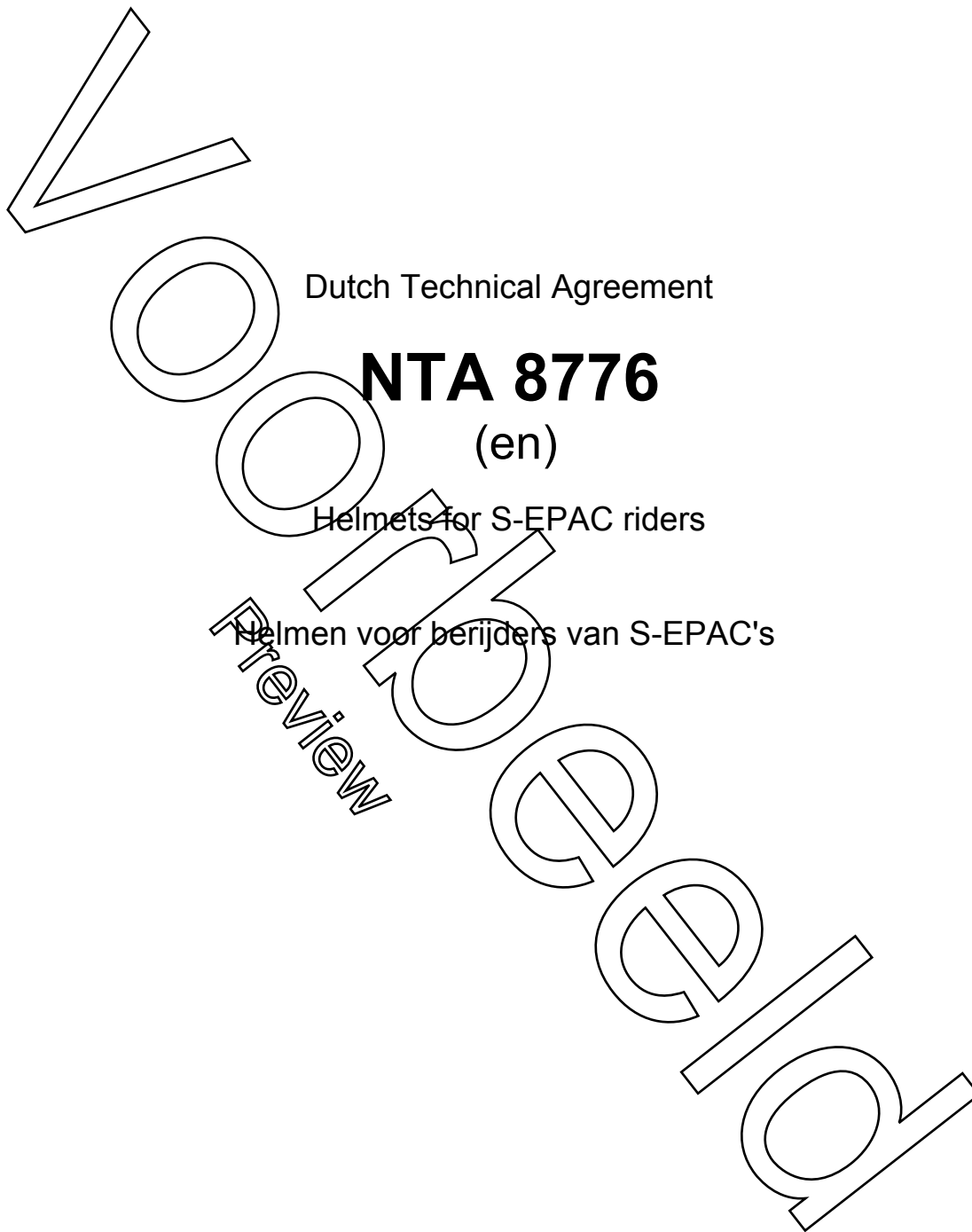


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Dutch Technical Agreement

NTA 8776

(en)

Helmets for S-EPAC riders

Helmen voor berijders van S-EPAC's

ICS 03.120.10; 11.020

August 2016

Nederlands voorwoord

Voor de in deze technische afspraak vermelde normatieve verwijzingen bestaan in Nederland de volgende equivalenten:

<u>vermelde norm</u>	<u>Nederlandse norm</u>	<u>titel</u>
EN 960:2006	NEN-EN 960:2006	Kunsthoeften voor het beproeven van veiligheidshelmen
ISO 6487	-	-

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Foreword

NTA 8776 contains requirements for helmets for use by high speed electrically power assisted bicycles (S-EPACs). The S-EPAC is a new mode of transportation and a new product for which the Dutch bicycle industry has identified the need to provide users with a suited helmet. In the new European regulation No 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles the S-EPAC will be classified as an L1e-B two-wheel moped. Although the electric power assistance will support the S-EPAC user up to the speed of 45 km/h, the S-EPAC will require a considerable pedaling effort from the user.

The challenge for the bicycle and helmet industry therefore was to come up with a set of requirements for an S-EPAC helmet that would provide an enhanced safety level compared to the EN 1078 bicycle helmet as a result of the higher speeds, but would likewise provide the same comfort level for use in physical effort. This means the helmet should be well ventilated and lightweight.

Together with the Dutch bicycle manufacturer's association (RAI), NEN performed a broad consultation of stakeholders both national and international and established a project group consisting out of S-EPAC manufacturers, helmet manufacturers, test institutes and the Dutch organization for applied scientific research (TNO). A full list of participants can be found below this foreword.

