



# SLOVENSKI STANDARD

## SIST EN 3207:2001

01-januar-2001

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### **Aerospace series - Rubber compounds - Technical specification**

Aerospace series - Rubber compounds - Technical specification

Luft- und Raumfahrt - Kautschukmischungen - Technische Lieferbedingungen

Série aérospatiale - Matériaux caoutchouc - Spécification technique

**Ta slovenski standard je istoveten z: EN 3207:1998**

[SIST EN 3207:2001](https://standards.iteh.ai/catalog/standards/sist/664e76b5-fa86-4e9b-bd7c-088e309023a/sist-en-3207-2001)

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### **ICS:**

49.025.40 Guma in polimerni materiali Rubber and plastics

**SIST EN 3207:2001**

**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 3207

April 1998

ICS 49.025.40

Descriptors:

English version

Aerospace series - Rubber compounds - Technical specification

Série aérospatiale - Matériaux caoutchouc - Spécification  
technique

Luft- und Raumfahrt - Kautschukmischungen - Technische  
Lieferbedingungen

This European Standard was approved by CEN on 22 June 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

### Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has successively received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

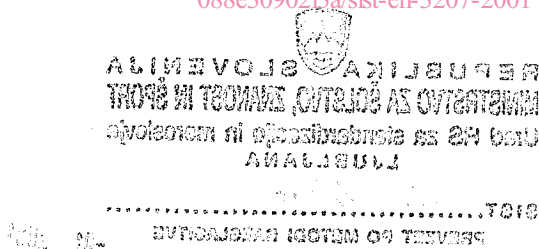
This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1998, and conflicting national standards shall be withdrawn at the latest by October 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## 1 Scope

This standard specifies the requirements for the qualification and batch acceptance of rubber compounds intended for the manufacture of aerospace parts.

## 2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 34-1	Rubber, vulcanized or thermoplastic - Determination of tear strength - Part 1: Trouser, angle and crescent test pieces
ISO 37	Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties
ISO 48	Rubber, vulcanized or thermoplastic - Determination of hardness (hardness between 10 IRHD and 100 IRHD)
ISO 188	Rubber, vulcanized - Accelerated ageing or heat-resistance tests
ISO 471	Rubber - Standard temperatures, humidities and times for the conditioning and testing of test pieces
ISO 815	Rubber, vulcanized or thermoplastic - Determination of compression set at ambient, elevated or low temperatures
ISO 1431-1	Rubber, vulcanized or thermoplastic - Resistance to ozone cracking - Part 1: Static strain test
ISO 1817	Rubber, vulcanized - Determination of the effect of liquids
ISO 2781	Rubber, vulcanized - Determination of density
ISO 2921	Rubber, vulcanized - Determination of low temperature characteristics - Temperature-retraction procedure (TR test)
ISO 3387	Rubber - Determination of crystallization effects by hardness measurements
ISO 6505	Rubber, vulcanized - Determination of adhesion to, and corrosion of, metals
ISO 9002	Quality systems - Model for quality assurance in production, installation and servicing
EN 2000	Aerospace series - Quality assurance - EN aerospace products - Approval of the quality system of manufacturers
EN 2899	Aerospace series - Vulcanized rubbers - Tests on the susceptibility to corrosion of metals in contact with vulcanized rubbers in a damp atmosphere <sup>1)</sup>
EN 3042	Aerospace series - Quality assurance - EN aerospace products - Qualification procedure
EN 10204	Metallic products - Types of inspection documents

1) In preparation at the date of publication of this standard

### 3 Definitions

For the purposes of this standard, the following definitions apply:

#### 3.1 Rubber compound

A rubber compound is a homogeneous mixture of all the constituents of a rubber formulation, e.g. rubber gumstock, curing agents, accelerators, fillers.

#### 3.2 Batch of rubber compound

A batch of rubber compound shall be rubber compound of definite composition which shall be identifiable, traceable and manufactured in a single production operation.

#### 3.3 Established manufacturer

An established manufacturer is a manufacturer who has manufactured products for the aerospace industry for a number of years to recognized national or company aerospace specifications.

This manufacturer shall have an approval in accordance with EN 2000 or ISO 9002 or other national or company standards issued by an authorized aerospace company.

