



The way to go



Everything you need to know about
i-Size
the new EU standard for car seats safety

i-Size, the way to go



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A new safety standard for car seats used by children is soon to be the law within the European Union. This white paper, published by Dorel Europe, discusses why the new standard is necessary and how it aims to make child car seats five times as safe as before.

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Introduction on i-size

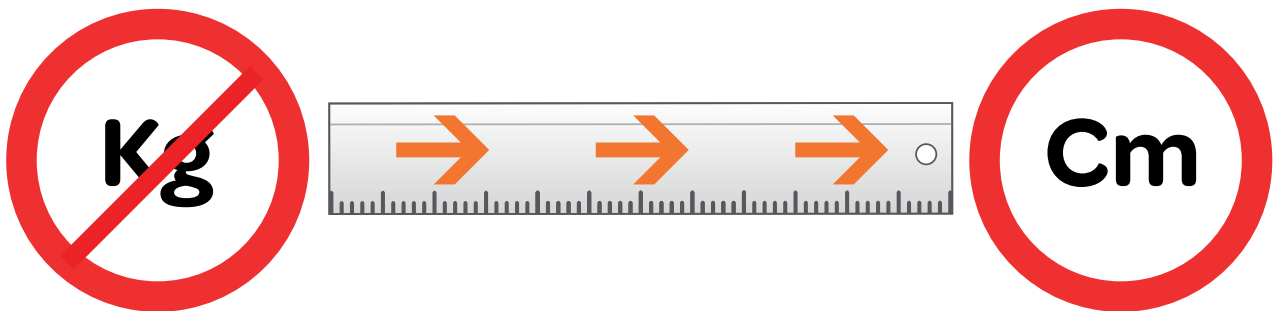
In the 1990s, research showed that child car seats were often installed incorrectly. Up to 80% of all installments contained some form of fault, of which 20% were critical. This prompted the development of a new and simpler installment system, one that does not make use of the car seat belt. The new system was named ISOFIX and it anchors the child seat rigidly to the car chassis with a simple place-and-click. From the early 2000s, new car models started to include the necessary ISOFIX anchor points, and a significant step was taken in the evolution of child safety in cars.

Since the introduction of ISOFIX, further research has identified other potential hazards in the use of car seats for children. Most notably, there is confusion among consumers when to change the first baby seat to a larger size. Often parents switch too soon from a Gr 0+ to a larger seat. Another issue is the premature switch from rearward- to forward-facing, which places the child in greater danger of head and neck injury during a collision. In addition, the current EU regulation for child car seats does not require any performance standards for side-impact collisions. This means that a ECER44/04 (current legislation) child car seat that does not provide any protection against side-impact collisions can still be officially approved and is legal to be used by consumers.

The new “i-Size” standard addresses all the issues above. It will help create greater usage of the safer ISOFIX anchorage system. It will also provide an easy to follow legislation for parents and retailers on when to up-size the child car seat and when to change from forward to rearward facing. By doing this it helps to ensure a full term of at least 15 months of rearward-facing seat usage and thereby helps reduce the number of neck and head injuries. In addition, the standard stipulates a minimum performance requirement for side-impact collisions, helping to ensure that all child car seats, approved under i-Size provide side-impact protection.

i-Size a new EU standard for increased child safety

- 1 Improved protection at higher forces for side & front impact and a much better protection of head and neck
- 2 Rearward faced travelling mandatory up to 15 months old
- 3 i-Size also requires Isofix, which has less chance of being incorrectly used than belted car seats
- 4 i-Size car seats will fit all Isofix cars
- 5 Length classification for easier choosing the right car seat, similar like clothing sizes



