

CHANGZHOU AIRWHRRL TECHNOLOGY CO., LTD
9TH FLOOR ZHONGCHUANG BUILDING, NO. 396 TONGJIANG MIDDLE ROAD, XINBEI DISTRICT,
CHANGZHOU CITY, JIANGSU PROVINCE, CHINA

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Description : AIRWHEEL SMART HELMET
Style / Item No. : C5
Size : 54cm-58cm
HPI (from basic plane) : 41mm For EN960 575
Test Performed : EN 1078:2012+A1:2012
Analysis of Azo Dye,
To Determine the pH Value,
Color Fastness to Perspiration
Sample Receiving Date : May 31, 2016
Test Performing Date : May 31, 2016 to Jun 15, 2016
Test Result(s) : For further details, please refer to the following page(s)

Signed for and on behalf of
Guangzhou Branch,
SGS-CSTC Ltd.

Leil Wu
Approved Signatory

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I. Test Conducted: Based on **EN 1078:2012+A1:2012**

Helmets for pedal cyclists and for users of skateboards and roller skates

Test Results: Details shown as following table

Clause	Test Method/Requirement	Result
4.1	<p>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.</p>	Pass
4.2	<p>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. <i>NOTE: Helmets should:</i> <i>have low weight;</i> <i>be ventilating;</i> <i>be easy to put on and take off;</i> <i>be usable with spectacles;</i> <i>not significantly interfere with the ability of the user to hear traffic noise.</i></p>	Pass See annex 1
4.3	<p>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.</p>	Pass See annex 4
4.4	<p>Shock absorbing capacity The helmet shall give protection to the forehead, rear, sides, temples and crown of the head. When tested in accordance with 5.3 and 5.4 the peak acceleration shall not, for each impact, exceed 250 g for the velocity of 5,42 +0.1,-0 m/s on the flat anvil, and 4,57+0.1,-0 m/s on the kerbstone anvil. <i>NOTE: These are theoretically equivalent to 1 497 mm and 1 064 mm drop heights respectively.</i></p>	Pass See annex 2
4.5	<p>Durability After being tested the helmet shall not exhibit damage that could cause significant injury to the wearer (sharp edges, points).</p>	Pass
4.6	<p>Retention system</p>	
4.6.1	<p>General Means shall be provided for retaining the helmet on the wearer's head. All parts of the retention system shall be securely attached to the helmet.</p>	Pass



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4.6.2	<p>Chin strap The chin strap shall not include a chin cup. Any chin strap shall be no less than 15 mm wide. Chin straps may be fitted with means of enhancing comfort for the wearer.</p>	Pass
4.6.3	<p>Fastening device Any retention system shall be fitted with a device to adjust and maintain tension in the system. The device shall be capable of adjustment so that the buckle does not sit on the jaw bone.</p>	Pass
4.6.4	<p>Color No part of the retention system shall be colored green. <i>NOTE: It is recommended that the opening mechanism be marked with red or orange color.</i></p>	Pass
4.6.5	<p>Strength When tested in accordance with 5.5, the dynamic extension of the retention system shall not exceed 35 mm and the residual extension shall not exceed 25 mm. For this purpose, extension includes slippage of the fastening device. Damage to the retention system shall be accepted provided that the above requirements are met. <i>NOTE: In this test, slippage of the fastening device can be measured and recorded separately from other contributions to the extension but this is for information only and is not subject to a separate requirement.</i></p>	Pass See annex 3
4.6.6	<p>Effectiveness When tested in accordance with 5.6 the helmet shall not come off the headform.</p>	Pass
4.6.7	<p>Ease of release Following the strength test in accordance with 5.5 and with the load still applied, it shall be possible to open the release system with one hand.</p>	Pass
5.2	<p>Inspection and determination of mass Inspect the helmet to ascertain whether it is suitable for its intended purpose and fulfils the general requirements in 4.2. Determine the mass of the helmets of the same size submitted for testing. Calculate and record the mean value in g rounded off to the nearest 10 g, stating the size of the helmet.</p>	Pass See annex 1
6	<p>Marking Each helmet shall be marked in such a way that the following information is easily legible by the user and is likely to remain legible throughout the life of the helmet:</p>	--
	a. the number of this European standard;	Pass
	b. the name or trademark of the manufacturer;	Pass
	c. the designation of the model;	Pass
	d. the designation, which shall be one or more of the following:-helmet for pedal cyclists, skateboarders or roller skaters;	Pass

