Australian/New Zealand Standard™

Motor vehicles—Cargo barriers for occupant protection

Part 1: Cargo barriers

Standards Australia

STANDARDS NEW ZEALAND

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee ME-048, Restraint Systems in Vehicles. It was approved on behalf of the Council of Standards Australia on 30 April 2001 and on behalf of the Council of Standards New Zealand on 27 April 2001. It was published on 6 June 2001.

The following interests are represented on Committee ME-048:

ACROD
Australasian Faculty of Rehabilitation Medicine
Australian Automobile Association
Australian Industry Group
Consumers Federation of Australia
The Commercial Vehicle Industry Association of Australia
Federal Chamber of Automotive Industries, Australia
Federation of Automotive Products Manufacturers
Land Transport Safety Authority, New Zealand
Roads and Traffic Authority of N.S.W.

Additional interests participating in the preparation of this Standard:

Australia Post
Cargo barrier manufacturers
Design consultants and testing facilities
Motor vehicle manufacturers

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-048, Restraint Systems in Vehicles to supersede AS/NZS 4034.1:1998, *Motor vehicles—Cargo barriers for occupant protection*, Part 1: *Cargo barriers*.

The objective of this Standard is to provide manufacturers with the requirements for cargo barriers in order to protect the passengers and drivers, in the event of a collision, when seated in front of cargo in a motor vehicle.

This Standard includes technical, material and testing innovations to cargo barriers. Part 2 of this series of Standards covers the partial cargo barrier to suit hatchback vehicles.

This Standard has been revised to include cargo barriers fitted to utilities, behind the driver's cabin. Barriers may be required where cargo can be stacked in such a way that it can penetrate the rear window during a collision. This can occur readily with those vehicles which have been fitted with external canopies, where the cargo is unlikely to be secured to the vehicle tray.

This Standard is Part 1 of AS/NZS 4034, *Motor vehicles—Cargo barriers for occupant protection*, which is published in part as follows:

Part 1: Cargo barriers (this Standard)

Part 2: Partial cargo barriers

The rating system for cargo barriers allows the barriers to be rated in either a test frame or a body shell and quotes alternative methods for impact testing. Whichever test method is chosen, the procedure is based on a single mass of cargo placed against the rear face of the cargo barrier. However, research indicates that during collision cargo barriers of any nominal rating may be capable of restraining cargo comprising of a number of smaller items with a total mass exceeding the nominal rating.

Provision has been made for the concurrent use of child restraints. However, concern has been expressed that child restraint anchorages and associated upper anchorage straps, if located behind the cargo barrier, could be damaged by cargo shifting in the rear of the vehicle during a collision. Attention is drawn to the information to be supplied under Clause 1.7 to overcome this problem.

In this revision, a new Clause has been added for cargo barrier manufacturers to provide a hatch for occupants to egress from the vehicle, if the vehicle is not equipped with an internal rear compartment door release (refer to Clause 2.3).

The addition of a clause on 'Ageing' of polycarbonate type materials was considered by the Committee, but as little evidence was available on the type of materials used within the confines of a motor vehicle, it was agreed that no statement could be made at the stage of publishing. When the Standard is next revised there should be more field experience available on such products and a realistic performance requirement can be included.

In preparing this Standard, the German Standard DIN 75410-2, *Securing of cargo in road vehicles*, Part 2: *Securing of cargo in passenger cars, station wagons and multi-purpose cars* and AS/NZS 4384:1997, *Motor vehicles—Anchorages and anchor points for securing internal cargo* were taken into consideration.

Statements expressed in mandatory terms in footnotes to figures are deemed to be requirements of this Standard.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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FOREWORD

The range of performance requirements prescribed in this Standard is intended to decrease the impact hazard in an accident to occupants from cargo carried within the interior of vehicles.

Cargo-related injuries contribute significantly to the total of injuries sustained in traffic accidents. In the past, little attention was paid to the hazard from unrestrained cargo when it intruded into the driver and passenger zone during frontal impacts or when the vehicle overturned.

Accident statistics do not quantify the risk that cargo creates, however, a thorough analysis of accidents, with cargo in the cabin, demonstrates the urgent need for improved cargo retention. Initial crash test program results for vehicles containing unrestrained cargo were of concern because they highlighted the potential for severe injury to occupants and great damage to vehicles.

The cargo barriers specified in this Standard are marked with a rated single mass capacity for cargo positioned against the cargo barrier. The effect of NOT putting the cargo against the rear face of the cargo barrier can increase the impact energy that must be dissipated by a factor of up to five times.

The basis for the performance criteria set by this Standard is the restraint of the nominated capacity of cargo as a single mass during frontal impact of the vehicle as specified in *Australian Design Rules for Motor Vehicles and Trailers*. From the economic viewpoint, it is impractical to verify the performance of the cargo barrier by conducting this type of frontal impact test for motor vehicles. As an alternative, a dropweight test method is specified with equivalent energy dissipation levels.

The single mass rating simulates the most severe condition and if the cargo were to consist of a number of items of smaller mass, a far greater mass of cargo might be restrained by the cargo barrier. However, because of the variety of cargo compositions possible, the Standard does not specify a rating for such conditions. Deceleration levels generated in simulated crash impacts are of the order of 20*g*.

Two test methods, a drop test and a horizontal test with equivalent energy dissipation, are specified for the demonstration of compliance with the impact strength requirements.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies a range of performance requirements including load ratings for cargo barriers, and their design, installation and usage in vehicles for the protection of occupants.

This Standard does not cover the requirements for other types of dividing devices, such as dog nets, which are not intended specifically to reduce injuries caused by the cargo shifting under crash conditions.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2700	Colour Standards for general purposes
AS/NZS	
2272	Plywood—Marine
2596	Seat belt assemblies for motor vehicles
4034	Motor vehicles—Cargo barriers for occupant protection
4034.2	Part 2: Partial cargo barriers
4384	Motor vehicles—Anchorages and anchor points for securing internal cargo
SAE	
J850	Fixed Rigid Barrier Collision Tests
ADR*	
4	Seat belts
5	Anchorages for seat belts and child restraints
8	Safety glazing materials
34	Child restraint anchorages and child restraint anchor fittings
69	Full frontal impact occupant protection

1.3 DEFINITIONS

For the purpose of this Standard, the definitions given in the *Australian Design Rules for Motor Vehicles and Trailers* and those below apply.

NOTE: Where conflicting definitions occur, those below are to take precedence.

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* Australian Design Rules for Motor Vehicles and Trailers. This reference refers to the latest edition of the Design Rules.