The importance of using and installing a car seat correctly

Car accidents are the leading cause of child deaths in Europe

10

Children are killed
on the road each week

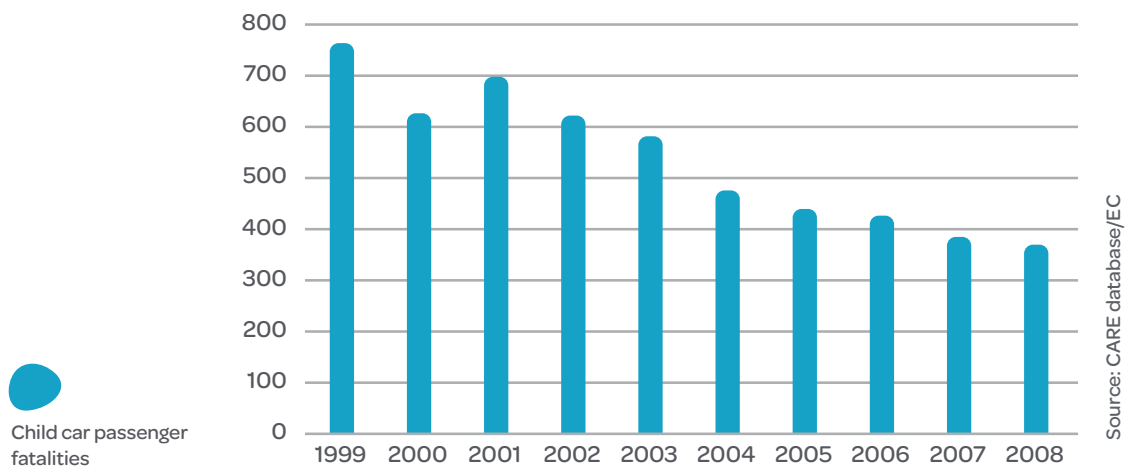
Around

1150

Children are injured on
the road every week

Source: WHO 2007, EEVC Working Group 18 Report Child Safety (Feb. 2006).
Research in 12 European Countries & Poland, Turkey, Czech Republic,
children age 14 and younger (2003)

Number of child fatalities in Europe

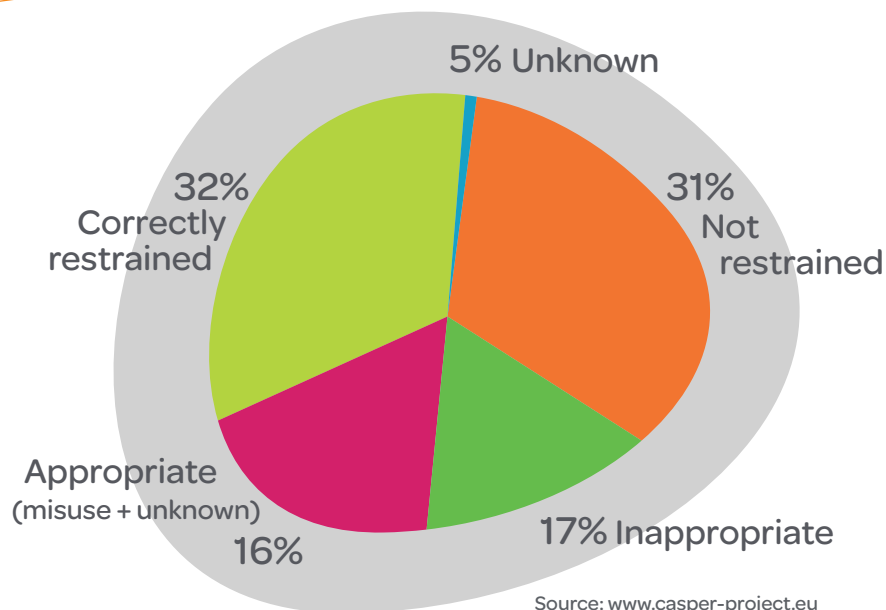


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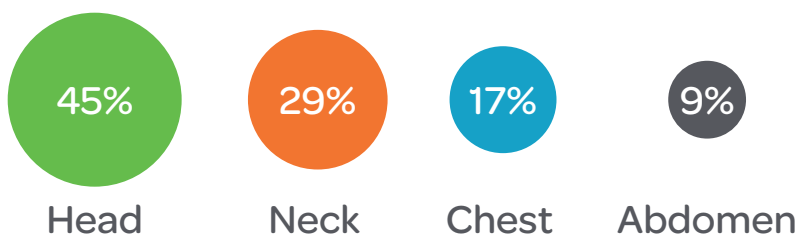
The importance of using and installing a car seat correctly

