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IEC 60479-2

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# INTERNATIONAL STANDARD



BASIC SAFETY PUBLICATION

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## Effects of current on human beings and livestock – Part 2: Special aspects

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	8
3 Terms and definitions .....	9
4 Effects of alternating currents with frequencies above 100 Hz .....	11
4.1 General.....	11
4.2 Effects of alternating current in the frequency range above 100 Hz up to and including 1 000 Hz .....	12
4.2.1 Threshold of perception .....	12
4.2.2 Threshold of let-go .....	12
4.2.3 Threshold of ventricular fibrillation .....	13
4.3 Effects of alternating current in the frequency range above 1 000 Hz up to and including 10 000 Hz.....	14
4.3.1 Threshold of perception .....	14
4.3.2 Threshold of let-go .....	14
4.3.3 Threshold of ventricular fibrillation .....	15
4.4 Effects of alternating current in the frequency range above 10 000 Hz .....	15
4.4.1 General .....	15
4.4.2 Threshold of perception .....	15
4.4.3 Threshold of let-go .....	15
4.4.4 Threshold of ventricular fibrillation .....	15
4.4.5 Other effects.....	16
5 Effects of special waveforms of current .....	16
5.1 General.....	16
5.2 Equivalent magnitude, frequency and threshold .....	16
5.3 Effects of alternating current with DC components .....	17
5.3.1 Waveforms and frequencies and current thresholds.....	17
5.3.2 Threshold of startle reaction .....	18
5.3.3 Threshold of let-go .....	19
5.3.4 Threshold of ventricular fibrillation .....	20
6 Effects of alternating current with phase control .....	24
6.1 Waveforms and frequencies and current thresholds .....	24
6.2 Threshold of startle reaction and threshold of let-go.....	25
6.3 Threshold of ventricular fibrillation .....	25
6.3.1 General .....	25
6.3.2 Symmetrical control .....	26
6.3.3 Asymmetrical control .....	26
7 Effects of alternating current with multicyle control .....	26
7.1 Waveforms and frequencies .....	26
7.2 Threshold of startle reaction and threshold of let-go.....	27
7.3 Threshold of ventricular fibrillation .....	27
7.3.1 General .....	27
7.3.2 Shock durations longer than 1,5 times the period of the cardiac cycle .....	28
7.3.3 Shock durations less than 0,75 times the period of the cardiac cycle .....	28

8	Estimation of the equivalent current threshold for mixed frequencies .....	28
8.1	Threshold of perception and let-go.....	28
8.2	Threshold of ventricular fibrillation .....	29
9	Effects of current pulse bursts and random complex irregular waveforms .....	29
9.1	Ventricular fibrillation threshold of multiple pulses of current separated by 300 ms or more .....	29
9.2	Ventricular fibrillation threshold of multiple pulses of current separated by less than 300 ms .....	29
9.2.1	General .....	29
9.2.2	Examples.....	30
9.2.3	Random complex irregular waveforms .....	32
10	Effects of electric current through the immersed human body .....	34
10.1	General.....	34
10.2	Resistivity of water solutions and of the human body .....	34
10.3	Conducted current through immersed body .....	36
10.4	Physiological effects of current through the immersed body .....	37
10.5	Threshold values of current.....	38
10.6	Intrinsically “safe” voltage values .....	38
11	Effects of unidirectional single impulse currents of short duration .....	38
11.1	General.....	38
11.2	Effects of unidirectional impulse currents of short duration.....	39
11.2.1	Waveforms .....	39
11.2.2	Determination of specific fibrillating energy $F_e$ .....	40
11.3	Threshold of perception and threshold of pain for capacitor discharge .....	41
11.4	Threshold of ventricular fibrillation .....	43
11.4.1	General .....	43
11.4.2	Examples.....	44
Annex A	(informative) Random complex irregular waveform analysis .....	47
A.1	General.....	47
A.2	Formal theoretical statement of the method .....	47
A.3	Demonstration of the calculation .....	48
A.3.1	General .....	48
A.3.2	Choice of justified current .....	50
A.3.3	Choice of sampling step size .....	50
A.4	Examples 1 and 2 .....	51
	Bibliography.....	54
	Figure 1 – Variation of the threshold of perception within the frequency range 50/60 Hz to 1 000 Hz .....	12
	Figure 2 – Variation of the threshold of let-go within the frequency range 50/60 Hz to 1 000 Hz.....	13
	Figure 3 – Variation of the threshold of ventricular fibrillation within the frequency range 50/60 Hz to 1 000 Hz, shock durations longer than one heart period and longitudinal current paths through the trunk of the body.....	13
	Figure 4 – Variation of the threshold of perception within the frequency range 1 000 Hz to 10 000 Hz .....	14
	Figure 5 – Variation of the threshold of let-go within the frequency range 1 000 Hz to 10 000 Hz.....	14

