

## 1 | General Information and Overview

Product	Risk assessor
<p>Product name: <b>Battery charger</b></p> <p>Product category: <b>Electronic equipment</b></p> <p>Description: <b>This is a risk assessment template for battery chargers. It describes likely injury scenarios linked to non-conformity with the following clauses of EN 62368-1:2014:</b></p> <p><b>§5.4.2 and 5.4.3 - Inadequate creepage and clearance distances between primary and secondary voltage inside the charger.</b></p> <p><b>§5.4.2 and 5.4.3 - Inadequate creepage and clearance distances between live parts and housing.</b></p> <p><b>§4.7.1 - Too low contact pressure in socket outlet.</b></p> <p><b>§6.3 and 6.4 - Housing made from flammable material.</b></p> <p><b>§4.4.4.3 - Poor construction with inadequate mechanical strength.</b></p> <p><b>How to use</b> Users of the template should select the scenario(s) corresponding to the non-conformities identified for the product under assessment. All other scenarios can be deleted.</p> <p>The probabilities are estimated in the remaining scenarios.</p> <p>The scenarios presented in the template are likely scenarios. Users should ensure that the scenarios are suitable, that the steps are correct and that the injury level is appropriate.</p> <p><b>Disclaimer:</b> The template has been developed by a Joint Action working group composed of market surveillance experts. The intention is to support market surveillance officials assessing the risk with a particular product as part of a market surveillance case.</p>	<p>First name:</p> <p>Last name:</p> <p>Organisation:</p> <p>Address:</p>

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<p>The template is not authorized or endorsed in any way and it is not binding for Member State market surveillance authorities. The contents of the original template is subject to change without notice.</p> <p><b>Disclaimer:</b> This Risk Assessment Template arises from the Joint Market Surveillance Action on GPSD Products – JA2016, which received funding from the European Union in the framework of the ‘Programme of Community Action in the field of Consumer Policy (2014-2020)’. The content of this document represents the views of the author only and it is his sole responsibility; it cannot be considered to reflect the views of the European Commission and/or the Consumers, Health, Agriculture and Food Executive Agency or any other body of the European Union. The European Commission and the Agency do not accept any responsibility for use that may be made of the information it contains.</p>	

## 2 | Product risks - Overview

- Scenario 1 : Risk to be determined - The creepage and clearance distances between primary and secondary voltage inside the charger are too small. A flasover occurs so the output plug (micro USB) becomes energised. The user touches the plug or a telephone that is being charged and gets in touch with high voltage. The user gets an electric shock, but it able to get off again.
- Scenario 2 : Risk to be determined - The creepage and clearance distances between live parts and the charger's housing are too small. The user grabs the charger in a way that breaks the insulation so he gets in touch with high voltage. The user gets an electric shock, but it able to get off again.
- Scenario 3 : Risk to be determined - The contact pressure between the pins on the charger and the socket outlet is too low so the charger makes poor contact to the mains. The charger overheats. This starts a glowing fire that emits smoke. The user is asleep and doesn't notice so he inhales poisonous fumes and dies.
- Scenario 4 : Risk to be determined - The charger's housing is made from flammable material. The charger overheats and the user doesn't notice. The charger ignites and starts a glowing fire that emits smoke. The user is asleep and doesn't notice so he inhales poisonous fumes and dies.
- Scenario 5 : Risk to be determined - The charger is a construction of poor quality with inadequate



mechanical strength. The user pulls the charger out from a socket outlet, and one pin break off and remains in the socket. The user (a large child) grabs intuitively after the pin. The user gets an electric shock, but is able to get off after a few seconds.



## Scenario 1 : Other consumers - High/low voltage

### 1 | Product hazard

Hazard Group: **Electrical energy**  
Hazard Type: **High/low voltage**

### 2 | Consumer

Consumer type: **Other consumers - Consumers other than vulnerable or very vulnerable consumers**

### 3 | How the hazard causes an injury to the consumer

Injury scenario: **The creepage and clearance distances between primary and secondary voltage inside the charger are too small. A flasover occurs so the output plug (micro USB) becomes energised. The user touches the plug or a telephone that is being charged and gets in touch with high voltage. The user gets an electric shock, but it able to get off again.**

### 4 | Severity of Injury

Injury: **Electric shock**  
Level: **2 Local effects (temporary cramp or muscle paralysis)**

### 5 | Probability of the steps to injury

Step	Step(s) to Injury	Probability
1	The creepage and clearance distances between primary and secondary voltage inside the charger are too small.	1
2	A flasover occurs so the output plug (micro USB) becomes energised.	0
3	The user touches the plug or a telephone that is being charged and gets in touch with high voltage.	0
4	The user gets an electric shock, but it able to get off again.	0