Number of deaths related to use of car seat (Casimir study)

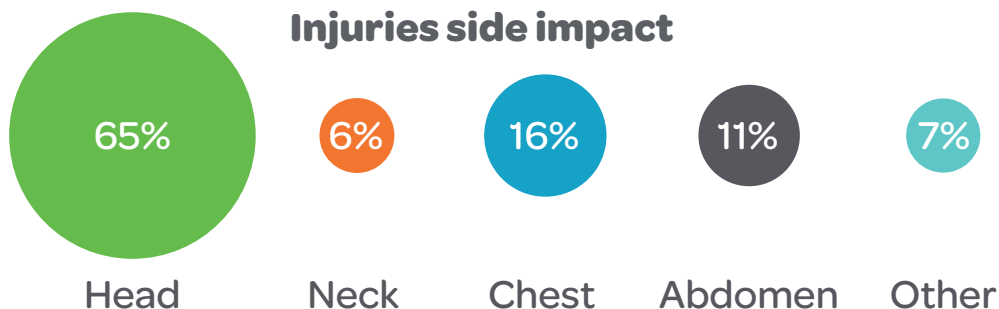


Injuries

Injuries front impact



Injuries side impact



Source: CREST: accident database - severe injuries in side impacts

Current safety standard

All child car seats currently sold within the EU must conform to the European Union's safety regulation ECER44/04. The 04 update of the regulation was introduced in June 2005 and it defines the minimum performance requirements for child seats that are fixed to the car via either the adult seat belt or via rigid anchorage points (ISOFIX) in the car chassis.

The ECER44/04 regulation also prescribes which type of child seat is allowed for which weight. The regulation states that babies that weigh less than 9 kg must not be placed in forward facing seats. If more than 9 kg, the child can be placed in a forward-facing seat.

However, it can be that the regulation description is unclear to parents and retailers, starting by the group classification that allows parents to install a child in a forward-facing from 9kg. Parents prefer their child to be forward facing and join the family as soon as possible. In addition, misconceptions about the correct size of child seats are causing parents to switch too soon (in terms of safety) from rearward-facing to a larger forward-facing child seat. This premature switch places the baby at potential unnecessary risk of sustaining head and neck injuries.

European ECER44/04 regulation

BIRTH	APPROX. 6 MONTHS	APPROX. 12 MONTHS	APPROX. 3.5yrs/4yrs
Weight	10kg	13kg	18kg
	Group 0		
	Group 0+		
		Group 1	
Traditional seating direction	Rearward	Forward	

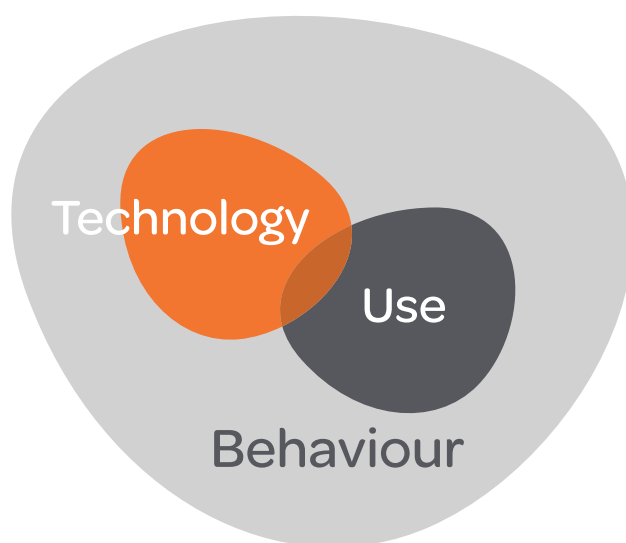
Why is a new standard necessary?

