



**Co-ordination of the Notified Bodies
NB-TOYS
under the Safety of Toys Directive**

NB-TOYS/2014/072

10 June 2014

**EC-type approval protocol No. 3
Physical and mechanical properties for rotor
blades used in remote controlled flying toys
intended for children over 8 years old (e.g.
helicopters) REV 4**

Agreed by:

NB-Toys group on: 13 March 2014

ADCO group on Toy Safety on: 23 May 2014

Expert group on Toy Safety on: 23 May 2014

Will be available at:

http://ec.europa.eu/enterprise/sectors/toys/documents/recommendations/index_en.htm

Changes made for Rev 4

Below the changes made in the 4th revision of the protocol are indicated for the relevant parts:

Background: a clarification of EC-type examination process has been added

- 1.1. Requirement have been specified on the radius of the rotor ends and –rotor front edges as well as detachment of rotor blades during flight. Requirements have been reworded and specifications have been removed from the requirements section. Warnings have been amended.**
- 2.1 Requirements have been specified on the radius of the rotor edges, the flexibility of the rotor blades as well as detachment of rotor blades during flight. Requirements have been reworded and specifications have been removed from the requirements section. Warnings have been amended.**

EC-type approval protocol No. 3

Physical and mechanical properties for rotor blades used in remote controlled flying toys intended for children over 8 years old (e.g. helicopters) (rev 4)

Background

To complete the legal obligations of the manufacturer which aim at ensuring the safety of toys, an explicit obligation to carry out an analysis of the various hazards that the toy may present and an assessment of the potential exposure to them, is included in the new Toy Safety Directive 2009/48/EC (TSD). In order to ensure compliance with the essential safety requirements, it was necessary to lay down appropriate conformity assessment procedures to be followed by the manufacturer.

Internal production control based on the manufacturer's own responsibility for the conformity assessment has proven adequate in cases where he has followed the harmonised standards, the references of which have been published in the *Official Journal of the European Union (OJEU)*, covering all the safety requirements for the toy.

In cases where such harmonised standards do not exist the toy should be submitted to third party verification, in this case EC-type examination. The same should apply if one or more such standards have been published with a restriction in the *OJEU*, or if the manufacturer has not followed such standards completely, or only in part. The manufacturer can submit the toy to EC-type examination in cases where it considers that the nature, design, construction or purpose of the toy necessitates third party verification.

Note: The above sentences were extracted from the introduction of the “guidance document on the application of Directive 2009/48/EC on the safety of toys: technical documentation” version 1.3 which can be accessed at the following link: http://ec.europa.eu/enterprise/sectors/toys/documents/guidance/index_en.htm

In the case of rotor blades used in remote controlled flying toys intended for children over 8 years old (e.g. helicopters), the safety assessment may identify mechanical and physical special hazards which may not be (sufficiently) covered by EN 71-1:2011. This kind of toys is indeed not considered as a projectile as defined in EN 71-1:2011 and is therefore not covered by clause 4.17 requirements and in particular by 4.17.1c) regarding helicopter rotors.

The specific risks of laceration injuries by rotor blades operated by high speed should be taken into account. This means EC-type examination may be required to show compliance to the 2009/48/EC toy safety directive. This guidance document sets out requirements agreed by Notified Bodies for physical and mechanical properties only. These requirements can be used in the framework of an EC-type examination. Other safety requirements (electrical, flammability, chemical, etc) have to be covered separately. As the operation of remote controlled flying toys requires specific skills correct age grading is essential. Also additional warnings and instructions for use are needed for safe use of the toy.

To be classified as toys consider the following aspects:

- Intended play value (for children under the age of 14)
Simple operating/flying functions (right-left/ up-down); no complex flying manoeuvres, no complex set up or tuning
- Assembly: simple (only a few components); assembly shall be possible by the user age group as indicated by the age grade
- Flying time: expected to be only a few minutes
- Marketing: offered as a toy, presentation for children; addressed in the operating instructions

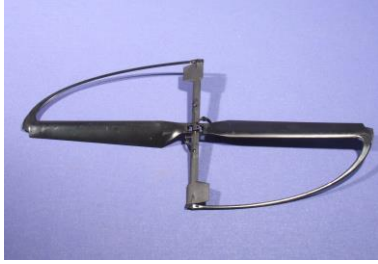

Scope of this protocol

Remote controlled flying toys intended for children over 8 years of age.

The following types of remote controlled flying toys with rotor blades such as helicopters are identified and dealt with in this protocol:

1. outdoor toys intended for children over 12 years of age
 - these toys typically have a diameter of the main rotor of up to approximately 50 cm and a weight of up to approximately 200 g.
2. domestic indoor and domestic garden use toys intended for children over 8 years of age
 - these toys typically have a diameter of the main rotor of up to approximately 35 cm and a weight of up to approximately 50 g.