	e. the size or size range of the helmet, quoted as the circumference (in centimeters) of the head which the helmet is intended to fit;	Pass
	f. the weight of the helmet (the average mass in g determined according to EN 1078,5.2);	Pass
	g. year and quarter of manufacture;	Pass
	h. a label carrying the instructions –“Warning! This helmet should not be used by children while climbing or doing other activities when there is a risk of strangulation/hanging if the child gets trapped with the helmet”	Pass
	In addition, if the helmet has components made of material which are known to be adversely affected by contact with hydrocarbons, cleaning fluids, paints, transfers or other extraneous additions, the helmet shall carry an appropriate warning.	Pass
	If there is a consumer sales packaging, the information specified in a), b), d), and h) shall also be given on that package. The text shall be of minimum font size 12.	Pass
	Information supplied by the manufacture	
	With every helmet clear information in the language of the country of sale shall be given as follows:	--
	a. that the helmet can only protect if it fits well and that the buyer should try different sizes and choose the size which feels secure and comfortable on the head;	Pass
	b. that the helmet should be adjusted to fit the user, e.g. the straps positioned so that they do not cover the ears, the buckle positioned away from the jawbone and the straps and buckle adjusted to be both comfortable and firm;	Pass
7	c. how the helmet should be positioned on the head to ensure the intended protection is provide (e.g. that it should be placed so as to protect the forehead and not be pushed too far over the back of the head); to protect the forehead and not be pushed too far over the back of the head);	Pass
	d. that a helmet cannot always protect against injury;	Pass
	e. that a helmet subjected to a severe impact should be discarded and destroyed;	Pass
	f. a statement of the danger of modifying or removing any of the original component parts of the helmet other than as recommended by the manufacturer, and that helmets should not be adapted for the purpose of fitting accessories in a way not recommended by the manufacturer.	Pass



Model: C5

Size: 54-58 cm

Test headform: 575 (EN 960:2006)

Annex-1: Mass

Mass of the samples:

Sample No.	Mass (g)
1	375
2	375
3	373
Average	374

Annex-2: Impact energy attenuation test

Test Specification: EN 1078:2012+A1:2012-5.4

Ambient temperature at time of test: 22 °C

Sample No.	Condition	Test Anvil	Test site	Velocity (m/s)	Peak'G	Result
1	High temperature No recondition (Clause 5.4.2.1)	Kerbstone	Front	4.57	119.0	Pass
		Flat	Left	5.43	154.3	Pass
2	Low temperature No recondition (Clause 5.4.2.2)	Flat	Crown	5.43	216.5	Pass
		Kerbstone	Left	4.61	190.5	Pass
3	Artificial Ageing No recondition (Clause 5.4.2.3)	Kerbstone	Rear	4.57	90.2	Pass
		Flat	Front	5.45	92.9	Pass

Annex-3: Retention system strength

Test Specification: EN 1078:2012+A1:2012-5.5

Ambient temperature at time of test: 22 °C

Sample No.	Condition	Dynamic extension (mm)	Residual extension (mm)	Result
2	Low temperature No recondition (Clause 5.4.2.2)	14.4	5.1	Pass
3	Artificial Ageing No recondition (Clause 5.4.2.3)	18.8	6.6	Pass

Annex-4: Field of vision

Test Specification: EN 1078:2012+A1:2012-5.7

Horizontal: >105°

Upward: >25°

Downward: >45°



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II. Analysis of AZO Dye and to Determine the PH Value in the submitted sample.