Figure 6 – Variation of the threshold of ventricular fibrillation for continuous sinusoidal current (1 000 Hz to 150 kHz) .....	16
Figure 7 – Waveforms of currents .....	18
Figure 8 – Let-go thresholds for men, women and children .....	19
Figure 9 – 99,5-percentile let-go threshold for combinations of 50/60 Hz sinusoidal alternating current and direct current .....	20
Figure 10 – Composite alternating and direct current with equivalent likelihood of ventricular fibrillation.....	22
Figure 11 – Waveforms of rectified alternating currents .....	23
Figure 12 – Waveforms of alternating currents with phase control.....	25
Figure 13 – Waveforms of alternating currents calculated with multicycle control factor .....	27
Figure 14 – Threshold of ventricular fibrillation (average value) for alternating current with multicycle control for various degrees of controls (results of experiments with young pigs).....	28
Figure 15 – Series of four rectangular pulses of unidirectional current .....	31
Figure 16 – Series of four rectangular pulses of unidirectional current .....	31
Figure 17 – Series of four rectangular pulses of unidirectional current .....	32
Figure 18 – Example of current versus elapsed time over a contaminated insulator .....	33
Figure 19 – PC plotted on the AC time current curves (IEC 60479-1:2018, Figure 20).....	34
Figure 20 – Forms of current for rectangular impulses, sinusoidal impulses and for capacitor discharges .....	40
Figure 21 – Rectangular impulse, sinusoidal impulse and capacitor discharge having the same specific fibrillating energy and the same shock duration.....	41
Figure 22 – Threshold of perception and threshold of pain for the current resulting from the discharge of a capacitor (dry hands, large contact area) .....	42
Figure 23 – Probability of fibrillation risks for current flowing in the path left hand to feet .....	44
Figure A.1 – Definition of a segment of a random complex waveform.....	47
Figure A.2 – Definition of a duration within a sample.....	47
Figure A.3 – PC for demonstration example of the random complex waveform method plotted against time-current curves for RMS AC.....	50
Figure A.4 – Random complex waveform typical of those used in Example 1 .....	51
Figure A.5 – Random complex waveform typical of those used in Example 2 .....	52
Figure A.6 – PC for Examples 1 and 2 of the random complex waveform method plotted against time-current curves for RMS AC.....	53
Table 1 – Estimate for ventricular fibrillation threshold after each pulse of current in a series of pulses each of which excited the heart tissue in such a manner as to trigger ventricular responses.....	30
Table 2 – Resistivity of water solutions [24], [25] .....	35
Table 3 – Resistivity of human body tissues.....	36
Table 4 – Relative interaction between the resistivity of water solution and the impedance characteristic of the electrical source .....	37
Table 5 – Effects of shocks.....	45
Table 6 – Effects of shocks.....	46

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### EFFECTS OF CURRENT ON HUMAN BEINGS AND LIVESTOCK –

#### Part 2: Special aspects

#### FOREWORD

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International Standard IEC 60479-2 has been prepared by IEC technical committee 64: Electrical installations and protection against electric shock.

This first edition cancels and replaces IEC TS 60479-2:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC TS 60479-2:2017:

- a) change in status from Technical Specification to International Standard.

It has the status of a basic safety publication in accordance with IEC Guide 104.

The text of this International Standard is based on the following documents:

CDV	Report on voting
64/2300/CDV	64/2362/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60479 series, published under the general title *Effects of current on human beings and livestock*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

## INTRODUCTION

In order to avoid errors in the interpretation of this document, it should be emphasized that the data given herein is mainly based on experiments with animals as well as on information available from clinical observations. Only a few experiments with shock currents of short duration have been carried out on living human beings.

The effects of current passing through the human body for

- alternating sinusoidal current with DC components,
- alternating sinusoidal current with phase control,
- alternating sinusoidal current with multicycle control,
- equivalent current threshold for mixed frequencies,
- current pulse bursts and random complex irregular waveforms,
- electric current through the immersed human body, and
- unidirectional single impulse currents of short duration

are described.

# EFFECTS OF CURRENT ON HUMAN BEINGS AND LIVESTOCK –

## Part 2: Special aspects

### 1 Scope

This part of IEC 60479 describes the effects on the human body when a sinusoidal alternating current in the frequency range above 100 Hz passes through it.

The effects of current passing through the human body for:

- alternating sinusoidal current with DC components,
- alternating sinusoidal current with phase control, and
- alternating sinusoidal current with multicycle control

are given but are only deemed applicable for alternating current frequencies from 15 Hz up to 100 Hz.

Means of extending the frequency of applicability of pure sinusoids to a frequency of 150 kHz are given, supplementing the data in IEC 60479-1.

Means of examining random complex irregular waveforms are given.

This document describes the effects of current passing through the human body in the form of single and multiple successive unidirectional rectangular impulses, sinusoidal impulses and impulses resulting from capacitor discharges.

The values specified are deemed to be applicable for impulse durations from 0,1 ms up to and including 10 ms.

This document only considers conducted current resulting from the direct application of a source of current to the body, as does IEC 60479-1. It does not consider current induced within the body caused by its exposure to an external electromagnetic field.

This basic safety publication is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 104 and ISO/IEC Guide 51. It is not intended for use by manufacturers or certification bodies.

One of the responsibilities of a technical committee is, wherever applicable, to make use of basic safety publications in the preparation of its publications. The requirements, test methods or test conditions of this basic safety publication will not apply unless specifically referred to or included in the relevant publications.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60479-1:2018, *Effects of current on human beings and livestock – Part 1: General aspects*



IEC 60990, *Methods of measurement of touch-current and protective conductor current*

IEC Guide 104, *The preparation of safety publications and the use of basic safety publications and group safety publications*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*