

AUTOMOTIVE INDUSTRY STANDARD

**Specification for Oil Seals and
'O' Rings for Automotive Application**

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ON BEHALF OF
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER
CENTRAL MOTOR VEHICLES RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY
MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)
GOVERNMENT OF INDIA

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Status chart of the standard to be used by the purchaser
for updating the record

Sr. No.	Corr- igenda.	Amend- ment	Revision	Date	Remark	Misc.

General Remarks :

INTRODUCTION

The Government of India felt the need for a permanent agency to expedite the publication of standards and development of test facilities in parallel when the work on the preparation of the standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the standard and commissioning of test facilities. To this end, the erstwhile Ministry of Surface Transport (MoST) has constituted a permanent Automotive Industry Standard Committee (AISC) vide order No. RT-11028/11/97-MVL dated September 15, 1997. The standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the Secretariat of the AIS Committee, has published this standard. For better dissemination of this information ARAI may publish this document on their Website.

The present automotive standard is prepared to provide requirements and methods of testing for oil seals and O-rings for automotive applications.

Considerable assistance has been taken from the following National / International Standards:

1.	IS:3400 (Part 1)	Methods of Test for Vulcanized Rubbers - Tensile Stress- Strain Properties
2.	IS:3400 (Part 10)	Methods of Test for Vulcanized Rubbers- Compression Set at Constant Strain
3.	IS:3400 (Part 22)	Methods of Test for Vulcanized Rubber-Chemical Analysis
4	ASTM D 2000	Standard Classification System for Rubber Products in Automotive Applications

The Automotive Industry Standards Committee (AISC) responsible for preparation of this standard is given in Annex : I.

Specification for Oil Seals and ‘O’ Rings for Automotive Application

1. SCOPE

This standard prescribes requirements and methods of testing for oil seals and O-rings for automotive applications.

2. APPLICATIONS

This specification is applicable for above materials used in automobiles.

3. REFERENCES

3.1.	ASTM D 297	Standard Test Methods for Rubber Products-Chemical Analysis
3.2.	ASTM D 1415	Standard Test Method for Rubber Property- International Hardness
3.3.	ASTM D 412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers–Tension
3.4.	ASTM D 471	Standard Test Method for Rubber Property - Effect of Liquids
3.5.	ASTM D 1414	Standard Test Methods for Rubber O-Rings
3.6.	ASTM D 395 Method B	Standard Test Methods for Rubber Property-Compression Set
3.7.	AIS-066	Guidelines for Analysis of Automotive Rubbers by Fourier Transform Infra-red Spectrometry (FTIR) and Thermogravimetry (TGA) Techniques

4. TESTS AND REQUIREMENTS

Sr. No.	Test Parameters	Test Method	Injector Seals	Water Pump Seals for Water Pump repair Kit	O-Rings for Water Pump repair Kit	Sealing Ring/O-ring for Air filter, Fuel filter, Lubricating Oil filter
1.	Visual Examination	-----	Shall be free from visual moulding defects	-Do-	-Do-	-Do-
2.	Type of Polymer	ASTM D 297, AIS-066	Natural/Synthetic rubber Meeting the requirements	-Do-	-Do-	-Do-
3.	Hardness, IRHD	ASTM D 1415	60-75	60-75	60-75	60-75
5.	* Tensile Strength, kg/cm ² , Min % Elongation at break, Min	ASTM D 412 ASTM D 1414	100 250	100 250	100 250	100 250
6.	Water resistance, 70 hours at 100°C a) Change in hardness, points b) Change in volume,%	ASTM D 471	NA	±10 ±5	±10 ±5	NA
7.	Fluid resistance, ASTM No.1 oil at 100°C for 70 hours, a) Change in hardness, points *b) Change in tensile strength, max,% *c) Change in ultimate elongation, max,% d) Change in volume,%	ASTM D 471	±10 -25 -45 -10 to +10	NA	NA	±10 -25 -45 -10 to +10
8.	** Compression set at 100°C For 22 hours, max, %	ASTM D 395, method B	25	25	25	25

* Tensile Strength and % Elongation at break to be carried out on standard test slabs made from the rubber compound having Composition identical to the corresponding item.

** Compression Set test to be carried out on standard test buttons made from the rubber compound having Composition identical to the corresponding item.

ANNEX : I
(See Introduction)
COMMITTEE COMPOSITION *
Automotive Industry Standards Committee

Chairman	
Shri B. Bhanot	Director The Automotive Research Association of India, Pune
Members	Representing
Shri S. K. Mishra	Ministry of Shipping, Road Transport & Highways, New Delhi
Shri Sushil Kumar	Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, New Delhi
Shri Chandan Saha	Office of the Development Commissioner, Small Scale Industries, Ministry of Small Scale Industries, New Delhi
Shri S. Dasgupta Shri P. C. Joshi (Alternate)	Bureau of Indian Standards, New Delhi
Shri A. S. Lakra Shri D. P. Saste (Alternate)	Central Institute of Road Transport, Pune
Director	Indian Institute of Petroleum, Dehra Dun
Dr. C. L. Dhamejani Dr. N. Karuppaiah (Alternate)	Vehicles Research & Development Establishment, Ahmednagar
Shri Dilip Chenoy	Society of Indian Automobile Manufacturers
Shri T.C. Gopalan Shri Ramakant Garg (Alternate)	Tractor Manufacturers Association, New Delhi
Shri K.N.D. Nambudiripad	Automotive Components Manufacturers Association New Delhi
Shri G. P. Banerji	Automotive Components Manufacturers Association New Delhi

Member Secretary
Mrs. Rashmi Urdhwareshe
Deputy Director
The Automotive Research Association of India, Pune

* At the time of approval of this Automotive Industry Standard (AIS)