- **Specific requirements:**

1	Outdoor toys intended for children over 12 years of age
1.1	Requirements:
	<p>The rotor shall have either:</p> <p><i>*Note: A solution to address risks of laceration injuries by helicopter rotor blades is compliance with the harmonised standard EN 71-1 clause 4.17.1.c. (requiring a ring around the perimeter of the rotor). A manufacturer may choose this option as part of his safety assessment.</i></p> <ul style="list-style-type: none"> • A protective ring surrounding the rotor fixed to the body of the toy that does not rotate a partial arch (see examples below) around the perimeter of the rotor, or <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Picture 1</p> </div> <div style="text-align: center;">  <p>picture 2</p> </div> </div> <ul style="list-style-type: none"> • Rotor blades made of flexible material, and a bright orange/red/ yellow color marking on the rotor ends, and the rotor ends and rotor front edges, that may come in contact with the skin, have to be rounded in the horizontal plane • The rotor blades should not present any sharp edges as determined by clause 8.11 of EN 71-1: and should be free from burrs. <p>In addition the following requirements should be met:</p> <ul style="list-style-type: none"> • The rotor blades should not detach from the helicopter during flight. The rotor blades should withstand tensile force of at least 90 N. This force should be applied on the extremity of each blade, in a parallel direction to the blade surface so as to simulate the centrifugal force which is applied on the blade during flight. • In case there are no clear instructions on how to replace the rear rotor, replaceable rear rotors should be evaluated to determine that they will not detach from the toy during use even if the rotor has not been properly/firmly affixed on its axle during replacement. <p>Alternative solutions may be based on a medical report.</p>
1.2	Warnings and instructions for use:
1.2.1	Warning on the toy
	<p>„Warning. Do not contact the rotating rotor“, The warning shall appear on the operator panel visible to the child when operating the toy.</p>
1.2.2	Warnings before Purchase (visible at point of sale)
	Caution. Read carefully before first use.
	To be used only outdoors – not to be used indoors. Risk of eye injuries.
	Warning. Not suitable for children under 12 years of age.
	Caution. Do not start up and fly when persons, animals or any obstructions are within the flying range of the helicopter. Note: The manufacturer should specify the flying range.
1.2.3	Instructions for use
	Warning..Not suitable for children under 12 years of age.
	Before first use: Read the user's information together with your child.
	Keep the instructions for use for later reference.
	Operations and safe use must be explained (preferably by graphical illustrations).
	Flying the helicopter requires skill and users must be trained under the direct supervision of an adult.
	Note for adult supervisors: Check if the toy is assembled as instructed. The assembly shall be performed under the supervision of an adult.

	Hands, hair and loose clothes must be kept away from the propeller (rotor). Do not touch the rotating rotor.
	Do not change or modify anything on the helicopter.
	For use only outdoors – not to be used indoors. Risk of eye injuries.
	Start and fly only when the area is appropriate for the intended use (free area, no obstacles) and only within direct visual contact
	Start and fly is strictly forbidden near high voltage poles, railway tracks, roads, swimming pools or open water.
	Caution. Do not start up and fly when persons, animals or any obstructions are within the flying range of the helicopter.
	Note: The manufacturer should specify the flying range.
	Only operate under good visibility and calm weather conditions.
2	Toy for domestic indoor and domestic garden use, by children of over 8 years of age
2.1	Requirements:
	The rotor shall have either: <i>*Note: A solution to address risks of laceration injuries by helicopter rotor blades is compliance with the harmonised standard EN 71-1 clause 4.17.1.c. (requiring a ring around the perimeter of the rotor). A manufacturer may choose this option as part of his safety assessment.</i>
	<ul style="list-style-type: none"> Rotor blades made of flexible material. The rotor should easily bend when a force is applied at the outer end of the blade, perpendicular to the horizontal plane of the blade This force should be less or equal to 6N. The blade should bend without breaking and come back to its initial position after the test. Rotor edges that may come in contact with the skin should be rounded in the horizontal plane. They should not present any sharp edges as determined by clause 8.11 of EN 71-1: 2011 and should be free from burrs.
	In addition the following requirements should be met:
	<ul style="list-style-type: none"> The rotor blades should not detach from the helicopter during flight. The rotor blades should withstand tensile force of at least 90 N. This force should be applied on the extremity of each blade, in a parallel direction to the blade surface so as to simulate the centrifugal force which is applied on the blade during flight. In case there are no clear instructions on how to replace the rear rotor, replaceable rear rotors should be evaluated to determine that they will not detach from the toy during use even if the rotor has not been properly/firmly affixed on its axle during replacement.
	Alternative solutions may be based on a medical report.
2.2	Warnings and instructions for use:
2.2.1	Warnings before Purchase (visible at point of sale)
	Caution. Read carefully before first use.
	Use only under adult supervision.
	To be used in domestic area (house and garden) only.
	Warning. Not suitable for children under 8 years of age.
2.2.2	Instructions for use
	Warning .Not suitable for children under 8 years of age.
	Keep the instructions for use for later reference.
	Before first use: Read the user's information together with your child.
	Operations and safe use must be explained (preferably by graphical illustrations).
	Flying the helicopter requires skill and children must be trained under the direct supervision of an adult.
	For toys intended to be assembled by the child: Note for adult supervisors: Check if the toy is assembled as instructed. The assembly shall be performed under the supervision of an adult.
	Hands, hair and loose clothes shall be kept away from the propeller (rotor).
	Do not change or modify anything on the helicopter.
	For safe use, the room where the toy is used must be sufficiently large.
	This toy is intended to be used in domestic area (house and garden) only.
	Caution. Do not start up and fly when persons, animals or any obstructions are within the flying range of the helicopter.
	Caution. Risk of eye injuries. Do not fly near your face to avoid injuries.