international basis and promote their general adoption.

The overall control of ISI, which is run and financed jointly as a non-profit making body by the Government and private enterprise, is exercised by the General Council, composed of representatives of Central and State Governments; leading trade, scientific and technological organizations; and subscribing members. The Union Minister of Industry is the ex-officio President of ISI.

The present technical activity of ISI is carried out through 8 Division Councils for Agricultural and Food Products, Chemical, Civil Engineering, Consumer Products, Electrotechnical, Mechanical Engineering, Structural and Metals, and Textile. All technical work relating to the formulation and revision of standards is done by committees appointed by and under the direction of their respective Division Councils. These committees consist of experts drawn from manufacturing units, technical institutions, purchase organizations and other concerned bodies.

To make available benefits of Indian Standards to the common man, ISI has introduced its Certification Marks Scheme under the *Indian Standards Institution (Certification Marks) Act, 1952,* as amended by the *Amendment Act, 1961*. According to this Act, quality goods conforming to Indian Standards can carry the ISI Certification Mark. This Mark is a third-party guarantee of quality of marked goods. Licences to use the ISI Certification Mark are granted to manufacturers using reliable methods of quality control subject to overall inspection by ISI.

In the International field, ISI represents India on the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO and IEC respectively link 54 and 40 countries, and function through 118 and 58 technical committees; ISI participates in 83 technical committees of ISO and all the technical committees of IEC. The committees and subcommittees of IEC and ISO for which ISI holds the secretariat deal with: Electric Fans, Lac, Mica, Pictorial Markings for Handling of Goods, Liquid Flow Measurements in Open Channels, Procedures for Inter-conversion of Values, Spices and Condiments, and Stimulant Foods.