SGS Ref No.: CAN16-103062

Test Requested	Result
To determine the pH Value in the submitted sample(s).	See Results
Determination of Azodyes in the submitted sample(s) with reference to the Entry 43 of Regulation (EC) No. 552/2009 amending Annex XVII of REACH Regulation (EC) No. 1907/2006 (previously restricted under Directive 2002/61/EC).	PASS

Test Results :

Test Part Description :

Specimen No.	SGS Sample ID	Description
SN1	CAN16-103062.001	Black strap
SN2	CAN16-103062.002	Black padding fabric
SN3	CAN16-103062.003	Black mesh fabric

Remarks :

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected (< MDL)
- (4) "-" = Not Regulated

pH value

Test Method : With reference to ISO 3071:2005, extracted by KCl solution, analysis was performed by pH meter.

Test Item(s)	<u>001</u>	<u>002</u>	<u>003</u>
pH value	6.0	5.9	6.1



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Azo Dyes

Test Method : With reference to EN 14362-1 :2012 - Analysis was conducted with GC-MS/HPLC-DAD.

Test Item(s)	CAS NO.	Limit	Unit	MDL	001	002	003
4-Aminobiphenyl	92-67-1	30	mg/kg	5	ND	ND	ND
Benzidine	92-87-5	30	mg/kg	5	ND	ND	ND
4-chloro-o-toluidine	95-69-2	30	mg/kg	5	ND	ND	ND
2-naphthylamine	91-59-8	30	mg/kg	5	ND	ND	ND
o-aminoazotoluene	97-56-3	30	mg/kg	5	ND	ND	ND
5-nitro-o-toluidine / 2-Amino-4-nitrotoluene	99-55-8	30	mg/kg	5	ND	ND	ND
4-chloroaniline	106-47-8	30	mg/kg	5	ND	ND	ND
4-methoxy-m-phenylenediamine / 2,4-Diaminoanisole	615-05-4	30	mg/kg	5	ND	ND	ND
4,4'-diaminodiphenylmethane	101-77-9	30	mg/kg	5	ND	ND	ND
3,3'-dichlorobenzidine	91-94-1	30	mg/kg	5	ND	ND	ND
3,3'-dimethoxybenzidine	119-90-4	30	mg/kg	5	ND	ND	ND
3,3'-dimethylbenzidine	119-93-7	30	mg/kg	5	ND	ND	ND
3,3'-Dimethyl-4,4'-diaminodiphe nylmethane / 4,4'-methylenedi-o-toluidine	838-88-0	30	mg/kg	5	ND	ND	ND
p-cresidine	120-71-8	30	mg/kg	5	ND	ND	ND
4,4'-methylene-bis- (2-chloroaniline)	101-14-4	30	mg/kg	5	ND	ND	ND
4,4'-oxydianiline	101-80-4	30	mg/kg	5	ND	ND	ND
4,4'-thiodianiline	139-65-1	30	mg/kg	5	ND	ND	ND
o-toluidine	95-53-4	30	mg/kg	5	ND	ND	ND
4-methyl-m-phenylenediamine / 2,4-Toluylendiamine	95-80-7	30	mg/kg	5	ND	ND	ND
2,4,5-trimethylaniline	137-17-7	30	mg/kg	5	ND	ND	ND
4-aminoazobenzene	60-09-3	30	mg/kg	5	ND	ND	ND
O-Anisidine	90-04-0	30	mg/kg	5	ND	ND	ND
Comment					PASS	PASS	PASS

Notes :