1. To minimize incorrect, dangerous installation

From 2000, some car manufacturers started including Isofix anchorage points in their new vehicles; since 2012 it is mandatory for all new vehicles. This means that currently about 60% of all cars on the road have these anchorage points. However, there are plenty of people who still use the seat belt fixation system, and thus incorrect, dangerous installation continues. Even worse, there are still a large number of parents who still don't know what the real benefits of ISOFIX are, even if they own a car which is equipped with this system. A recent UK survey found that 52% of all seat belt-fixed child seats were incorrectly installed, with 27% containing major faults*. We can therefore use the introduction of a new standard to create a preference for the simpler ISOFIX place-and-click system – by showing that it is simpler and safer. This will minimize the chance of incorrect and dangerous seat belt-type installation.

(*SOURCE: www.protectchildgb.org.uk)

**Child car safety
is more than a
good car seat**



27% *of parents are using and installing their car seat incorrect with significant safety faults*

Source: www.protectchildgb.org.uk

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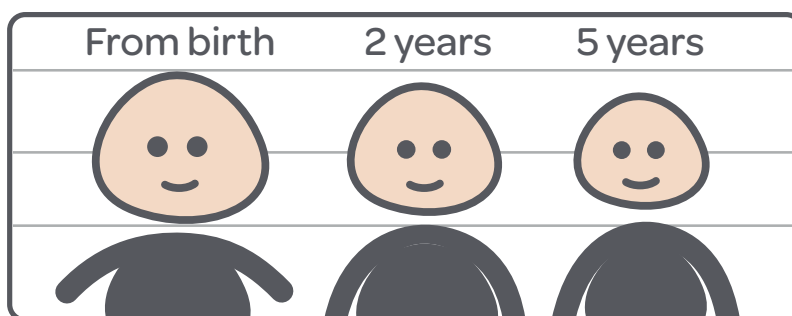


Why is a new regulation necessary?

2. To protect against head/neck injuries up to at least 15 months

The existing ECER44/04 regulation allows a forward-facing child seat when the baby is 9 kg. However, recent research confirm that babies are safer in a rearward-facing seat up to the age of at least 15 months. Only then is the child's neck strong enough to withstand the impulsive force of an average forward collision. That's why the new i-Size regulation clearly requires using rearward-facing seats for all babies up to the age of 15 months.

The baby's neck is not yet developed enough to support the relatively heavy head



3. To protect against side-impact collisions

Currently there are no performance criteria that must be fulfilled for side impact collisions in the ECE regulation. i.e. a child car seat does not need to offer any protection against side impact by law. But since a quarter of all collisions are side-impact this issue clearly needs to be addressed. Of course, some car seats, including our own range, are tested on more demanding criteria, including the side impact (testing by consumer and automotive groups by Dorel), but it's still something that is not mandatory by the ECER44/04 law.

Why is a new standard necessary?

4. To prevent up-sizing too early

Many parents move their baby to a bigger forward-facing seat too early – typically at around 9 months (Gr 1 from 9kg to 18kg). This is because the current regulation uses a weight-based categorisation that can be mistakenly understood to allow up-sizing at 9 months. The new regulation clearly states that parents can switch from Rearward Facing to Forward Facing only when the child is at least 15 months. Only then is the child's neck strong enough to withstand the impulsive force of an average forward collision.

5. To encourage the use of safer ISOFIX child seats

ISOFIX child seats are safer than current Gr 0+ and Gr 1 seats that use the adult seat belt. That's because the ISOFIX system makes it easier to install a child seat correctly, requiring only a place-and-click procedure, whereas the traditional seat belt fixation requires the correct routing of the seat belt webbing, with the associated chances of misuse.