#### 3.4 Established rubber compound

An established rubber compound is a rubber compound produced by an established manufacturer to an existing national or company aerospace specification which is accepted as an alternative to the EN material standard.

#### 3.5 New manufacturer

A new manufacturer is a manufacturer who has not previously manufactured rubber compounds for the aerospace industry and which has no approval from an authorized aerospace company. This manufacturer shall be approved in accordance with EN 2000.

#### 3.6 New rubber compound

A new rubber compound is a rubber compound produced by a specific manufacturer, but which has never been qualified by this manufacturer against an existing national or company aerospace specification which is accepted as an alternative to the EN material standard.

A new rubber compound shall be qualified in accordance with EN 3042 and this standard.

### 4 Requirements

#### 4.1 Constituents

The manufacturer of the rubber compound shall be responsible for the quality of the constituents of the mixture.

## 4.2 Mixing process

The manufacturer of the rubber compound shall prepare and comply with a comprehensive mixing process instruction schedule.

The reproducibility of the process shall be assured.

## 4.3 Test pieces

Test pieces shall be prepared from vulcanized sheets of appropriate sizes and thicknesses. Where necessary, test pieces may be moulded in a separate operation.

Details of the vulcanization conditions shall be given for all test pieces.

## 4.4 Conditioning and testing

The time interval between vulcanization and testing shall comply with ISO 471.

The conditioning and testing of the test pieces shall comply with ISO 471 at  $(23 \pm 2)$  °C and with ambient relative humidity.

## 5 Quality assurance

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### 5.1 Qualification

See EN 3042.

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An established rubber compound shall be qualified by a body mandated by the aerospace industry.

For qualification of an established rubber compound, one batch manufactured under production conditions shall be tested.

For qualification of a new rubber compound, a minimum of three batches manufactured under production conditions shall be tested.

Testing shall be carried out in accordance with the requirements of the appropriate material standard.

The test methods and number of test pieces are listed in tables 1 and 2.

### 5.2 Acceptance

Unless otherwise agreed between manufacturer and purchaser all tests identified in the material standard as batch acceptance tests shall be carried out. Nevertheless, the batches supplied shall fulfill all the requirements listed in the material standard.

The test methods and number of test pieces are listed in tables 1 and 2.

### 5.3 Certificate

For each batch of rubber compound, a certificate 3.1.B according to EN 10204 shall be produced (see example annex A), which shall contain the results of the acceptance tests. This certificate of conformity shall form part of the end product inspection and test report.

The certificate certifies the conformity of the properties of the rubber compound with the requirements of the material standard.

## 6 Storage of the rubber compound

The rubber compound shall be stored in such a way as to prevent any contamination or deterioration of the material.

The environmental conditions for storage (temperature, humidity, etc.) and the storage duration shall be suitable for the rubber compound.

## 7 Identification

All batches of rubber compound shall be identified as follows:

- reference of material standard;
- batch number;
- date of production;
- number of certificate.

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Table 1 - Test methods

Material standard line number	Properties	Test methods	min. number of test pieces	
			Qualification	Acceptance
1	Hardness	ISO 48 8 mm thick test pieces which may be made by superposing a thickness of 2 mm and of 6 mm. The 6 mm thick sheet shall absorb the pressure from the indenter.	3	3
2				
3	Density	ISO 2781	3	3
4				
5	Tensile strength	ISO 37 - Type 2 test pieces	5	5
6				
7	Elongation at break	ISO 37 - Type 2 test pieces	5	5
8				
9	Modulus at ..... % strain	ISO 37 - Type 2 test pieces	5	5
10				
11	Tear strength	ISO 34-1 - Method C	5	5
12				
13	Resistance to low temperatures TR10	ISO 2921 TR test specimen with length = 100 mm initial elongation = 50 %	3	3
14	Crystallization	ISO 3387	3	3
15	Compression set	ISO 815	3	3
16				
17	Ozone resistance	ISO 1431-1 Method A	3	3
18				
19	Corrosion and adhesion on metals in a dry atmosphere	ISO 6505	3	3
20	Corrosion and adhesion on metals in a damp atmosphere	EN 2899A	3	3
20.1				
20.2		EN 2899B		