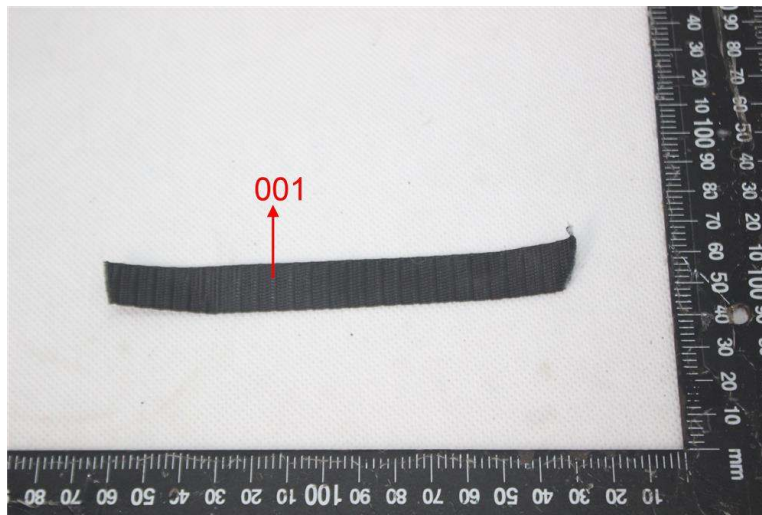
- (1) Test specimen was taken randomly from the sample submitted by client/applicant.
- (2) Whenever 4-aminodiphenyl (CAS number 92-67-1), 2-naphthylamine (CAS number 91-59-8) and 4-methoxy-m-phenylene-diamine (CAS number 615-05-4) is found, the use of banned azo colorants cannot be reliably ascertained without additional information, e.g. the chemical structure of the colorants used.



- (3) In case polyurethane materials are used, e.g. PU foams and coatings and in prints, it cannot be ruled out that certain amines, e.g. 4,4'-methylene-dianiline (MDA, CAS number 101-77-9) and 2,4-toluylene-diamine (TDA, CAS number 95-80-7) are released from the PU component and not from a banned azo colorant.
- (4) In case of pigment prints care has to be taken that 4,4'-methylene-dianiline (MDA, CAS number 101-77-9) is not released from a source of banned azo colorants but from e.g. a chemical fixing agent.

Requirement : ≤ 30 mg/kg for each aromatic amine according to Requirement of Entry 43 of Regulation(EC) No. 552/2009 amending Annex XVII of REACH Regulation (EC) No. 1907/2006 (previously restricted under Directive 2002/61/EC).

Sample photo:



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III. Colour Fastness to Perspiration.

SGS Ref. No.: GZSL1606057859TX

Three sample of Airwheel Smart Helmet marked as (A)black strap (B)black padding fabric (C)black mesh fabric

Test Result:

Requirement

Colour Fastness To Perspiration

(ISO 105-E04:2013; test specimen in vertical position.)

Acid

	<u>(A)</u>	<u>(B)</u>	<u>(C)</u>
Change in shade	4-5	4-5	4-5
Staining on multi-fiber stripe			
Acetate	4-5	4-5	4
Cotton	4-5	4-5	4-5
Nylon	4	4	4
Polyester	4-5	4-5	4-5
Acrylic	4-5	4-5	4-5
Wool	4-5	4-5	4-5



Alkaline

	(A)	(B)	(C)
Change in shade	4-5	4-5	4-5
Staining on multi-fiber stripe			
Acetate	4	4-5	4
Cotton	4-5	4-5	4-5
Nylon	4	4	4
Polyester	4-5	4-5	4-5
Acrylic	4-5	4-5	4-5
Wool	4-5	4-5	4-5

Remark: Grey Scale rating is based on the 5-step scale of 1 to 5, where 1 is bad and 5 is good

Sample photo:



Remark:

1. Pass means the test sample met the requirement of the test item.
2. N/A means not applicable.
N/T means not tested as per client's request.
3. A material list for each part of the product and a statement to announce the material complying with requirements of the standard are received from the manufacturer



Sample photos:

<p>Front view</p>	
<p>Side view</p>	



<p>Back view</p>	
<p>Top view</p>	



<p>Bottom view</p>	
<p>Test line for (575) EN 960:2006 head form</p>	

End of Report