6. It's our duty

It is socially, politically and ethically necessary to continually evolve higher safety regulation in all areas of life - especially when technical advances make it possible to do so. It has been almost a decade since the last major step forward in child car seats (i.e. ISOFIX), so it is now time to take the next major step forward.

Why doesn't the new regulation replace the old one?

The two regulations will run side by side for the foreseeable future. The “i-Size” regulation is exclusive to ISOFIX child seats. And the “ECER44” regulation will remain a norm for seatbelt-fixed seats and ISOFIX seats for a while.

At this moment the EU is encouraging a preference for ISOFIX-based, i-Size seats for children up to about 105 cm (about 4 years). In the future (about 5 years from now) we can expect that all newly introduced car seats will conform to the requirements of the new i-Size regulation.

This evolution is similar to that for adult seatbelts. Firstly, around 1980, all new cars had to be manufactured with seatbelts. Only when these cars became common on the road, did it become the law for passengers and drivers to wear those seatbelts.

How much will it improve the safety of child car seats?

It could be claimed that car seats according to the new standard provide five times as much safety as before. That's because the i-Size standard provides:

1. Better head and neck protection

Thanks to prescribed rearward-facing of 15 months instead of 9 kg.

2. Better side impact protection

Thanks to new specifications and testing criteria.

3. Minimised premature up-sizing

Thanks to the stricter requirement of 15 months old instead of 9kg, and also thanks to the use of length as the decision metric, i.e. parents will not mistakenly conclude that the child has outgrown its first child seat because the top of his head is sticking out of the seat, or because its feet are outside of the seat.

4. Dramatically fewer incorrect installations

Thanks to the simple place-and-click procedure of ISOFIX child seats, compared to the weaving procedure of seat belt installed child seats.

Dorel's contribution to the development of i-Size

As a long-time and leading manufacturer of child car seats, Dorel Europe has established an advanced Technical Centre in France. This centre encompasses everything necessary to conceive, build and test car seats in one ultra-modern, state-of-the-art facility. Its facility, along with Dorel's experience and expertise in child seat design and manufacture were deployed by the UNECE to help develop and define the new i-Size standard.

In particular, Dorel proposed and defined the ISOFIX support leg compatibility rules for car manufacturers. This support leg stops the child seat rotating forwards in the event of a collision.

Dorel also proposed a side impact test procedure which has been accepted European wide by other experts. Dorel also contributed to the new classification of products by child size (rather than weight) by supplying the results of a 3D measuring survey of > 2000 children from birth to 12 years old.

And, in addition to preparing a complete portfolio of i-Size compliant car seats, we are preparing industry stakeholders for the new regulation and are sharing our knowledge in order to ensure that consumers better understand the reasons for and benefits of the new i-Size regulation.

What experts have said about the new regulation

“Currently, parents tend to put children in a bigger car seat too soon. The seats are often installed incorrectly in the vehicle, and the children are not installed correctly in the child seat.”

Peter Broertjes

EC Legislative Officer Automotive Industry

“The i-Size regulation is a big step forward because car seat classification becomes more obvious to parents, they only need to know the length of their child, and every i-Size seat fits into every i-Size ready car. Moreover, i-Size requires that for rearward-facing transportation the age increases to fifteen months.”

Ronald Vroman

European Consumer Organizations – ANEC

“Previously, the test environment that was used was that for 1970s vehicles. The new test environment that the i-Size regulation will use is more representative of the vehicles we use today and is more like your modern car.”

Marianne Hynd

Former Head of child safety in vehicle

TRL Child Safety Center UK

“We are very pleased that we can see a much improved side impact protection. And of course the i-Size system will make it easier for consumers in the EU to use the correct child seat for the children.”

Peter Broertjes

EC Legislative Officer Automotive Industry



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