Calculated probability	Overall probability	Risk of this scenario
To be determined	To be determined	Risk to be determined

## Scenario 2 : Other consumers - High/low voltage

### 1 | Product hazard

Hazard Group: **Electrical energy**  
Hazard Type: **High/low voltage**

### 2 | Consumer

Consumer type: **Other consumers - Consumers other than vulnerable or very vulnerable consumers**

### 3 | How the hazard causes an injury to the consumer

Injury scenario: **The creepage and clearance distances between live parts and the charger's housing are too small. The user grabs the charger in a way that breaks the insulation so he gets in touch with high voltage. The user gets an electric shock, but it able to get off again.**

### 4 | Severity of Injury

Injury: **Electric shock**  
Level: **2 Local effects (temporary cramp or muscle paralysis)**

### 5 | Probability of the steps to injury

Step	Step(s) to Injury	Probability
1	The creepage and clearance distances between live parts and the charger's housing are too small.	1
2	The user grabs the charger in a way that breaks the insulation so he gets in touch with high voltage.	0
3	The user gets an electric shock, but it able to get off again.	0

Calculated probability	Overall probability	Risk of this scenario
To be determined	To be determined	Risk to be determined

## Scenario 3 : Older children - Toxic gas

### 1 | Product hazard

Hazard Group: **Toxicity**  
Hazard Type: **Toxic gas**

### 2 | Consumer

Consumer type: **Older children - 8 to 14 years (Vulnerable consumers)**

### 3 | How the hazard causes an injury to the consumer

Injury scenario: **The contact pressure between the pins on the charger and the socket outlet is too low so the charger makes poor contact to the mains. The charger overheats. This starts a glowing fire that emits smoke. The user is asleep and doesn't notice so he inhales poisonous fumes and dies.**

### 4 | Severity of Injury

Injury: **Poisoning from substances (ingestion, inhalation, dermal)**  
Level: **4 Irreversible damage to nerve system, Fatality**

### 5 | Probability of the steps to injury

Step	Step(s) to Injury	Probability
1	The contact pressure between the pins on the charger and the socket outlet is too low so the charger makes poor contact to the mains.	1
2	The charger overheats.	0
3	This starts a glowing fire that emits smoke.	0
4	The user is asleep and doesn't notice so he inhales poisonous fumes and dies.	0

Calculated probability	Overall probability	Risk of this scenario
To be determined	To be determined	Risk to be determined

## Scenario 4 : Older children - Toxic gas

### 1 | Product hazard

Hazard Group: **Toxicity**  
Hazard Type: **Toxic gas**

### 2 | Consumer

Consumer type: **Older children - 8 to 14 years (Vulnerable consumers)**

### 3 | How the hazard causes an injury to the consumer

Injury scenario: **The charger's housing is made from flammable material. The charger overheats and the user doesn't notice. The charger ignites and starts a glowing fire that emits smoke. The user is asleep and doesn't notice so he inhales poisonous fumes and dies.**

### 4 | Severity of Injury

Injury: **Poisoning from substances (ingestion, inhalation, dermal)**  
Level: **4 Irreversible damage to nerve system, Fatality**

### 5 | Probability of the steps to injury

Step	Step(s) to Injury	Probability
1	The charger's housing is made from flammable material.	1
2	The charger overheats and the user doesn't notice.	0
3	The charger ignites and starts a glowing fire that emits smoke.	0
4	The user is asleep and doesn't notice so he inhales poisonous fumes and dies.	0

Calculated probability	Overall probability	Risk of this scenario
To be determined	To be determined	Risk to be determined

## Scenario 5 : Older children - High/low voltage

### 1 | Product hazard

Hazard Group: **Electrical energy**  
Hazard Type: **High/low voltage**

### 2 | Consumer

Consumer type: **Older children - 8 to 14 years (Vulnerable consumers)**

### 3 | How the hazard causes an injury to the consumer

Injury scenario: **The charger is a construction of poor quality with inadequate mechanical strength. The user pulls the charger out from a socket outlet, and one pin break off and remains in the socket. The user (a large child) grabs intuitively after the pin. The user gets an electric shock, but is able to get off after a few seconds.**

### 4 | Severity of Injury

Injury: **Electric shock**  
Level: **2 Local effects (temporary cramp or muscle paralysis)**

### 5 | Probability of the steps to injury

Step	Step(s) to Injury	Probability
1	The charger is a construction of poor quality with inadequate mechanical strength.	1
2	The user pulls the charger out from a socket outlet, and one pin break off and remains in the socket.	0
3	The user (a kid) grabs intuitively after the pin.	0
4	The user gets an electric shock, but is able to get off after a few seconds.	0

Calculated probability	Overall probability	Risk of this scenario
To be determined	To be determined	Risk to be determined