In order to meet the deadline of the implementation of European regulation No 168/2013, the project group made use of existing knowledge on head protection (a whole range of existing helmet standards, literature and testing results) and defined requirements that are at the limits of the current technical possibilities in the context of developing a ventilated, lightweight helmet with an increased safety level.

After initial meetings, research and tests the project group made the decision that the NTA for helmets for S-EPAC users should be a modified EN 1078 *Helmets for pedal cyclists and for users of skateboards and roller skates*. This choice was made for three reasons. EN 1078 comes closest to what the stakeholders in the project group envision as a suited S-EPAC helmet. Starting with EN 1078 allows the group to focus on requirements that need adaptation and starting with EN 1078 puts the NTA in the framework of the European standards from CEN/TC 158. Although this standard has been prepared as an NTA to meet the specific conditions of the Dutch market, the goal of the stakeholders in the project group is to propose this NTA as New Work Item Proposal within CEN/TC 133 to create a European standard.

Significant modifications compared to EN 1078 are related to the shock absorbing capacity and test area. The test area is enlarged in order to provide more protection of the temporal and occipital area of the head. For the impact test the fall velocities are increased.

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The text of this NTA has been established by the NEN project group "Helmets for S-EPAC cyclists". The project group consists of the following members:

ABUS

Accell Group

BBB Cycling

Belgian Road Safety Institute

Bell Sports

CONEBI

Gazelle

KASK

MET Helmets

Pon

RAI Vereniging

Riese & Müller

TASS International

TNO

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Introduction

The protection given by a helmet depends on the circumstances of the accident and wearing a helmet cannot always prevent death or long term disability.

A proportion of the energy of an impact is absorbed by the helmet, thereby reducing the force of the blow sustained by the head. The structure of the helmet may be damaged in absorbing this energy and any helmet that sustains a severe blow needs to be replaced even if damage is not apparent.

The project group which has prepared this standard realizes that it is of importance for the wearer's comfort and psychrometric performance that a helmet is ventilated. At the time this NTA was prepared, no standardized method for measuring the ventilating capacity of a helmet was recognized. For that reason no requirements concerning ventilation or heat transmission have been introduced. Manufacturers of helmets are urged to design their helmets to encourage a flow of air over the wearer's head.

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Helmets for S-EPAC riders

1 Scope

This Dutch Technical Agreement (Nederlandse Technische Afspraak) NTA specifies requirements and test methods for helmets worn by users of high speed electrically power assisted bicycles (S-EPACs).

Requirements and the corresponding methods of test are given for the following:

- construction, including field of vision;
- shock absorbing properties;
- retention system properties, including chin strap and fastening devices;
- marking and information.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 960:2006, *Headforms for use in the testing of protective helmets*

ISO 6487, *Road vehicles – Measurement techniques in impact tests – Instrumentation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 S-EPAC

cycle designed to pedal having a mass in running order ≤ 35 kg, fitted with pedals enabling the vehicle to be propelled solely by the rider's muscular leg power, and having an auxiliary propulsion power added to the driver's pedal power which is less than or equal to four times the actual pedal power and does not exceed 4 000 W, whereby the output of the auxiliary propulsion is cut off at a vehicle speed ≤ 45 km/h

Note 1 to entry The S-EPAC is classified as vehicle category L1e-B in EU regulation No 168/2013. The defining requirements for the S-EPAC is found in Commission Delegated Regulation (EU) No 3/2014 and subject to changes made into this Commission Delegated Regulation.

3.2 protective helmet

item to be worn on the head and intended to absorb the energy of an impact, thus reducing the risk of injury to the head

3.3 helmet type

category of helmets which does not differ in such essential respects as the materials or dimensions or construction of the helmet, of the retention system or of the protective padding

3.4 padding

3.4.1 protective padding

material used to absorb impact energy

3.4.2 comfort padding

lining material provided for the wearer's comfort

3.4.3 sizing padding

lining material used for adjustment of the helmet size

3.5 retention system

complete assembly by means of which the helmet is maintained in position on the head including any devices for adjustment of the system or to enhance the wearer's comfort

3.6 chin strap

part of the retention system consisting of a strap that passes under the wearer's jaw to keep the helmet in position

3.7 basic plane of the human head

plane at the level of the external ear opening (external auditory meatus) and the lower edge of the eye sockets (orbits)

3.8 basic plane of a headform

plane relative to the headform that corresponds to the basic plane of the human head

3.9 reference plane

construction plane parallel to the basic plane of the headform at a distance from it which is a function of the size of the headform

3.10 test area

area of the helmet in which impact tests may be conducted which corresponds to the minimum protected area of the human head

4 Requirements

4.1 Materials

For those parts of the helmet coming into contact with the skin, the material used should be known not to undergo appreciable alteration from contact with sweat or with substances likely to be found in toiletries.

Materials shall not be used which are known to cause skin disorders.

4.2 Construction

The helmet normally consists of a means of absorbing impact energy and means of retaining the helmet on the head in an accident.

The helmet should be durable and withstand handling. The helmet shall be so designed and shaped that parts of it (visor, rivets, ventilators, edges, fastening device and the like) are not likely to injure the user in normal use.

NOTE Helmets should:

- have low weight;
- be ventilating;
- be easy to put on and take off;
- be usable with spectacles;
- not significantly interfere with the ability of the user to hear traffic noise.

4.3 Field of vision

When tested in accordance with 5.7 there shall be no occultation in the field of vision bounded by angles as follows (see Figure 1):

- horizontally: min. 105° from the longitudinal vertical median plane to the left and right hand sides;
- upwards: min. 25° from the reference plane;
- downwards: min. 45° from the basic plane.

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